Application to increase access to HIV Pre-exposure Prophylaxis (PrEP) through exemption to prescription status for pharmacists.

Introduction

This application seeks to widen access to HIV prophylaxis medication in New Zealand. PrEP is a combination of two antivirals in one tablet that is taken once daily. PrEP has high efficacy (up to 99%) for prevention of HIV (2), and is recommended by the World Health Organization (WHO) to reduce rates of transmission in people at high risk of HIV (3). We propose to allow suitably trained pharmacists with appropriate knowledge and experience to provide PrEP to eligible people.

The existing supply pathways through GPs and Sexual Health Clinics have been successful for many but have not been able to achieve high levels of equitable access. Māori and Pacific peoples have lower rates of PrEP initiation and retention, and uptake is also lower for young MSM and those living outside the main urban centres (4, 5). Māori are overrepresented in HIV diagnoses and are more likely to receive a late diagnosis, and therefore advanced HIV or AIDS-related illnesses (1). It is essential that more prevention access points are available. The proposed reclassification will aid PrEP initiation for people who are unable/uncomfortable to get GP-initiated supply and supports continuation of GP-initiated supply.

In the National HIV Action Plan for Aotearoa 2023-2030 which was launched in 2023**,** New Zealand has a goal of eliminating local HIV transmission by 2030. The Plan also identifies prevention as a key component of achieving New Zealand's elimination goal. This is a goal shared by the WHO and many other countries (3). New Zealand has advanced this commitment by early funding of PrEP through Pharmac, widening patient eligibility for PrEP, easing Special Authority criteria, and supporting prescriber education. Since PrEP's introduction, New Zealand has seen a significant downward trend in new local HIV diagnosis. This is a credit to the efficacy of the drug, and the demand and usage from the community for effective HIV prevention methods that suit their needs.

To make PrEP available to everyone who needs it, WHO states the following:

> ***"Differentiated PrEP services may make PrEP services more acceptable and accessible and support PrEP uptake, persistence and effective use."***

The WHO recommends HIV testing and antiretroviral therapy (including PrEP) are supplied in a way that adapts and meets the needs of the community (3). As adoption rates slow for PrEP, we must now adapt to meet the needs of those who are not served under the current framework and make it easy for existing PrEP users to have ongoing access and avoid treatment gaps.

We expect reclassification to result in increased uptake of PrEP in New Zealand, and more equitable uptake. It will have a flow on benefit of increasing routine STI testing and engaging people in their own sexual health and well-being. The more people we can get to use effective HIV prevention that suits them, the closer we will be to eliminating HIV transmission. No single access pathway will suit everyone. This reclassification and other advocacy will create multiple access pathways of no greater risk than prescription supply, and give patients the autonomy to engage in their desired pathway, which will aid adherence in the long term and contribute to further declines in HIV transmission. Wider PrEP access will support HIV elimination, decrease community and individual risk, and decrease the financial burden for the health system of lifelong HIV treatment; however, additional resources and supply pathways will overcome some

important barriers to access and increase the likelihood of reaching the target of HIV elimination in New Zealand.

Below is a summary of the proposed pharmacist supply mode. Please see Appendix 1 for complete procedure.

1. The client approaches a trained community pharmacist to initiate PrEP supply.
2. The pharmacist completes an initial consultation and checklist for eligibility.
3. The client returns upon completion of lab tests.
4. The pharmacist reviews completed blood test results.
5. Supply checklist consultation is completed.
6. Patient education and consent (side effects, emergency contacts, regimen advice, avoiding interacting medicines etc).
7. Medication is dispensed, labelled with patient details and GP notified/electronic record of supply. The dispensing will appear on the patient's electronic record.
8. Medication is supplied and the patient may return in 90 days.

Patients without a GP will be advised to enrol with one, and the pharmacist can usually suggest local GPs who are taking enrolments.

Part A

1. International Non-proprietary Name of the medicine

Tenofovir disoproxil and emtricitabine

2. Proprietary name (s)

Tenofovir Disoproxil Emtricitabine.

Referred to as TDE or PrEP.

3. Name of company/organisation/individual requesting reclassification

Burnett Foundation Aotearoa (BFA), formerly known as The New Zealand AIDS Foundation.

Burnett Foundation Aotearoa is a registered charity and non-government organisation funded through contracts with Te Whatu Ora and independent fundraising. We are funded to provide HIV and STI testing and prevention, support people living with HIV, and promote great sexual health for rainbow and takatāpui communities. We were established almost 40 years ago and our Kaupapa has not changed.

Our work includes:

- Health promotion on HIV, sexual health and rainbow health.
- Condom distribution.
- Educating key populations about HIV prevention and treatment options.
- Workforce education to a range of healthcare professionals, as well as judicial and police services.
- Providing counselling and support to people living with HIV to ensure they live healthy lives free of stigma and advocate for improved treatments.
- Providing sexual health testing to key populations and advocating for sexual health access nationally.

- Providing a voice and advocating on behalf of gay, bisexual and other men who have sex with Men (MSM), and the wider rainbow community.
- Research and policy advice on key issues for our communities.
- Advocating for healthy public policy and environments that support people living with HIV and rainbow and takatāpui communities.

Burnett Foundation Aotearoa initially led an application to Pharmac to get PrEP funded in 2017. Since then, we have continued to advocate for wider eligibility criteria and suitability criteria, educate our communities about their prevention options, and provide workforce education to those involved in the delivery of PrEP. We have seen firsthand and heard from our communities the positive benefit that this drug can have on reducing HIV risk, stigma and preventing the transmission of HIV.

4. Dose form(s) and strengths for which a change is sought

Tablets containing tenofovir disoproxil maleate 300 mg and emtricitabine / 200 mg immediate release film-coated tablets.

5. Proposed pack size, storage conditions and other qualifications

There will be no change from the current registered pack sizes or storage conditions.

Volumes supplied will be the same as via prescription – up to 3 months' supply.

6. Indications for which change is sought

The indication for which reclassification is sought is HIV Pre-Exposure Prophylaxis only, a licensed indication for this medicine.

7. Present classification of the medicines

Prescription medicine.

8. Classification sought

The proposed wording of the classification is:

> Prescription medicine: except when supplied for HIV prophylaxis to people who are over 18, are HIV negative, and meet the clinical and eligibility criteria of an approved training programme, when provided by a pharmacist who meets the requirements of the Pharmacy Council.

PrEP HIV Prophylaxis will be available from a duly trained and registered pharmacist. The training course will be created in collaboration between community, clinicians and pharmacy, and be endorsed by the Pharmacy Council. The model has the guidance of a professional working group including GPs, nurses, sexual health clinicians and infectious diseases specialists, public health academics, pharmacists, the Pharmaceutical Society and the Pharmacy Guild.

9. Classification status in other countries, especially Australia, UK, USA, Canada.

Country	Classification	Date
Australia (6)	Registration Type: Medicine License Category: RE License Status: A	ARTG ID: 265834 ARTG Date: 15/12/2016

	Prescription	
United Kingdom	Legal Status: Prescription	March 2020
Canada (7)	Status: Marketed Schedule: Prescription	Current Status Date: 11/09/2020
Ireland	Legal Status: Prescription	Issued: 28/06/2019
United States of America	Rx	Approved: 8/6/2017

Table 1: Classification status in other countries

Other countries that have approved an HIV prevention indication for this medication:
As of 2021, 144 countries have adopted a PrEP recommendation into their national guidelines. Over 2.3 million people worldwide have used this medication (8).

Countries with legal PrEP supply: Albania, Antigua and Barbuda, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Botswana, Brazil, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Chile, China, Colombia, Costa Rica, Cote d'Ivoire, Croatia, Cuba, Cyprus, Czechia, Denmark, Djibouti, Dominica, Dominican Republic, DR Congo, Ecuador, El Salvador, England, Eritrea, Estonia, Eswatini, Ethiopia, Finland, France, French Guiana, Gambia, Georgia, Germany, Ghana, Greece, Grenada, Guatemala, Guyana, Haiti, Honduras, Hungary, Iceland, India, Indonesia, Iran, Ireland, Israel, Italy, Jamaica, Japan, Kazakhstan, Kenya, Kyrgyzstan, Lao PDR, Latvia, Lebanon, Lesotho, Liechtenstein, Liberia, Lithuania, Luxembourg, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Mexico, Moldova, Mongolia, Morocco, Mozambique, Myanmar, Namibia, Nepal, Netherlands, New Zealand, Nigeria, North Macedonia, Northern Ireland, Norway, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Rwanda, Saint Lucia, Scotland, Senegal, Serbia, Seychelles Sierra Leone, Singapore, Slovakia, Slovenia, South Africa, South Korea, South Sudan, Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Uganda, Ukraine, United States, Uruguay, Uzbekistan, Vietnam, Wales, Zambia, Zimbabwe, Poland, United States, South Africa, Uganda, Zimbabwe

As of July 2023, the pharmacy boards of 15 US states, have authorised pharmacists to prescribe PrEP under certain conditions, e.g. a Collaborative Practice Agreement (like Standing Orders) and enabling legislation is pending in 11 other states (9). Supply without prescription in a community pharmacy is available in California in the USA (California via senate bill SB-159 in 2021 and SB-339 in 2023) (10-13).

In Alberta, Canda pharmacists can prescribe PrEP in a community pharmacy setting. In Quebec they can initiate PrEP followed continuation and review with a clinician (14).

Supply without prescription in a community pharmacy is also currently available through pilot studies in Kenya, Uganda, Tanzania, Nigeria, Zambia and Malaysia.

10. Extent of usage in New Zealand and elsewhere (e.g. sales volumes) and dates of original consent to distribute

For HIV prophylaxis indication: Consent given / Approval date: 16/2/2017

For HIV treatment indication: Consent given / Approval date: 11/05/2006

Total Number of PrEP Users in New Zealand

Year	Number of users
2022	4,125
2021	3,684
2020	3,021
2019	2,580
2018	1,491
2017	9

Figure 1 Total Number of PrEP Users in NZ. Source: Integrated data infrastructure (IDI) New Zealand

11. Local data or special considerations relating to New Zealand (if applicable)

The National HIV Action Plan for Aotearoa New Zealand 2023-2030 identifies prevention as a key component of achieving New Zealand's elimination goal. Equitable outcomes are a specific target in Aotearoa under Te Tiriti (15).

HIV epidemiology trends (1, 16)

There are 3,272 people living with diagnosed HIV in New Zealand. In 2023, 97 people were first diagnosed with HIV in New Zealand. Of the 97 diagnosed, 65 were MSM, 17 acquired HIV through heterosexual contact, and for the remaining 15 the means of acquisition was reported as other or unknown.

A total of 43 MSM were thought to have acquired HIV locally in Aotearoa New Zealand in 2023. While this is slightly higher than in 2021 and 2022, in general the numbers are declining, and it is a 55% decrease from the peak of the HIV epidemic in 2016. The steady decline in the number of people with locally acquired HIV means we are seeing the continued impact of local HIV prevention like PrEP and condom use. HIV testing efforts allow for people to be diagnosed early and access medication to live healthy lives without the risk of passing HIV to their sexual partners.

Fourteen people were diagnosed with AIDS and 6 AIDS-related deaths were reported in 2023. Thirty-five per cent of new local cases among MSM were diagnosed with low CD4 counts, which suggests that these cases have been living with undiagnosed HIV for some time, potentially able to transmit to others.

A total of 235 cases were notified for 2023 – an increase from the 135 reported in 2022. This was largely driven by a notable increase in people living with HIV who were first diagnosed overseas and who have moved to Aotearoa New Zealand.

The new cases emerged among all major ethnic groups, across all regions and age groups. Thirteen Māori MSM were diagnosed in New Zealand, and 12 of these men acquired their HIV locally. The most significant decreases in number of new infections have been seen among European MSM, and the rate of decline other ethnic groups is at a slower rate.

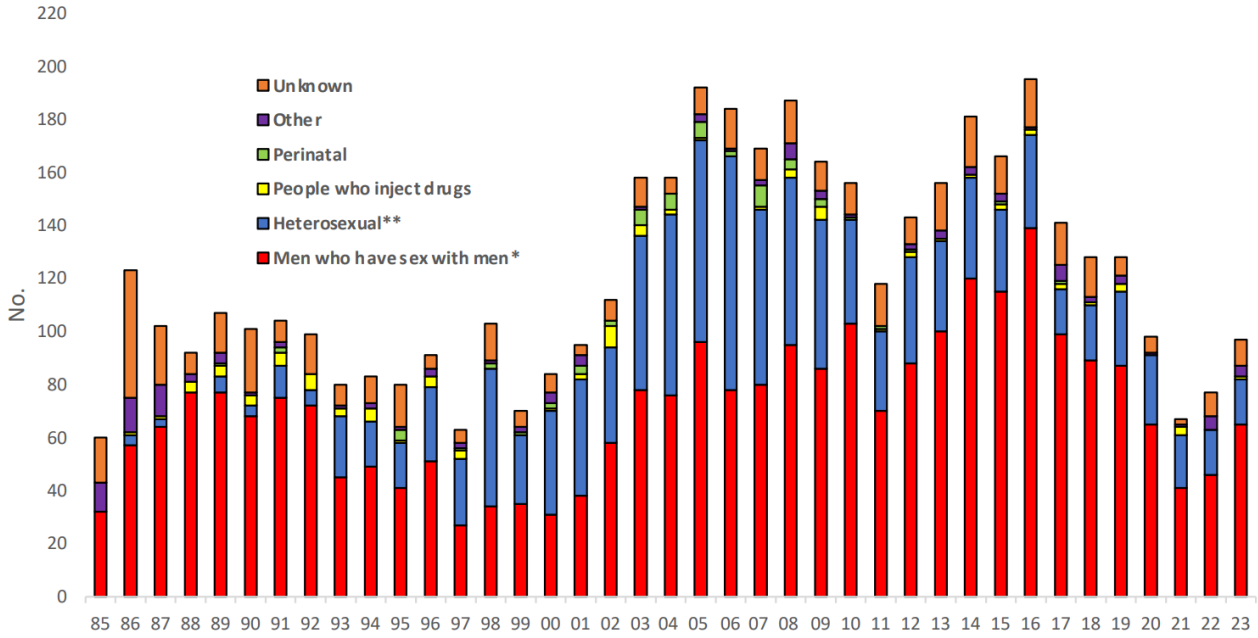

Figure 2 Number of people diagnosed with HIV in New Zealand by year of diagnosis and means of acquisition of HIV (1)

Timeline of HIV prevention medication in New Zealand

Tenofovir Disoproxil Fumarate/Emtricitabine 300 mg / 200 mg as Truvada (Gilead Sciences, Inc, Foster City, CA, USA) was first registered in New Zealand on 11 May 2006, and was approved for the PrEP indication by Medsafe in 2017.

TDE/PrEP has been funded through Pharmac since 2018. Prior to Pharmac funding and Medsafe approval, community members were importing this medication from overseas, and the New Zealand AIDS Foundation provided health promotion information on access pathways. This was in response to significant unmet need in a vulnerable community and the importance of limiting HIV transmission in New Zealand.

The New Zealand AIDS Foundation submitted a funding application to Pharmac in September 2017 to urgently fund HIV PrEP to address the rising number of HIV cases New Zealand was experiencing. From 1 March 2018, PrEP became funded for people at high risk of acquiring HIV. Initially PrEP could only be initiated by an HIV specialist and Special Authority criteria was limited. Eligibility criteria required someone to test negative for HIV, but also to report historic and future risk. These strict control criteria were a barrier for many people who engaged in high-risk sex covertly, or for whom it was not safe to disclose this information. As such uptake has been inequitable, with higher rates of uptake among European and Asian MSM, MSM in urban centres, and people over aged 30 (17, 18).

In 2019, Saxton and McAllister conducted an analysis to enumerate the population eligible for Pharmac funded HIV PrEP under the strict eligibility criteria. This study estimated that 17.9% of sexually active HIV-negative MSM would be eligible for PrEP, equating to 5,816 individuals, as well as a further 31 non-MSM individuals (in total, 5847 individuals) (19).

On 1 July 2022, several decisions were made by Pharmac to expand access to PrEP:

- The list of behaviours and scenarios in which people might be at risk of HIV was removed. From this date, the only criteria required the prescriber to confirm that the patient is HIV negative, that they consider the patient is at elevated risk of HIV exposure and that use of PrEP is clinically appropriate. This effectively enabled clinical discretion on PrEP 'suitability', so that someone does not have had to put themselves at risk of acquiring HIV to access PrEP.
- Pharmac estimated an additional 3,500 (9,300 in total) people per year would be able to access PrEP after these changes (beyond the 5,800 estimates by Saxton and McAllister (19)).
- This 2022 policy change also removed the requirement for a 'named HIV specialist', allowing any relevant practitioner to prescribe it. This enabled PrEP to be initiated in general practice, with a nurse practitioner or pharmacist prescriber.
- STAT dispensing was also applied at this time so that people could collect three months' worth of PrEP from the pharmacy at a time.

HIV Prevalence in the MSM population of New Zealand

A study by Saxton et al. found HIV prevalence among MSM in New Zealand was 6.5%, and one fifth of HIV infected men were undiagnosed; 1.3% of the total sample. While this is a relatively low prevalence compared to other countries with mature epidemics, MSM in Aotearoa are still at high risk of acquiring HIV. This study also demonstrated that HIV prevalence was elevated in subgroups of MSM based on their demographics or behaviour (i.e. those who were aged 30-44 or 45 and over, had 6-20 or more than 20 recent sexual partners, had engaged in unprotected anal intercourse with a casual partner, etc.) and that all MSM were disproportionately at risk of HIV. The study stated that there was a need for more prevention of transmission as well as earlier diagnosis (20). Another analysis by Saxton et al. found that MSM were 348 times more likely to be diagnosed with HIV than heterosexuals (21).

PrEP usage in New Zealand

The most recent IDI data shows 4,125 individuals accessed PrEP in 2022, and PrEP usage has been growing year on year. In 2022, 44% of eligible people were accessing PrEP.

There is good data on PrEP use in Aotearoa New Zealand thanks to the Sex and Prevention of Transmission Study (SPOTS) which was implemented between 2020 and 2022, led by Associate Professor Peter Saxton at the University of Auckland. Saxton has contributed to ongoing behavioural surveillance of MSM in relation to HIV and STI risk since 2002. Participants were MSM aged 16 and over who anonymously and voluntarily participated online, and in total 3,838 participants took part in the study.

The SPOTS study showed that most users accessed PrEP through their GP (56%), followed by a sexual health clinic (37%), with 7% stating "a different GP" (a small proportion were from other sources) (4). This study defined a significant PrEP gap (the proportion of participants who were suitable and willing to use PrEP but had not taken PrEP in the six months prior to survey). **Overall, approximately one in every six participants were suitable to take PrEP and were willing to use it but had not.** Below half of the sample (48%) had used PrEP in the last six months, and only 1,308 were considered PrEP-suitable MSM. A high proportion of participants were aware of PrEP (98%) and willing to use PrEP (86%). This demand stems from effective health promotion and historic community action, however, the PrEP gap demonstrates that

access to PrEP is the main barrier to uptake (rather than awareness or willingness to use) (17). This represents a critical inequality to address in future.

Māori and Pacific MSM have the greatest PrEP gap. Of those people suitable for PrEP and willing to use it, 27% of Māori participants and 26% of Pacific participants were not currently taking it. PrEP uptake was proportionately highest among those aged in the 30s, 40s and 50s, and lowest among those aged under 20, however, rates were also low for participants in their 20s and 60s. Participants living in Auckland reported the highest PrEP uptake (27%), with those living in Waikato, Canterbury, Otago and the rest of New Zealand all reporting under 20% uptake in the previous six months (4{Leakey, 2023 #134)}.

Behavioural risk insights on MSM from the 2022 SPOTS survey

"Combination HIV prevention" refers to the way multiple behaviours effectively preventing HIV transmission can be combined to limit HIV spread. It can include use of condoms, avoiding intercourse or casual sex, HIV testing, as well as use of PrEP, Post-Exposure Prophylaxis (PEP)[a] or the use of anti-retroviral treatments (ART) by people living with HIV that can achieve an undetectable viral load, preventing sexual transmission of HIV.

Insights on the level of prevention coverage and how it varies across ethnic groups, age groups, regions, and behaviour characteristics are available from the SPOTS survey. Overall HIV combination prevention coverage was estimated in the study by combining participants responses related to anal intercourse and condom use with casual male partners, HIV testing history, use of PrEP and use of antiretroviral treatment for HIV. Not being covered by HIV prevention is defined as the participant reporting at least one instance where they have not personally used any HIV prevention tool (condoms, PrEP, or undetectable viral loads) with a casual male sexual partner.

- One third (36%) of participants used no form of HIV prevention coverage at least once when having anal sex in the past 6 months (5).
- Not being covered by a prevention tool was highest among those aged under 30 (67%), Māori and Pacific participants (63% and 62% respectively) and people residing outside of the Auckland region (5).
- A lack of HIV prevention usage was also higher among a range of sociodemographic characteristics, such as not having formal education qualifications, being unemployed or a beneficiary, and those reporting financial need (5).
- Knowledge about HIV and prevention options also affect one's risk of HIV, and this was lowest among those aged under 20 and Māori participants (22).
- About a third (31%) of MSM with a recent potential HIV exposure report that they have not tested recently for HIV (23).
- The proportion of those who had not tested recently was higher among those aged under 20 (56%), Māori participants (44%), and those living in Waikato (45%) or outside the main urban centres (37%) (23).
- 40.4% of participants had not tested for HIV in the past 12 months (5). Not testing recently was higher among those aged 16-19 years, participants identifying as Māori,

[a] PEP is a medicine that can be taken to prevent HIV acquisition after a possible exposure and needs to be taken within 72 hours of possible exposure.

those with less school qualifications and more tenuous financial situations (23). Casual sex was associated increased reporting of recent HIV testing.

Medication cost

These tablets have a subsidised price of $15.45 for 30 tablets (one month's supply), ex GST. This would be affordable for many consumers, even with wholesale and retail mark-ups and GST added (24).

12. Labelling or draft labelling for the proposed new presentation(s)

No labelling changes are required.

This reclassification is for "Prescription except when" so remains a Prescription Medicine. When supplied by a trained pharmacist an information sheet will be available for consumers. Requiring a label change is not practical as it would require the manufacturer to produce multiple product lines for separate indications. This will not be commercially viable or necessary.

13. Proposed warning statements (if applicable)

There would be no need for any additional warning statements. Usage scenarios for patients are unchanged. Current warning statements still apply in the same way and are in the attached data sheet.

14. Other products containing the same ingredient(s), and which would be affected by the proposed change.

The indication for which this reclassification is sought will only permit supply by specially trained pharmacists for HIV prophylactic use of this medicine. The product currently supplied is a generic. Reclassification may affect the branded version of the medication (Truvada) which has previously been licensed for use in New Zealand using the same active ingredients. At present, Truvada's approval has lapsed, and it is not supplied under funding from Pharmac. The proposed change would therefore not impact other products currently funded and available.

Part B – Evidence Supporting Reclassification

Context and Summary of Benefits:

HIV and AIDS are ongoing global epidemics. To date ~85.6 million people have acquired HIV and ~40.4 million people have died from AIDS-related illnesses. In 2022, ~39 million people globally were living with HIV, ~1.3 million became newly infected with HIV, and ~630,000 people died from AIDS-related illnesses (25).

Relative to other countries and international standards, New Zealand has managed its HIV epidemic well with a low prevalence of HIV. We are considered world-leading and a success story in many aspects of our HIV response. This is in some part due to the consistent promotion of condom and lube use for anal sex between men since 1987. A robust legislative environment based on a strong human rights approach is also a key reason for this, and our management of the epidemic was aided by the early introduction and successful operation of an effective national needle exchange programme since 1988, as well as ongoing community-led advocacy from the New Zealand Sex Workers Collective (NZPC). We are proud that blood to blood

transmission and transmission through sex work continues to be rare in New Zealand. Widespread antenatal screening and effective treatment for pregnant people means that perinatal transmission of HIV is very low (1%), with no children with perinatally-acquired transmission born in Aotearoa New Zealand since 2007.

In total there have been 5,844 people diagnosed with HIV in New Zealand since national surveillance began in 1985.1,246 people have been diagnosed with and 767 people have died from AIDS-related conditions, however these decreased significantly since the mid-1990s when effective antiretroviral therapy was introduced (16). Cases had an early peak in the 2000s among heterosexual people, which corresponded to an increase in migrants and refugees from high HIV prevalence countries arriving when HIV screening was not a compulsory part of the immigration process. Heterosexual diagnoses began to decline from 2007, coinciding with immigration policy changes in late 2005 when mandatory HIV testing for residency applicants and people applying for visas for longer than 12 months was introduced. This policy is still in effect today and shapes the ethnic make-up of the community. Cases increased until the peak of the epidemic in 2016, and since then case numbers have declined, thanks largely to the introduction of PrEP and increased use of combination HIV prevention (use of condoms, PrEP, and prompt treatment of HIV enabling people living with HIV to have an undetectable viral load).

Burnett Foundation Aotearoa (formerly New Zealand AIDS Foundation & Ending HIV NZ) has been at the forefront of the community response to HIV in Aotearoa New Zealand for nearly 40 years. In a time where those most affected were ostracised and discriminated against, our forebears joined the fight to decriminalise homosexuality, establish and uphold the human rights of those living with HIV, decriminalise the possession of needles and to decriminalise sex work. With a long history of brave, sex-positive education, support and advocacy, Burnett Foundation Aotearoa was a part of changing the course of the HIV epidemic here. We are today seeing some of the lowest rates of new HIV infection since the 1990s, thanks to this dedication.

Our vision is an Aotearoa with zero HIV transmission, where all people living with HIV thrive, and rainbow and takatāpui communities enjoy great sexual health. Our kaupapa has always been to have a human-centred, science-led, sex-positive approach to public health. Key workstreams of advocacy, education, and support have always been and remain our key pillars. We also acknowledge our commitments to Te Tiriti o Waitangi, to people living with and affected by HIV and to our very environment.

We now have a range of tools available to prevent HIV transmission and support people living with HIV, including not only condoms, but also the prompt testing, diagnosis and treatment of people living with HIV to support them to attain an undetectable viral load, which means they cannot pass HIV on through sexual transmission. We are seeing declines in rates HIV transmission [see Figure 3]; however, there are people who remain unable to access these tools and at risk of HIV, and as was noted earlier, last year 97 were diagnosed with HIV in New Zealand. We can do more to reduce this number.

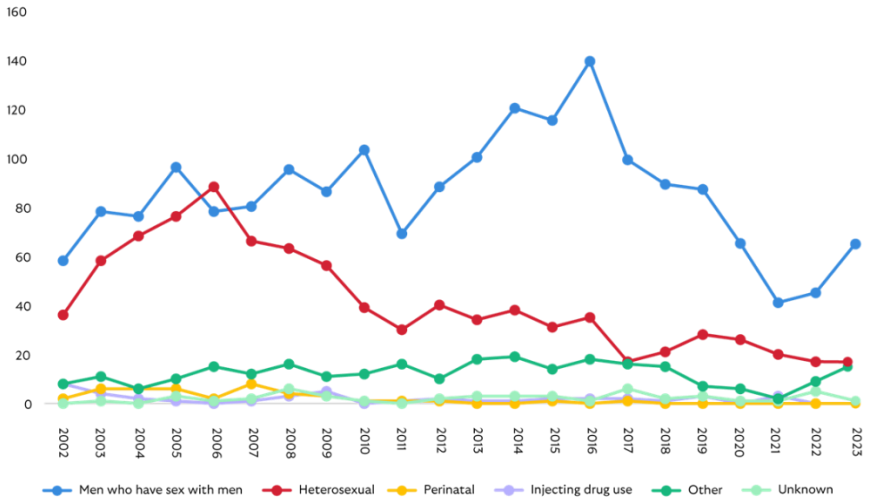

Figure 3: Local HIV diagnoses in Aotearoa New Zealand 2023 (1)

As will be noted throughout this application, there are a range of barriers to accessing PrEP through the current pathways, which are either through a person's GP or sexual health clinics, and these are resulting in inequitable uptake of HIV, and inequitable declines of HIV transmission. It is important that people at risk have PrEP readily available to protect them and their future partners from acquiring HIV. HIV cannot be cured, but it can be controlled with combination antiretroviral therapy which is taken for the person's lifetime. It can also be prevented, saving individuals the grief of this diagnosis and the burden of lifetime medication, and the health system the cost of a lifetime of medication.

New Zealand is not alone in facing these challenges, and internationally there is a growing move towards differentiated service delivery (DSD) for HIV (which varies the "when, where, who, and what" of service delivery to respond to people's different needs in different contexts).

> ***"A differentiated PrEP service delivery approach is person- and community-centred and adapts services to the needs and preferences of the people who are interested in and could benefit from PrEP. Differentiated PrEP services may make PrEP services more acceptable and accessible and support PrEP uptake, persistence, and effective use."*** WHO, 2022 (3)

A growing number of initiatives are expanding access to PrEP by increasing where it is available and who can prescribe or supply it. In PrEPBox in the UK sexual health clinics partnered with sex-on-site saunas to provide clients with testing, mpox vaccines and three-monthly PrEP prescriptions at the sauna (26). The Princess PrEP Project in Thailand empowered members of a key population to provide healthcare services to their peers by training community health workers to provide PrEP, which increased PrEP uptake by 48% (27).

Some countries are already implementing pharmacy models and pilots. In 2019, California passed SB-159 which allowed pharmacists to 'furnish' a 60-day supply of PrEP or 28-day supply of PEP under a collaborative care model. Unfortunately, a 2021 study of 209 pharmacies in San Francisco found only ~3% were furnishing PrEP or PEP; the rollout was likely hampered by Covid-19 and vague wording regarding clinical criteria/testing, and the high upfront costs to clients as insurance requirements were ambiguous (10). In response, SB-339 was passed clarifying clinical requirements (Tests for; HIV, renal function, Hep B, Hep C, STIs, and pregnancy) and requiring health insurance to cover PrEP/PEP furnished by a pharmacist, as well

as the consultation time and testing ordered by pharmacist. This year at the International AIDS conference in Munich, news of PrEP delivery and pilot studies occurring in community pharmacies was shared from Malaysia, Canada and across sub-Saharan Africa, and each shared positive outcomes of a demonstrated increase in PrEP initiations, community pharmacies effectively prescribing PrEP, high retention rates, and reaching a diversity of clients.

The current inequities are leading to growing calls in New Zealand to explore DSD. Therefore, in April 2024 Burnett Foundation Aotearoa hosted a national PrEP symposium which brought together community organisations, sexual health clinicians and nurses, infectious disease specialists, public health specialists, Te Whatu Ora, Te Aka Whai Ora, the Ministry of Health, pharmacists, academics, and pharmacy representatives. Along with wanting to increase availability through nurses, there was unanimous consensus that getting pharmacists able to supply PrEP would make a meaningful difference. A working group was established containing a range of healthcare professionals to oversee this application.

"Since 2015, when WHO recommended offering oral PrEP to all people at substantial risk of HIV, there has been a global uptake of PrEP into national guidelines and widespread implementation of PrEP services. In many countries, services have been demedicalized, simplified, differentiated, digitalized, and integrated to increase uptake and effective use of PrEP." WHO, 2022 (3)

1. Indications and dose

The full indications and dose are in the data sheet attached.

Therapeutic indication(s):

Pre-exposure Prophylaxis
Tenofovir Disoproxil/Emtricitabine is indicated in combination with safer sex practices for preexposure prophylaxis (PrEP) to reduce the risk of sexually acquired HIV-1 in adults at high risk. This indication is based on clinical trials in men who have sex with men (MSM) at high risk for HIV-1 infection and in heterosexual Sero discordant couples.

Figure 4: NZ Data Sheet - TENOFOVIR DISOPROXIL EMTRICITABINE VIATRIS

PrEP is indicated for people who meet the following criteria: over 18 years of age, > 60kg, HIV negative and at elevated risk of HIV. Elevated HIV risk is defined by historical behaviour or intention to engage in elevated HIV risk behaviours.

Criteria for Elevated HIV Risk

Population	**Elevated Risk Criteria** (Only 1 criterion need apply)
MSM, including trans men.	• Sex without a condom with any casual or non-exclusive MSM partner or • Sex without a condom with a regular HIV+ partner who is not on treatment and/or has a detectable viral load > 200 copies/mL or • Rectal gonorrhoea, rectal chlamydia or infectious syphilis in the past 3 months. or • Methamphetamine use

Any person who has direct sexual contact with MSM.	• Sex without a condom with any casual or non-exclusive MSM partner or • Sex without a condom with a regular HIV+ partner who is not on treatment and/or has a detectable viral load > 200 copies/mL or • Rectal gonorrhoea, rectal chlamydia or infectious syphilis in the past 3 months. or • Methamphetamine use
Heterosexual People	• Sex without a condom with a regular HIV+ partner who is not on treatment and/or has a detectable viral load > 200 copies/mL or • Sex without a condom with any casual MSM partner of unknown HIV status or • Overseas travel to a high HIV prevalence country, and condomless sex with partners of unknown HIV status

Figure 5 Criteria for elevated risk of HIV in New Zealand – adapted from PrEP and PEP Guidelines for Aotearoa New Zealand 2023 (28).

TDE is also indicated for the treatment of HIV in combination with another antiretroviral agent. We are only seeking reclassification for the prophylactic indication with daily use. HIV treatment is accessible already through Infectious Disease clinics and specialist nurses nationwide, or a patient's GP. HIV treatment is funded and free for anyone in New Zealand, regardless of visa status. We do not expect anyone needing HIV treatment to access medication via this route due it being of higher cost, excluded in the supply checklist and as HIV treatment needs to be approved by an HIV specialist.

Dosage

The dosage is one tablet taken at approximately the same time every day, preferably taken with food to optimise the absorption of tenofovir. There is no limitation on the period for which this medication can be taken provided blood test results remain acceptable.

Due to its regular once daily dosing, adherence is straight forward, and compliance should be high (28). This indication and dosage are simple for pharmacists to educate patients on. Pharmacists will be suitably trained and utilise a supply checklist to ensure the patient receives the correct information for safe use. When repeats are needed the pharmacist will ask about adherence and education needs. This dosage regime is suitable for the proposed reclassification.

Key reasons this indication is appropriate for supply by specially trained pharmacists:

- The dosage and indication are easily understood by pharmacists and within their scope.
- The WHO recommends multiple delivery avenues and success has been seen internationally (3).
- Clinical criteria for pharmacist supply complies with Best Practice New Zealand Sexual Health Society Guidelines published for Aotearoa (29).
- The benefit of the drug is understood by those suitable for its use. This was shown in the SPOTS study with high PrEP awareness among MSM (17).
- The treatment population is clearly defined by their behaviour, and a doctor would not have any greater ability to ascertain risk than a pharmacist with training in this topic.

- The risks associated with this medicine can be mitigated prior to supply and during the pharmacist consult/checklist.
- Patient education is consistent between supply locations i.e. both prescription and pharmacist supply are taken the same
- Pharmacists advise on and supply this medicine currently
- No special precautions are needed for disposal, administration or handling
- There are no recreational or illicit benefits to accessing this medication

2. Presentation

The tablets are currently supplied in a pack of 30 tablets, one month's supply.

We expect most people to purchase three months' supply at once for convenience. However, those who cannot pay for all packs immediately would be able to purchase a lesser quantity, if necessary, under this reclassification.

3. Consumer benefits

The consumer benefit is significant. The sooner PrEP is available through pharmacists the better for reducing new infections and assisting in reaching the HIV elimination goal.

Key consumer benefits:

- Reducing the risk of HIV infection in the individual taking PrEP.
- Reducing the risk of HIV transmission within the MSM population.
- Reducing the healthcare burden and cost to New Zealand of lifetime management for a preventable disease.
- Supporting equitable access and improving uptake in minority groups.
- Increased convenience for consumers; more access locations and suppliers.
- This reclassification may address nonclinical barriers identified in SPOTS publications.

Further benefits include:

Pharmacist supply can reduce strain on primary healthcare and extend supply

- The Aotearoa New Zealand 2021-2022 Health Index reports that within the last 12 months, 11.5% of respondents were unable to access a GP because wait times were too long, and 10.7% were unable to access one because of costs (30).
- This lack of access is in line with established health inequities due to ethnicity in the health system: 10.6% of Pākehā did not access a GP due to wait time and/or cost, versus 14.5% of Māori (30).
- There are 35 clinics providing sexual health services in New Zealand. Limited hours and limited locations hinder access.
- Pharmacies have more favourable opening hours than most medical centres and sexual health clinics. Many sexual health clinics do not take walk-ins, and waiting lists for non-urgent appointments for GPs are often weeks, and in some places can be longer e.g. Greymouth.

Improved access to PrEP will also improve the health generally of at-risk populations by getting them into regular cycles of testing for other STIs. Accessing PrEP has benefits beyond its primary purpose of preventing HIV transmission:

- Early detection of STIs and asymptomatic infections allows prompt treatment, reducing the risks of complications and onward transmission.
- Pharmacist visits associated with PrEP initiation and maintenance offer opportunities for education.
- MSM using PrEP may experience reduced anxiety about HIV transmission

For the consumer access to PrEP through pharmacists has the potential to increase the accessibility, convenience, timeliness, and uptake of PrEP.

- Publicly funded sexual health clinics and GPs who prescribe PrEP are still limited due to waiting times to get appointments, limited hours of operation, distance to the service, etc. Pharmacists are often more convenient and accessible than other healthcare providers, particularly outside of cities, with no appointment or enrolment needed and often open extended hours. A person can choose pharmacy for convenience. This will save waiting for a GP, time off work, running out of medicine.
- Some MSM may feel more comfortable discussing PrEP with a pharmacist than their GP. Preference for and acceptability of pharmacy access has been reported among MSM internationally (31-33), particularly among more marginalised groups (34). A pharmacy may be more acceptable than sexual health clinic for some.
- Pharmacists can initiate PrEP quickly after assessing eligibility criteria and necessary tests conducted, reducing delays in starting PrEP.
- Pharmacists are well-equipped to have sensitive discussions about sex, as with the Emergency Contraception Pill and Sildenafil. Other areas pharmacists manage with perceived stigma include hepatitis C, gout, headlice and scabies. Pharmacists will provide education about PrEP, including how to take it, potential side effects, and adherence and direct users to appropriate info sources on sexual health topics.
- Pharmacists can facilitate linkage to other healthcare services as needed, e.g. for STI testing and treatment and advise on promptly treating an STI. Anyone without a GP will be encouraged to find one, the pharmacist may be able to assist with this.
- This initiative could ease the pressure on sexual health and primary care by redirecting the initiation of PrEP and consults to pharmacists (34).
- This initiative would save costs for people ineligible for healthcare in New Zealand.
- This initiative will contribute to public health efforts to reduce HIV transmission rates.

Other benefits:

- Reduced anxiety of acquiring HIV.
- PrEP allows for control of one's own risk.
- PrEP does not rely on a compliant sexual partner. i.e. condoms need the consent of both parties who may not have consistent bargaining power.
- PrEP is protective during times of inhibition i.e. intoxication or sexual assault.
- PrEP is protective of spontaneous sex.
- PrEP can be covertly taken.
- Detection of asymptomatic STIs through routine three-monthly screening. This allows for prompt treatment, reducing the risks of complications and onward transmission.
- Pharmacist assistance in linking patients with a GP if needed.
- Improved telehealth options via pharmacist.

- Decreased strain on Primary Healthcare and Sexual Health Clinics by decreasing routine PrEP appointments.
- Contribute to normalisation and visibility of HIV prevention.

4. Contraindications and precautions

Contradictions for PrEP

- Hypersensitivity to tenofovir, tenofovir disoproxil, emtricitabine or any other components of the tablet.
- Children or adolescents under the age of 18 years.
- Concomitant use of tenofovir disoproxil, emtricitabine, drugs containing lamivudine, or with adefovir dipivoxil.
- HIV prophylaxis in individuals with unknown or positive HIV-1 status.
- HIV-infected patients.

These contradictions are on the supply checklist and will be part of pharmacist training.

Pharmacists follow the PrEP and PEP[b] Guidelines for Aotearoa New Zealand (2023), ensuring appropriate clinical standards, consistency and risk profile.

The warnings and precautions

Lactic acidosis/severe hepatomegaly with steatosis

Cases of lactic acidosis are rare and most common when this medication is used for HIV treatment. To mitigate this the patient will be checked one week after starting the medication. Adverse effects will be enquired about, and managed if necessary.

Renal impairment

The data sheet states: *"Tenofovir disoproxil/emtricitabine should be avoided with concurrent or recent use of a nephrotoxic agent. It is recommended that creatinine clearance is calculated in all patients prior to initiating therapy and, as clinically appropriate, during tenofovir disoproxil/emtricitabine therapy. Patients at risk for, or with a history of, renal dysfunction including patients who have previously experienced renal events while receiving adefovir dipivoxil should be routinely monitored for changes in serum creatinine and phosphorus."*

eGFR will be used to assess renal health for all patients as per HealthPathways and the national guideline. A limit for eGFR is set in the checklist, below which supply is precluded. eGFR will be repeated before every supply to ensure safety. Pharmacists are experienced in considering eGFR, e.g. with COVID antivirals (35). This information will be covered in the training, including examples of nephrotoxic agents, and is included in the screening tool. Pharmacists will have access to the eGFR results through electronic records and will ensure it is sufficiently recent as per the screening tool. Clients with possible CKD risk factors (judged by eGFR/Clinical history investigations) will be escalated to a clinician.

Bone effects

These has only ever been observed in animal studies. It has not been seen in long term use for HIV treatment or prophylaxis with TDE. Renal tubulopathy is likely to occur in advance of

[b] Note, pharmacists will not be supplying PEP – post-exposure prophylaxis

significant bone density issues. This will be detected first on the quarterly urine tests (Creatinine: albumin ration), with the medication ceased, and then referred to a doctor. This will be covered in the training programme.

Hepatitis B infection

The registration states *"Individuals should be tested for the presence of chronic hepatitis B virus (HBV) before initiating tenofovir disoproxil/emtricitabine."*

Serology testing for Hepatitis B antibodies or antigen is required before supply. The patient must be negative for Hepatitis B or immune. This assessment removes the risk for Hepatitis B positive patients being supplied this medicine and the contraindication for concomitantly taking lamivudine which is a Hepatitis B treatment. Training will cover this.

Interactions

- The potential for CYP450 mediated interactions is low (36).
- Co-administration of tenofovir disoproxil/emtricitabine with drugs that are eliminated by active tubular secretion may increase serum concentrations of tenofovir, emtricitabine, and/or the co-administered drug. Drugs that decrease renal function may increase serum concentrations of tenofovir and/or emtricitabine.
- Sofosbuvir increases tenofovir exposure.
- Didanosine and atazanavir. These medicines will not be taken with TDE PrEP as they treat HIV.

Training and the supply checklist will cover drug interactions and patients will be encouraged to disclose their PrEP usage to other clinicians.

Medication controls

- No behavioural restrictions (machinery operation restrictions) are required for this medication.
- No further special population restrictions exist.
- Emtricitabine/Tenofovir disoproxil tablets are best taken with food.
- The data sheet overdose information indicates TDEV does not have a low therapeutic index (36).

Other factors

Class effects may occur for people taking antiretrovirals for HIV or hepatitis infections. Both conditions preclude pharmacist supply of PrEP. There are no additional pharmacist specific risks compared to clinician supply.

5. Undesirable effects

Undesirable side effects for PrEP are infrequent, usually mild and it is generally well tolerated across demographics (37). Meta analyses show side effect incidence is similar to placebo, (n= 15,678) including serious adverse events (SAE) (38). A study on 1,071 MSM found that after 24 months 18% discontinued PrEP. Only 4 were related to side effects. More common reasons for discontinuation were cost, change in sexual behaviour and perceived risk or access to medication. Unemployed and younger men were more likely to discontinue use (39). The table

below summarises the incidence of undesirable effects from two clinical trials.

	iPrEx Trial		Partners PrEP Trial	
	Emtricitabine/Tenofovir Disoproxil Fumarate (N=1251)	Placebo (N=1248)	Emtricitabine/Tenofovir Disoproxil Fumarate (N=1579)	Placebo (N=1584)
Gastrointestinal Disorders				
Diarrhoea	7%	8%	2%	3%
Abdominal pain	4%	2%	-[a]	-
Infections and Infestations				
Pharyngitis	13%	16%	-	-
Urethritis	5%	7%	-	-
Urinary tract infection	2%	2%	5%	7%
Syphilis	6%	5%	-	-
Secondary syphilis	6%	4%	-	-
Anogenital warts	2%	3%	-	-
Musculoskeletal and Connective Tissue Disorders				
Back pain	5%	5%	-	-
Nervous System Disorders				
Headache	7%	6%	-	-
Psychiatric Disorders				
Depression	6%	7%	-	-
Anxiety	3%	3%	-	-
Reproductive System and Breast Disorders				
Genital ulceration	2%	2%	2%	2%
Investigations				
Weight decreased	3%	2%	-	-

a. Not reported or reported below 2%.

Figure 6 Selected Adverse-Events reported while taking PrEP in the iPrEx Trial and Partners PrEP trial (Appendix 5) (40, 41)

Renal function decrease

PrEP use is associated with a reversable decrease in creatine clearance, but is not associated with significant clinical renal issues. On average, creatine clearance dropped by 2-3mL/min/1.73 m2 while on PrEP. 96% of participants had rebounded to 75% of their base line readings, 8 weeks after cessation (42). A cut off value exists in the eligibility criteria for eGFR of 70.

WHO provides the following advice on eGFR in "Differentiated and Simplified Pre-exposure Prophylaxis for HIV Prevention" (2022):

- Measuring kidney function is optional <30 years without kidney-related comorbidities.
- Screen more frequently (every 6–12 months) for individuals with comorbidities, those aged 50 years and older, and those with a previous kidney function test result suggesting at least a mild reduction in function (eGFR Less than 70).

Breakthrough infection of HIV

PrEP is very effective. Seventy-two studies of PrEP with over 17,000 participants found only 101 HIV infections, of which 98.1% were attributed to improper adherence or drug resistance (43). The risk of PrEP failure will be no different to current practice, but treatment breaks should be less.

Missing infection at baseline

The likelihood of missing an HIV infection at baseline is low when consultation is completed as per the training and checklist.

- Current laboratory testing (4th gen antigen and antibody testing used in New Zealand) is highly sensitive and will detect an infection at around 4 weeks (44).
- Any symptoms of seroconversion will preclude supply and the pharmacist will inquire about recent high risk sexual exposure which may require PEP via a clinician.
- Combined blood testing and symptomatic assessment mean a person undiagnosed with HIV is not likely to receive this medication (45, 46).

Hepatitis B blood testing is also completed, and the same seroconversion symptoms are also investigated to mitigate this risk. If Hepatitis B is present this medication may lead to viral suppression as TDE can partially treat Hepatitis B. This may be followed by a viral flare when the patient ceases TDE. This would then require specialist intervention (45). Hepatitis B resistance to TDE is extremely uncommon as a high genetic barrier exists to its development (47-49). Both of these risks are mitigated via testing prior to initiation. Vaccination is also recommended where appropriate. This risk is the same for pharmacy or GP supply as the testing method used is identical. Training and the Supply Checklist will also include screens for this test and prompt investigation.

Other information

This medicine has not been withdrawn in the past due to undesirable effects. There are no known withdrawal effects when ceasing this medication for the general population, and they would not be expected for an antiviral. For full adverse event notifications in New Zealand see Appendix 3 SMARS data.

6. Overdose

The proposed reclassification does not increase the likelihood of overdose. There are no SMARS entries for overdose in New Zealand. This medication is not highly toxic or commonly used for intentional overdose. The medication in supplied in a child resistant, opaque, twist cap safety container to hinder accidental overdose.

The data sheet states (36):

> There is no known antidote for Emtricitabine/Tenofovir disoproxil tablets. If overdose occurs the patient must be monitored for evidence of toxicity, and standard supportive treatment applied as necessary.
>
> **Tenofovir disoproxil**: Clinical experience of doses higher than the therapeutic dose of tenofovir disoproxil is available from two studies. In one study, intravenous tenofovir, equivalent to 16.7 mg/kg/day of tenofovir disoproxil fumarate, was administered daily for 7 days. In the second study, 600 mg of tenofovir disoproxil fumarate was administered to patients orally for 28 days. No unexpected or severe adverse reactions were reported in either study. The effects of higher doses are not known. Tenofovir is efficiently removed by haemodialysis with an extraction coefficient of approximately 54%. Following a single 300 mg dose of tenofovir disoproxil fumarate, a four-hour haemodialysis session removed approximately 10% of the administered tenofovir dose.
>
> **Emtricitabine** Limited clinical experience is available at doses higher than the therapeutic dose of emtricitabine. In one clinical pharmacology study, single doses of emtricitabine 1200 mg were administered to 11 patients. No severe adverse reactions were reported. The effects of higher doses are not known. Haemodialysis treatment removes approximately 30% of the emtricitabine dose over a 3- hour dialysis period

starting within 1.5 hours of emtricitabine dosing (blood flow rate of 400 mL/min and a dialysate flow rate of 600 mL/min). It is not known whether emtricitabine can be removed by peritoneal dialysis.

7. Medication errors and abuse/misuse potential

PrEP is administered in a single tablet taken once daily. This is straight forward. No tools or measuring are required for correct dosing. The pill is not addictive and has no association with addiction. This medication is not psychoactive and has no recreational misuse. There are no known cases of misuse or overdose in New Zealand SMARS data.

This reclassification will have no impact on import considerations as it will remain a prescription medicine except in the cases provided. We expect longer adherence to treatment with pharmacist-availability because the medicine is convenient to access.

Two possibilities could be considered for misuse. Firstly, that someone could try to buy for HIV treatment. This would be unlikely, as HIV treatment is readily available and fully funded in New Zealand from a doctor and TDE is not appropriate for HIV treatment on its own. Secondly, it is possible that someone could try to obtain more pills to share with others. This is unlikely as the patient needs to have tests done to receive the medication, and the pharmacist needs to sight these. In most of New Zealand there is an electronic health record that the pharmacist will look up. With good accessibility through the pharmacist and the ability to arrange free self-tests, there is no reason not to have each person access it themselves.

8. Communal harm and / or benefit

The wider use of PrEP will increase overall HIV prevention, and decrease risk of HIV across key populations. It will assist New Zealand to reach its 2030 goal of eliminating local HIV transmission.

As has been noted earlier, the AIDS Epidemiology Group in New Zealand estimates 3,272 people are receiving HIV treatment. In 2023, 97 people were first diagnosed with HIV locally (1). Of the 97 diagnosed, 65 were MSM, 17 acquired HIV through heterosexual contact, and for the remaining 15 the means of acquisition was reported as other or unknown. A further 123 people living with HIV were first diagnosed overseas, and migrated to New Zealand. While a slight increase on 2022 figures, HIV diagnoses have been declining since peaking in 2016. Those diagnosed with low CD4 counts (35% of new local cases among MSM in 2023), have likely been living with undiagnosed HIV for some time. 14 people (nine men and 5 women) were diagnosed with AIDS in 2023. Eleven (79%) had their AIDS diagnosis within three months of being diagnosed with HIV which means they were late diagnosed with no opportunity for treatment to control progression of their HIV infection. Six deaths from AIDS-related illnesses occurred in 2023 (1).

The declines in rates of HIV transmission arises from local HIV prevention, like PrEP use, condom use, and HIV testing, helping early diagnosis and access to medication to live healthy lives without risking passing HIV to their sexual partner/s.

In 2023, the Ministry of Health launched the National HIV Action Plan, with the vision of:

- eliminating both local HIV transmission
- eliminating deaths due to AIDS, and

- ensuring people living with HIV have healthy lives free from stigma and discrimination (15).

The Action Plan sets out a roadmap to achieve this vision by 2030 and is aligned with global targets set by UNAIDS. Using the baseline number of 85 local HIV infections acquired in 2010, New Zealand would need to see no more than 9 new, locally acquired HIV transmissions per year. Doing so requires greater reductions in new, local transmissions each year.

Continued innovation is key to reaching the vision of eliminating local HIV transmission, to reach populations missed by current prevention initiatives. As New Zealand works to achieve the goal of eliminating new local HIV transmissions, greater uptake of both PEP and PrEP for those who would benefit from it is essential.

The rates of new HIV infections have decreased much faster for European MSM than for every other ethnic group, and we need to ensure access benefits everyone. Discussions have started with Pharmac about funding through the pharmacist (as for emergency contraceptive pill) to maximise equitable access. Reclassification is a good first step.

Maximising PrEP uptake would contribute to a reduction in HIV incidence in New Zealand, helping public health efforts for ending the HIV epidemic. Preventing HIV infections also creates healthcare cost savings in the avoidance of the lifetime cost of HIV treatment and care for when someone does seroconvert. More people on PrEP means more people who are at risk of HIV getting regular HIV testing and regular STI testing (with treatment if positive) reducing the risk of transmission of infections for both.

Community harm and risk mitigation

There are some potential risks associated with supplying PrEP in pharmacies, however, we believe these can be easily mitigated, and in this section, we will outline these risks, and discuss mitigations.

1. **It is possible there could be a missed HIV diagnosis which would then be under-treated with PrEP.** This risk will be on the screening tool and in the training along with lab testing. A negative blood test can occur in the early stages and questions are included about current health status to address this. This has the same risk profile as prescription use.
2. **There is a decrease in "opportunistic healthcare" from clinicians when accessing PrEP.** Pharmacists will act within their scope of work set by the industry body. They will be able to advise on some health conditions the person raises, but will also be able to refer them to a GP or clinic. High levels of "opportunistic healthcare" are currently not the norm in this population.
3. **Inadequate diagnosis and treatment of other health conditions including STIs (50).** MSM account for a significant proportion of current syphilis cases, and Māori and Pacific MSM are disproportionately represented (21, 51). Requiring training of pharmacists and clear referral pathways to sexual health or GPs for positive tests with discussion of the importance of treatment will mitigate this. People taking PrEP are required to test quarterly which is higher than testing rates for other sexually active men not on PrEP.
4. **The pharmacist cannot see test results in all of New Zealand.** Pharmacists must be able to see the lab results to be able to provide PrEP. This is done via TestSafe or similar systems. If this is not possible then the client will need to see a clinician for this

medicine. For self-requested tests, it is expected that they will be able to name a pharmacy to receives these results – the logistics are being worked through. At the moment some pharmacies are already able to access lab results as part of COVID-19 antiretroviral treatment management and Hepatitis C programmes. These locations are good training candidates.

5. **There is a risk that a positive HIV test result may not be appropriately managed and supported in pharmacy care.** If the test is ordered by the GP or Sexual Health, they will be responsible for managing the result. If the test is self-requested (as can already occur), there is a process in place for the lab to contact the person and inform them. This is done via the phone, and they supply them with treatment advice, next steps and connect them to community support groups (e.g. Body Positive, Burnett Foundation). The laboratory will also report Notifiable Diseases to authorities. Pharmacists will receive training to help clients manage this should they see a patient for PrEP who has received a positive HIV result.
6. **Reduced use of condoms because PrEP is used instead.** The majority of at-risk individuals do not use condoms for casual sex, and these individuals still need HIV prevention options (52, 53). Many people struggle with condom use because of poor mental health, substance use, difficulties negotiating condom use due power asymmetry, due to perceived reductions in intimacy or sensation, or because of erectile disfunction or latex allergies (54). Consistent condom use has been declining steadily over time, since before the introduction of PrEP. Behavioural surveillance from SPOTS indicates that this decrease in consistent condom use has occurred alongside an increase in regular HIV testing and the use of PrEP and undetectable viral loads (5). Therefore, there has been an overall increase in combination HIV prevention coverage, and it is this that has contributed to declining rates of HIV transmission. We advocate to our communities the importance of choice in prevention methods, as well as the use of well-fitting condoms for HIV, and especially STI prevention.
7. **PrEP is recommended because many men at high risk do not use condoms**. PrEP has been specifically targeted to high-risk individuals who are at risk of HIV, and as was stated above, there are a myriad of factors which affect condom uptake. PrEP is an effective tool to prevent HIV infections, and its introduction has contributed to a reduction in new HIV infections and getting individuals into routine patterns of HIV and STI testing. While there is some evidence that some MSM have moved from using condoms to PrEP, there is also evidence that it has got individuals into routine care and health-seeking behaviour. PrEP is intended to be a complementary method of HIV prevention, not a replacement, and provides an extra layer of protection, especially for times when sex has not been planned for with the use of condoms. PrEP programmes often including counselling on the importance of other prevention methods than when condoms can be planned for. It is far better to have PrEP available than HIV transmission increasing, which is why doctors can prescribe it, and why pharmacists with special training should also be available. The regular STI checks, and HIV tests help manage the fact that these people are at risk of STIs, and a very small proportion could get HIV, e.g. because of poor adherence.
8. **Bacterial STI circulation increases.** As stated above. condom use has been waning since before the introduction of PrEP. STI transmission rates have also been rising since before PrEP's introduction (51). The requirement for regular screening of STIs with PrEP will detect STIs sooner and connect patients to treatment. Prior to PrEP being funded in New Zealand a pilot study was conducted locally that showed sexual risk and activity

did not increase while on PrEP (54). PrEP users were already highly sexually active with a high number of participants reporting condomless receptive anal intercourse, 65% reporting an STI in the last 12 months, and 48% reporting using drugs for sex (55). PrEP will not impact this risk.

9. **People with no clinical need will access this medicine.** This risk will be well controlled via training and eligibility criteria for pharmacist supply. We do not drug see drug seeking behaviour from the public for this medicine. There is no recreational use for this medicine.
10. **HIV resistance to TDE.** The likelihood of drug resistance from PrEP is low, especially when used as prescribed/supplied, which will be discussed by the pharmacist as part of initiation and continuation. Resistance is more likely with a lack of adherence or inconsistent usage of TDE, or if a diagnosis is missed (discussed above) (56). TDE resistance is typically inferred via a mutation called M184V/I. This resistance genotype is most common when it mutates in non-adherent users, not in an individuals infected by a resistant variant. A study into the prevalence of this mutation found that 25% of people diagnosed with HIV who had taken PrEP in the last 90 days had it (56). This is compared to less than 1% when PrEP use was not reported prior to diagnosis. Non-adherence was due to 17% reporting a disruption to supply as a contributing factor and 63% were accessing PrEP through a non-medical route (i.e. sharing or self-importation). All patients with this resistant strain still achieved viral suppression with alternative treatments. In New Zealand alternatives to TDE for HIV treatment are available. Importantly, resistance to TDE does not impact clinical outcomes for the client's treatment as alternate medication can be employed to achieve viral suppression. Furthermore, potential resistance is not a justification to withhold prophylaxis medication as pharmacist supply does not increase this risk. Some key mitigations include:
    - The risk of resistance can be reduced through workforce education and training prior to supply. This risk is not limited to pharmacist supply and education strategies will be complimentary to clinician messaging.
    - Medication access plays a role in adherence. People who found PrEP harder or more expensive to access may be more likely to extend supply via non adherent dosing (57).
    - Patients who acquire HIV while on PrEP may be detected sooner due to the frequency of which they are tested compared to others, and because the PrEP course gets people into regular systems of testing. Early diagnosis will connect clients to treatment sooner offering better long-term outcomes. Once on treatment this mutation cannot be spread further via sex. Non-PrEP users are likely to be diagnosed later, due to infrequent testing. Late diagnosis poses the highest transmission risk.
    - Infectious diseases specialists monitor HIV patients' response to treatment and advice on safe sexual practises while on treatment to limit transmission.
    - The WHO recognises the greater resistance risk is PrEP supply to a person with HIV. It is a 10-fold higher risk than PrEP failure due to preexisting resistance (44). Between 2020 and 2023 the WHO received reports of 62 (20% of total) PrEP failures due to preexisting resistance.
    - PrEP will infer protection to the majority of sexual exposures in New Zealand.

9. Integrated benefit-risk statement

The need for PrEP at a community pharmacy access point is evidenced by the current limitations and inequities in PrEP uptake. We have explored in this application the barriers that community members have reported facing accessing PrEP through primary care and sexual health clinics. These access points are overburdened with long waiting lists and limited open hours. Community members have reported difficulty disclosing their sexuality to GPs, or discussing their behavioural risk with their usual primary health provider. Each of these have resulted in the current inequitable uptake where Māori, Pacific, young and rural MSM have a significant unmet need for PrEP.

Benefits for individual patients would include reducing the risk of HIV infection and reducing any anxiety they may have about acquiring HIV. Being on PrEP gets users into routine screening for STIs. This aids in early detection and treatment, reducing the risk of long-term complications and onwards transmission. This reclassification may also link patients without GPs into healthcare. Reclassification of HIV PrEP would provide more access points for HIV prevention and tools. These access points being more convenient, available, accessible, and for some people, a more acceptable (and therefore equitable) option.

These benefits would flow onto decreased community risk. Increased PrEP use would contribute to reductions in the risk of transmission within the broader MSM population. Providing a higher level of overall prevention coverage, and a smaller pool of circulating transmission. Furthermore, the cost and burden to the healthcare system that comes with the lifetime management of a preventable disease would decrease. It would also ease some burden on primary care and sexual health clinics (which have been chronically short-staffed and underfunded for many years) through reducing the number of routine appointments.

Both individual and community risk needs to be considered with our goal to eliminate local HIV transmission. As we get closer to eliminating transmission, we need to reach those who have not yet engaged with prevention and ensure prevention services are not ‘hard to reach’. New Zealand thus far has been a success story internationally in its management of its HIV epidemic, however without addressing these access issues, inequities will persist, and we will not reach our goal of elimination.

In general, the rate of risk or harm associated with PrEP use in community pharmacies is low and predictable. Meaning mitigation strategies can be successful. Contraindications/cautions for the medication can be managed by trained pharmacists. The risk of a breakthrough infection is unlikely when PrEP is taken correctly and does not differ from a GP or sexual health clinician. The risk of resistance through missing a diagnosis at initiation is unlikely with screening in place. This risk is not limited to pharmacist supply. The Pharmacy Supply Checklist provides pathways for the management of low-risk cases with clear escalation criteria. We are not alone in concluding that the burden of an HIV infection is greater than the risks associated with pharmacist supply.

We do not foresee the reclassification of the medication as setting any new precedent. It aligns with the rationale and arguments for allowing other routine healthcare checks to move into pharmacies, such as the supply of vaccines, hepatitis C testing and treatment, and COVID antiretroviral medicines such as Paxlovid and Lagevrio.

10. Risk mitigating strategies

Risks are mitigated via pharmacist training including an assessment, which would be endorsed by the Pharmacy Council, standardised supply procedures and a screening tool to assist, GP notification of supply unless the patient opts out, clear ownership of responsibilities, patient education (verbal and written material), and informed consent.

We have discussed with sexual health staff and GPs whether a GP needs to be informed in all cases. There were differing views, with one sexual health physician always wanting the GP informed, but others wanted an opt-out approach (similar to some Sexual Health Clinics), recognising not all people wanted to tell their GP and access was important. The PrEP dispensing would still be on the patient's electronic record, as for sexual health prescribing. In all cases the person receiving PrEP will be informed that important drug interactions can occur and to tell any doctor, dentist or other prescriber if prescribed another medicine that they take this medication. In some cases, collaborative models will occur whereby the patient is seen annually by the GP who orders 3 monthly tests for 12 months as per HealthPathways for PrEP provision, and the patient consults the GP if any STI tests are positive or other concerns arise, and the pharmacist provides PrEP (after the necessary checks) and informs the doctor (with patient permission) of supply.

The risks associated with reclassification are well-mitigated. Throughout the preparation of this document feedback has been received from a working group of healthcare professionals. This included Sexual Health clinicians, SH nurses, pharmacists, the Pharmacy Guild, the Pharmaceutical Society, GPs and infection disease specialists. This group has helped to guide this reclassification to best meet the needs of the community including input on risk mitigation. We have greatly appreciated their supportive comments and suggestions with this initiative.

Workforce training

Training will be required before a pharmacist can supply this medication. It will ensure the pharmacists understands the risks and benefits of the medication and how to assess that a patient is suitable and will benefit from supply. This will involve proficiency testing and screening to ensure the participant has understood key messaging from the course.

Training will cover the following areas:

- HIV in New Zealand, risk factors and prevalence
- MSM sexual practices and risks including HIV, STIs and sexual assault
- Indication and use of PrEP
- Contraindications and precautions
- Risk based eligibility criteria
- Clinical eligibility criteria
- Dosing regimens
- Side effects
- Cessation
- Process compliance and adherence
- Consultation techniques and examples to address perceived stigma regarding MSM, HIV and STIs
- STI management and how to take sexual history
- Combination prevention strategies

- Referral process and connecting clients to healthcare including potential collaborative models with GP ordering tests and PrEP provision by the pharmacist informed to the GP.

In situ checklists

The supply checklist will ensure the correct investigations and conversations are completed, and documentation is kept. The pharmacist will work through the checklist and notify then GP if supply is provided.

Clear exclusion criteria

The supply checklist takes a conservative approach so people at greater risk of adverse events are managed by the general practice or sexual health clinic.

Referral mechanisms

Pharmacist supply criteria and referral will be clear. Referral will be covered in the training.

Input from professional bodies and health care professionals

While preparing this application, model of supply, and screening tool, we have consulted multiple professional bodies and healthcare professionals. This was done to ensure this work optimised the benefit-risk equation, maximised safety of PrEP users and was within the scope of their members. It provided insight from multiple perspectives. We are encouraging these groups to make individual submissions on the classification when public consultation is open.

Consumer information and consent

Participants who receive TDE supply through a specially trained pharmacist will be given written information additional to verbal information. This will use simple language and link to other resources for further questions or concerns and will include contact details for the Burnett Foundation. Patient consent is given by instigating PrEP access.

11. Potential risk of harm to the consumer as a result of the proposed change, and factors to mitigate this risk.

Potential harm for the consumer is stated below:

The client is supplied while HIV positive.
Mitigation: Prior to supply the patient must test HIV negative and report no symptoms of seroconversion. The pharmacist is appropriately trained and has a screening tool. This is the same mitigation employed for prescription supply.

The client is treated while a contraindication is present.
Mitigation: The pharmacist is appropriately trained and has a screening tool that follows the Health Pathway for PrEP. The pharmacist will see the blood test results.

The client is supplied medication without pre-supply blood tests being completed.
Mitigation: Training and the screening tool will be clear on this. Results are reported from an accredited lab in New Zealand through secure pathways. This is the same mitigation employed for prescription supply.

The client may not continue medication as advised.
Mitigation: Training and the screening tool include discussion about adherence. Written

information to the patient will cover this in plain language. Each supply will include an adherence consultation and discussion of changes in risk profile.

The clients GP or other doctor may not be aware they have been supplied this medication.
Mitigation: If the patient gives their permission, this information will be shared with their GP by the pharmacist. This medication supply will go on the patient electronic records. The client is educated on the importance of disclosing medications if in an emergency or seeing a different clinician. The same risk exists for PrEP supply from Sexual Health or when seeing a different GP.

The client may not return for further medication.
Mitigation: This is the patient's prerogative. The risk of this is expected to be lower with a reclassification and accessibility through the pharmacist compared to other settings which require an appointment and have more limited hours. Funded availability will help reduce barriers to access and we are discussing the possibility of extending funding to pharmacy for this medicine. Training of the pharmacist to include managing conversations around PrEP will help encourage a welcoming environment for the patient to support their return.

The patient will be supplied while not at elevated risk of acquiring HIV.
Mitigation: The patient will be given a list of risk factors and can decide whether they apply to them. The client must be engaging in one high risk activity to receive this medicine. There is no benefit to this medicine other than its indicated use, so this is not likely.

The client may take the incorrect dosage
Mitigation: This is unlikely given the tablets are taken daily and pharmacist education and resources are provided. Common reasons for incorrect dosing are supply constraints or a desire to extend access to a medicine that can be hard to come by. These scenarios will decrease with greater access opportunities.

The client may underdose / not adhere to the medication
Mitigation: This is unlikely given the tablets are taken daily and pharmacist education and resources are provided. Common reasons for incorrect dosing are supply constraints or a desire to extend access to a medicine that can be hard to come by. These scenarios will decrease with greater access opportunities.

The client may acquire HIV from misuse
Mitigation: The client will be consulted on dosing and its relationship with efficacy. The patient is advised to seek medical support if they experience symptoms of HIV seroconversion. Frequent blood testing for HIV is required. This is the same as for prescription supply.

The client may have additional STIs that go without treatment
Mitigation: STI testing is required before PrEP supply. The client will be made aware of this infection and instructed on how to access treatment. If the blood test was ordered by their GP, the GP will be notified and take responsibility for any concerns in the test results. If the patient has ordered tests through self-test, there is already a mechanism to tell the patient of a positive. We expect patients taking PrEP will be motivated to manage STIs promptly. However, if there is a positive when the pharmacist checks the

tests, they can check if treated and if not refer them to the GP with discussion about the importance of prompt treatment. Free treatment for STIs is available nationwide in New Zealand. When notified the client is advised of these support services, how and why to access treatment and supplementary services. E.g. contact tracing. As rectal STI infections increase susceptibility to HIV, PrEP medication must not be withheld until STI tests return negative or the patient is treated.

The client may be more likely to have unprotected intercourse and therefore have greater risk of STIs than if not using this medicine.
Mitigation: PrEP is an extremely effective HIV prevention method. Prevention methods for sex other than penetrative anal sex is rare (i.e. condoms for oral sex). PrEP will not affect this risk but will lead to earlier detection and treatment due to increased testing. Prophylactic medication does exist for bacterial STIs and is becoming more frequent in New Zealand. Condom use messaging and supply will continue and is recommended even when on PrEP.

The client shares medicines with another person.
Mitigation: Pharmacist supply will be accessible to anyone in New Zealand who is willing to pay to access it and meets the supply criteria.

Limited access or insufficient supply are the most common reasons for sharing medicine. The low access barrier for those who would benefit from this medicine will help decrease medicine sharing. Education will also be provided by the pharmacist on the risks of this and importance of adherence. This risk is the same if not lower than with prescription supply.

12. Further information

See appendices.

END

List of attached appendices

Appendix 1	Proposed model: HIV PrEP from a pharmacist
Appendix 2	Pharmacist supply checklist
Appendix 3	SMARS data for Emtricitabine and Tenofovir
Appendix 4	New Zealand consumer medicine information Tenofovir disoproxil emtricitabine Viatris
Appendix 5	New Zealand data sheet Tenofovir disoproxil emtricitabine Viatris
Appendix 6	PrEP and PEP Guidelines for Aotearoa New Zealand
Appendix 7	BPAC – PrEP supply
Appendix 8	HealthPathways – PrEP supply
Appendix 9	National HIV Action Plan for Aotearoa New Zealand 2023-2030
Appendix 10	PrEP Client DLE
Appendix 11	PrEP Prescriber Flowchart

Additional readings and Key publications

Appendix 12	An observational survey assessing the extent of PrEP and PEP furnishing in San Francisco Bay Area pharmacies. Bellman 2022
Appendix 13	Enumerating the population eligible for funded HIV

	pre-exposure prophylaxis (PrEP) in New Zealand. Saxton 2019
Appendix 14	Inequities in recent combination HIV prevention use among gay, bisexual, takatāpui and other men who have sex with men. Ludlam 2024
Appendix 15	Inequities in HIV testing uptake among gay, bisexual, takatāpui and other men who have sex with men reporting recent casual sex without HIV prevention coverage. Ludlam 2024
Appendix 16	HIV pre-exposure prophylaxis uptake, suitability and gaps 2022. Saxton 2024
Appendix 17	Trends in combination HIV prevention and HIV testing 2002-2022. Saxton 2024
Appendix 18	Getting HIV Pre-exposure Prophylaxis (PrEP) into Private Pharmacies. Roche 2024

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Burnett Foundation Aotearoa

August 2024

Proposed model: HIV PrEP from a pharmacist

The current situation

1. HIV Pre-Exposure Prophylaxis (PrEP), is recommended for people at elevated risk of HIV acquisition. It has high efficacy (%99) in preventing HIV infection. Containing emtricitabine and tenofovir disoproxil and taken daily, PrEP is funded by Pharmac.
2. Not all people who would benefit from this medicine are accessing it. Resulting in individual and community risk. Inaccessible prevention affects HIV rates in New Zealand.
3. Behavioural studies estimate around 9,300 individuals in Aotearoa meet risk criteria for supply, only 4,000 people take this medication as of 2024.
4. Adherence and continuation are known issues, there is the potential for those taking it that they could remain at risk periodically if there was a treatment gap.
5. Barriers to access are numerous and include physical access, cost and the stigma associated with HIV and sexuality.
6. Currently supply requires a prescription.
    a. 56.2% of scripts are provided via GP, 37% through sexual health clinics and 7.2% through a GP who is not their main care provider. Low levels of self-importation that make up the remainder.

The Burnett Foundation Aotearoa (BFA), held a workshop with industry experts in April 2024 regarding widening access to PrEP and PEP. There was strong support for availability through pharmacists and nurses. BFA is intending to submit a reclassification application for the next Medicines Classification Committee. A pilot programme will be run concurrently to ensure the system works well and inform the national roll-out after reclassification.

Clinical concerns when supplying PrEP are: sufficient renal function; ensuring the correct blood tests are done at the right time and interpreted correctly; prompt treatment for STIs (common in this group) and regimen education. There is also a need to ensure people seeking PrEP have a positive experience with the pharmacist (even if declined) and that continuation is encouraged if indicated.

The proposed supply model

Below are two proposed models.

1. Initiation at pharmacy, for men not accessing PrEP already.
2. Collaborative model between GP and Pharmacist, for continuation of supply via pharmacist.

Initiation at Pharmacy

1. The client would approach a trained community pharmacist directly and ask to initiate PrEP.
    a. A directory of trained pharmacists would be maintained
    b. Initiation could also be started online with a preassessment form and digital lab form dispatched.
2. The client is assessed for inclusion eligibility by the pharmacist.

   a. This is page one of the PrEP Supply Checklist.
   b. Patient is given the Medicine Info sheet, and plain language PrEP resources.
   c. Inform clients of the cost.
      i. Cost is TBC at this time.
3. Client is given a blood lab form and asked to return 72 hours after completing it.
   a. Initiation and repeats have separate lab form templates.
   b. Client details including NHI are confirmed with Test Safe.
   c. A record of supply will be made on this NHI digitally.
4. The client visits the lab and completes the blood tests.
   a. If there is a positive HIV result it is not released to the pharmacy.
      i. HIV positive results will be withheld for client privacy - PrEP is no longer suitable to be supplied.
      ii. A laboratory pathologist will phone the client and inform them. They will also connect the client to support and a doctor.
      iii. Clients will be notified of bacterial STI and syphilis by the lab. This will include how to access treatment. PrEP can still be supplied however we recommend that the STI treating clinician takes over PrEP initiation.
5. The client returns to the pharmacy. Email results will be sent to the client and to pharmacies secured inbox.
6. The pharmacist consults with the client and works through the full **PrEP Supply checklist.**
   a. See checklist document for full details.
   b. Indication, safety, regimen and cessation are discussed.
7. If no issues arise PrEP can be supplied. All non-supplies scenarios are referred to a clinician.
   a. The patient will be supplied with 90 days of medication.
   b. Patient is educated on repeat process.
8. Repeat scripts are initiated either in person or online using the same process.
9. If the client expects to repeat at the same pharmacy, they can be given future dated blood forms now.
   a. Inform them to do them 72 hours before coming in. Start repeat process at least 10 days before you run out of tablets.

Collaborative model between GP and Pharmacist

1. The patient will discuss Pharmacist supply with their GP when they require a repeat.
2. They will be given the blood test request form by their doctor.
   a. They may be given up to a years' worth of future dated forms.
3. The client visits the lab and completes the blood tests.
4. The client approaches the pharmacy and requests PrEP continuation.
   a. A list of approved pharmacies will be maintained.
5. The client is assessed for inclusion eligibility by the pharmacist.
   a. This is page one of the PrEP Supply Checklist.
   b. At this point they are also given the Medicine Info sheet, and plain language PrEP resources.
6. Full pharmacy consult is completed if blood results are present.
   a. The blood test results will be reviewed and discussed.

   i. Simultaneously these are sent to the GP who is the responsible party.
   ii. Reactive results will be addressed by the GP
   iii. The patient can still get PrEP at pharmacy then return to GP for treatment later.
7. If no issues arise PrEP can be supplied, all non-supplies scenarios are referred back to clinician.
   a. The patient will be supplied with 90 days of medication.
   b. Patient is educated on repeat process.
8. Repeat scripts are initiated either in person or online using the same process.
   a. The GP will have supplied blood forms or sent them digitally in advance.
   b. Inform them to do lab tests 72 hours before coming in. Start repeat process at least 10 days before you run out of tablets.

HIV PrEP – Pharmacist supply

Burnett Foundation Aotearoa

Tenofovir Disoproxil/ Emtricitabine - 300 mg / 200 mg film coated tablets

Client details — Complete ☐

Name: _____ NHI: _____

D.O.B: _____ Age: (years) _____

Email address: _____

Address: _____ Gender: Male / Female / Another Gender

_____ Is the client trans ☐

Has this person been supplied PrEP before?

Date of last PrEP supply: _____

☐ Yes, by prescriber ☐ Yes, by pharmacist ☐ No Repeat number: _____

Eligibility Criteria — Complete ☐

	Yes	No
Is the patient aged between 18 and 65?	☐	☐ **DNS**
Is risk of acquiring HIV elevated? - See appendices	☐	☐ **DNS**
Has the patient ever tested positive for HIV? (incl overseas)	☐ **DNS**	☐
HIV exposure event in the last 72 hours? * If yes, refer to physician for PEP urgently	☐ **DNS**	☐
Any HIV seroconversion symptoms in past 30 days?	☐ **DNS**	☐
Any nephrotoxic medications – e.g. NSAIDs, lithium, methotrexate, zoledronic acid.	☐ **DNS**	☐
Is the patient pregnant or at risk of pregnancy?	☐ **DNS**	☐
Does the patient have, or is being treated for Hepatitis B or C?	☐ **DNS**	☐
Does the patient have a history of kidney problems?	☐ **DNS**	☐
Tenofovir or emtricitabine allergy?	☐ **DNS**	☐
Already taking tenofovir?	☐ **DNS**	☐
Is the patient immunosuppressed?	☐ **DNS**	☐

DNS = Do not Supply, might not preclude access. Refer patient to GP or sexual health specialist.

All medications the client is taking (last 90 days) : _____

_____

- Check for interactions with PrEP for all relevant medications and supplements.
  See Liverpool HIV Interactions (hiv-druginteractions.org) or NZ formulary.
- Do not vary any existing medications the client is taking. Refer to prescribing clinician.

Laboratory Blood form Supplied — Complete ☐

PrEP initiation = Supply form A
Second or greater PrEP repeat = Supply form B

On every 1-year anniversary of PrEP supply repeat form A.

HIV PrEP – Pharmacist supply

Tenofovir Disoproxil/ Emtricitabine - 300 mg / 200 mg film coated tablets

Laboratory Investigations Complete ☐

Date of investigations: _____ **Days since investigations:** _____

All tests can be self-requested through a community laboratory.

Initiation Supply Investigations – Form A

Investigation	Range	Days since test	Note:	Checked
HIV	Negative	< 14 days	Laboratory test only.	☐
STI Testing^^	Completed	< 14 days	Refer to Dr. for treatment if positive.	☐
Hepatitis B antigen	Negative	< 14 days	Recommend vaccine.	☐
Hepatitis C antigen	Negative	< 14 days		
eGFR	>70 ml/Min	< 14 days		☐
Liver Function Tests (LFT)	Normal range	< 14 days		☐
Urine Protein Creatinine ratio	< 23	< 14 days		☐
HCG	< 5 ml U/mL	< 14 days	Only needed if chance of pregnancy	☐

If any of the conditions are not met = Do Not Supply, refer to GP

If DNS state reason here: _____

Continuation Supply Investigations – Form B

Note: 1st repeat and onwards repeats differ (see table).

Investigation	Range	Days since Test	Note:	Checked
HIV	Negative	< 14 days	Laboratory test only.	☐
STI Testing^^	Completed	< 14 days	Refer to Dr. for treatment if positive.	☐
eGFR	>70 ml/Min	< 14 Days		☐
Urine Protein Creatinine ratio	< 23	< 14 days		☐
HCG	< 5 mIU/mL	< 14 days	Only needed if chance of pregnancy	☐

If any of the conditions are not met = Do Not Supply, refer to GP

If DNS state reason here: _____

^^STI testing required is dictated by patients' sexual activity and differs by population. See STI Management Guidelines for details. When lab tests were ordered the patient was asked about their sexual behaviour and the appropriate tests were ordered.

HIV PrEP – Pharmacist supply

Burnett Foundation Aotearoa

Tenofovir Disoproxil/ Emtricitabine - 300 mg / 200 mg film coated tablets

Patient Information Counselling Check List — Complete □

Dosing:
Take 1 tablet, once daily with food.
It is best to take the tablet at a regular time.
Missing doses will decrease the effectiveness of this medication.

Missed Doses:
If you miss a single dose and it is more than 12 hours till your next dose. Take the missed pill. If it is less than 12 hours till your next dose wait for that time and then resume as normal. **Missing a dose lowers the effectiveness of this medicine.** Limit exposure risk and practice safe sex using condoms if a dose is missed.

Starting PrEP:
Take PrEP consistently for 7 days to achieve high levels of protection before engaging in unprotected sex.

Stopping PrEP:
Take prep for 7 additional days after your last HIV exposure risk event before stopping.

Combination Prevention:
PrEP only protects you from HIV. Condoms are recommended to prevent other STIs and your sexual partners.

STI Testing:
While on PrEP you will be tested for STIs, it is also recommended that your sexual partners also test regularly and are notified should you test positive for any STI.

STI Treatment:
Rectal STIs can increase your susceptibility to HIV. If you test positive for any STI during this process you will need to seek treatment from a doctor immediately.

Risks:
Your kidney function will be monitored while on this medication. Should it decrease, you may be transferred to a doctor for PrEP supply and follow up renal testing. This medication may impact bone density.

Other considerations:
- Notify any future doctor your see that you are on this medication.
- Continue to use condoms for best protection from HIV and STIs
- Do not take if you are pregnant or at risk of pregnancy. If you become pregnant while on this medication, see a doctor.
- Notify the Pharmacist if you have ever been denied this medicine.

Side Effects:
Minor side effects may occur. Continue dosing and these should settle with time. Troublesome or continued side effects should be reported to your pharmacist.

Common side effect:
Nausea, headaches, fatigue and tiredness, stomach upset, abdominal pain, diarrhoea, depression.

Signs of HIV seroconversion:

Do not start this medicine and tall a pharmacist if you have or have had in the last 30 days; Fever, chills, rash, swollen lymph nodes, mouth sores, tiredness and lethargy.
If you have experienced any of these symptoms PrEP must be supplied by a doctor.

Contact a doctor if you:
- Test positive for HIV
- Believe you have HIV and need testing
- Incorrectly take PrEP and require emergency post exposure treatment (PEP)

In case of overdose contact poison Hotline
0800 764 766

Key information discussed & Written Information Provided — □ Yes / □ No

CMI Leaflet Provided + PrEP patient pamphlets ☐ Yes / ☐ No

Pharmacist Name _____ Pharmacist Stamp _____

HIV PrEP – Pharmacist supply

Tenofovir Disoproxil/ Emtricitabine - 300 mg / 200 mg film coated tablets

Burnett Foundation Aotearoa

Supply notification for GP

Complete □

Dear Doctor,

For your records, please note the following supply notification for HIV PrEP.

GP name	
GP clinic	
Patient name	
NHI Number	
Date of Birth	
Drug Supplied	
Quantity	
Date of supply	
Pharmacy	
Pharmacist	
Date of notification	

HIV PrEP – Pharmacist supply

Tenofovir Disoproxil/ Emtricitabine - 300 mg / 200 mg film coated tablets

Burnett Foundation Aotearoa

Patient Consent — Complete □

PrEP recipient name	
Date	
TBC – With legal advice	
Signature _____	

HIV PrEP – Pharmacist supply

Tenofovir Disoproxil/ Emtricitabine - 300 mg / 200 mg film coated tablets

Appendices

Criteria for elevated HIV risk

Be aware that people may be reluctant to disclose their HIV risk. There is a low threshold for Supply for those from higher risk groups who ask for PrEP.

It would be appropriate to supply someone from a high-risk population if the person intends to or might engage in any of these activities in future or alludes to such behaviour

Population	**Elevated Risk Criteria** (Only 1 criteria need apply)
Men who have sex with men (MSM). Commonly referred to as gay or bisexual, incl trans men. **High Risk Population**	• Sex without a condom with any casual or non-exclusive MSM partner or • Sex without a condom with a regular HIV+ partner who is not on treatment and/or has a detectable viral load > 200 copies/mL or • Rectal gonorrhoea, rectal chlamydia or infectious syphilis in the past 3 months. or • Methamphetamine use
Any person who has direct sexual contact with MSM. **High Risk Population**	• Sex without a condom with any casual or non-exclusive MSM partner or • Sex without a condom with a regular HIV+ partner who is not on treatment and/or has a detectable viral load > 200 copies/mL or • Rectal gonorrhoea, rectal chlamydia or infectious syphilis in the past 3 months. or • Methamphetamine use
Heterosexual People	• Sex without a condom with with a regular HIV+ partner who is not on treatment and/or has a detectable viral load > 200 copies/mL or • Sex without a condom with any casual MSM partner of unknown HIV status or • Overseas travel to a high HIV prevalence country, and condomless sex with partners of unknown HIV status
People who inject drugs. **Do not supply.**	**Do not supply.** Refer to Needle Exchange Programme, NZ Drug Foundation or GP PrEP does not effectively mitigate percutaneous blood exposure and combination prevention will be needed.

Seroconversion Symptoms

Signs and symptoms of acute HIV infection include.

- Fever,
- Headache,
- Fatigue,
- Vomiting,
- myalgia, - Muscle aches and pains
- Swollen lymph nodes
- Diarrhoea,
- Pharyngitis, - sore throat
- Rash,
- Night sweats,

Appendix 3 – SMARS data

Detail for Emtricitabine between 1/1/2000 and 31/5/2024

Number of reports: 31
Number of serious reports: 24
Number of reactions: 78

Report	Date	Gender	Age	Medicine(s)	Reaction(s)
148891	Aug 2023	Male	56	Truvada (Suspect)	Nausea Vomiting Dysphagia Treatment noncompliance
148411	Jul 2023	Male	33	Truvada (Suspect)	Angioedema Eye pruritus Periorbital oedema Dyspnoea
147917	Jun 2023	Male	47	NALTREXONE (Suspect) ATORVASTATIN (Concomitant) Truvada (Suspect)	Tearfulness Depersonalisation/derealisation disorder Sedation Fatigue Affect lability
146735	Mar 2023	Male	70	Truvada (Suspect)	Neuralgia Rash Herpes simplex
146012	Dec 2022	Male	33	Truvada (Suspect) FINASTERIDE (Concomitant)	Renal impairment
144929	Aug 2022	Male	35	Truvada (Suspect)	Dyspnoea Chest discomfort Sleep disorder Abnormal dreams
147647	May 2022	Male	54	Truvada (Suspect) BUDESONIDE/EFORMOTEROL (Concomitant) FAMPRIDINE (Suspect) BACLOFEN (Concomitant) Zeposia (Suspect)	Cellulitis
143435	Mar 2022	Male	26	Truvada (Suspect)	Abdominal discomfort Vomiting Nausea
141569	Jul 2021	Male	18	ISOTRETINOIN (Suspect) Truvada (Suspect)	Dyslipidaemia Hepatic enzyme increased
138540	Oct 2020	Male		Truvada (Suspect)	Diarrhoea Pancreatic enzymes abnormal
137169	Jun 2020	Male	60	Truvada (Suspect)	Diarrhoea Pancreatic enzymes abnormal
137168	Jun 2020	Male	39	Truvada (Suspect)	Diarrhoea Pancreatic enzymes abnormal

136727	May 2020	Male	30	DAPSONE (Suspect) Tivicay (Suspect) Truvada (Suspect)	Haemolytic anaemia
136726	May 2020	Male	30	COTRIMOXAZOLE (Suspect) Tivicay (Suspect) Truvada (Suspect)	Rash maculo-papular
133703	Jul 2019	Male	55	FLUTICASONE (Concomitant) Truvada (Suspect) CETIRIZINE (Concomitant) FINASTERIDE (Concomitant) CELECOXIB (Suspect)	Dermatitis exfoliative generalised Hepatitis Acute kidney injury Pyrexia Haematuria
133340	Jun 2019	Male	57	TENOFOVIR + EMTRICITABINE + EFAVIRENZ (Suspect)	Dysgeusia Nightmare
131622	Jan 2019	Male	58	Tivicay (Suspect) Truvada (Suspect)	Renal impairment
131433	Jan 2019	Male	35	AZATHIOPRINE (Suspect) Isentress (Suspect) INSULIN (Concomitant) Humira (Suspect) Truvada (Suspect)	Lymphoma
128049	Apr 2018	Male	28	MULTIVITAMINS (Concomitant) EVENING PRIMROSE OIL (Concomitant) Truvada (Suspect)	Trigeminal neuralgia
126880	Dec 2017	Male	61	EMTRICITABINE (Suspect) LAMIVUDINE (Suspect) INDAPAMIDE (Concomitant)	Drug resistance Therapeutic response decreased
126789	Dec 2017	Male	41	Tivicay (Suspect) Truvada (Suspect)	Immune reconstitution inflammatory syndrome Retinitis Infection parasitic
124839	Jun 2017	Male	34	Tivicay (Suspect) VALACICLOVIR (Concomitant) Truvada (Suspect) SILDENAFIL (Concomitant)	Suicidal ideation Panic reaction Disturbance in attention Anxiety
123572	Feb 2017	Male	34	HYDROCHLOROTHIAZIDE (Concomitant) Tivicay (Suspect) Truvada (Suspect) OMEPRAZOLE (Concomitant) ALPRAZOLAM (Concomitant)	Diarrhoea Cough Bacterial infection Eosinophilia Anorectal disorder
123173	Jan 2017	Male	47	Truvada (Suspect) Tivicay (Suspect) ARIPIPRAZOLE (Concomitant)	Cutaneous vasculitis
122480	Oct 2016	Male	46	Atripla (Concomitant) Truvada (Suspect)	Nephrotic syndrome
119552	Feb 2016	Male	62	Atripla (Suspect) OMEPRAZOLE (Suspect)	Eosinophilia T-cell lymphoma Acute kidney injury

114361	Nov 2014	Male	49	Atripla (Suspect)	Somnolence Depersonalisation/derealisation disorder
110567	Mar 2014	Male	23	B-52 Berry Bomb (Suspect) ATAZANAVIR (Concomitant) RITONAVIR (Concomitant) Zyprexa (Suspect) Truvada (Suspect)	Psychotic disorder Judgement impaired
100560	Mar 2012	Female	45	EMTRICITABINE (Suspect) Viread (Suspect) EFAVIRENZ (Suspect)	Rash pruritic Rash maculo-papular
075332	May 2007	Female	40	Viread (Suspect) EMTRICITABINE (Suspect) ATAZANAVIR (Suspect)	Vertigo Cognitive disorder Headache Dizziness
074995	Apr 2007	Male	55	EFAVIRENZ (Concomitant) DICLOFENAC (Concomitant) Truvada (Suspect) RITONAVIR / LOPINAVIR (Concomitant)	Tubulointerstitial nephritis Acute kidney injury Hepatic enzyme increased Hyperglycaemia

Detail for Tenofovir between 1/1/2000 and 31/5/2024

Number of reports: 46
Number of serious reports: 36
Number of reactions: 107

Report	Date	Gender	Age	Medicine(s)	Reaction(s)
148891	Aug 2023	Male	56	Truvada (Suspect)	Nausea Vomiting Dysphagia Treatment noncompliance
148411	Jul 2023	Male	33	Truvada (Suspect)	Angioedema Eye pruritus Periorbital oedema Dyspnoea
147917	Jun 2023	Male	47	NALTREXONE (Suspect) ATORVASTATIN (Concomitant) Truvada (Suspect)	Tearfulness Depersonalisation/derealisation disorder Sedation Fatigue Affect lability
146735	Mar 2023	Male	70	Truvada (Suspect)	Neuralgia Rash Herpes simplex
146012	Dec 2022	Male	33	Truvada (Suspect) FINASTERIDE (Concomitant)	Renal impairment
145893	Dec 2022	Female	66	Viread (Suspect)	Chest pain
144929	Aug 2022	Male	35	Truvada (Suspect)	Dyspnoea Chest discomfort Sleep disorder Abnormal dreams
147647	May 2022	Male	54	Truvada (Suspect) BUDESONIDE/EFORMOTEROL (Concomitant) FAMPRIDINE (Suspect) BACLOFEN (Concomitant) Zeposia (Suspect)	Cellulitis
143435	Mar 2022	Male	26	Truvada (Suspect)	Abdominal discomfort Vomiting Nausea

141569	Jul 2021	Male	18	ISOTRETINOIN (Suspect) Truvada (Suspect)	Dyslipidaemia Hepatic enzyme increased
138776	Oct 2020	Male	49	Viread (Suspect)	Medication error HIV test positive
138540	Oct 2020	Male		Truvada (Suspect)	Diarrhoea Pancreatic enzymes abnormal
137168	Jun 2020	Male	39	Truvada (Suspect)	Diarrhoea Pancreatic enzymes abnormal
137169	Jun 2020	Male	60	Truvada (Suspect)	Diarrhoea Pancreatic enzymes abnormal
136727	May 2020	Male	30	DAPSONE (Suspect) Tivicay (Suspect) Truvada (Suspect)	Haemolytic anaemia
136726	May 2020	Male	30	COTRIMOXAZOLE (Suspect) Tivicay (Suspect) Truvada (Suspect)	Rash maculo-papular
133703	Jul 2019	Male	55	FLUTICASONE (Concomitant) Truvada (Suspect) CETIRIZINE (Concomitant) FINASTERIDE (Concomitant) CELECOXIB (Suspect)	Dermatitis exfoliative generalised Hepatitis Acute kidney injury Pyrexia Haematuria
131622	Jan 2019	Male	58	Tivicay (Suspect) Truvada (Suspect)	Renal impairment
131433	Jan 2019	Male	35	AZATHIOPRINE (Suspect) Isentress (Suspect) INSULIN (Concomitant) Humira (Suspect) Truvada (Suspect)	Lymphoma
131252	Dec 2018	Male	46	Viread (Suspect) OMEPRAZOLE (Concomitant) Menactra (Suspect) ACICLOVIR (Concomitant) FOLIC ACID (Concomitant)	Somnolence Decreased appetite
130700	Nov 2018	Male	64	VALACICLOVIR (Suspect) Viread (Suspect) ALLOPURINOL (Suspect)	Rash Pruritus Pyrexia

128049	Apr 2018	Male	28	MULTIVITAMINS (Concomitant) EVENING PRIMROSE OIL (Concomitant) Truvada (Suspect)	Trigeminal neuralgia
126789	Dec 2017	Male	41	Tivicay (Suspect) Truvada (Suspect)	Immune reconstitution inflammatory syndrome Retinitis Infection parasitic
126492	Nov 2017	Male	64	Omnipaque (Suspect) Viread (Suspect)	Rash pruritic Urticaria
124839	Jun 2017	Male	34	Tivicay (Suspect) VALACICLOVIR (Concomitant) Truvada (Suspect) SILDENAFIL (Concomitant)	Suicidal ideation Panic reaction Disturbance in attention Anxiety
123808	Mar 2017	Female	46	METFORMIN (Concomitant) SIMVASTATIN (Concomitant) FELODIPINE (Concomitant) Humalog (Suspect) Viread (Suspect)	Nephropathy
123572	Feb 2017	Male	34	HYDROCHLOROTHIAZIDE (Concomitant) Tivicay (Suspect) Truvada (Suspect) OMEPRAZOLE (Concomitant) ALPRAZOLAM (Concomitant)	Diarrhoea Cough Bacterial infection Eosinophilia Anorectal disorder
123173	Jan 2017	Male	47	Truvada (Suspect) Tivicay (Suspect) ARIPIPRAZOLE (Concomitant)	Cutaneous vasculitis
122480	Oct 2016	Male	46	Atripla (Concomitant) Truvada (Suspect)	Nephrotic syndrome
122168	Sep 2016	Female	60	Viread (Suspect) LAMIVUDINE (Concomitant)	Tubulointerstitial nephritis Hepatic function abnormal
122167	Sep 2016	Female	61	Viread (Suspect)	Renal tubular disorder Back pain Vomiting Hepatic function abnormal Fanconi syndrome
122038	Sep 2016	Male	62	Viread (Suspect) RITONAVIR (Concomitant) DARUNAVIR (Concomitant)	Renal impairment

				FLUOXETINE (Concomitant) LAMIVUDINE (Concomitant)	
119552	Feb 2016	Male	62	Atripla (Suspect) OMEPRAZOLE (Suspect)	Eosinophilia T-cell lymphoma Acute kidney injury
114421	Nov 2014	Male	59	Viread (Suspect) SOTALOL (Concomitant) CILAZAPRIL (Concomitant) LAMIVUDINE (Concomitant) TACROLIMUS (Concomitant)	Renal failure Hepatic enzyme increased Haemoglobin decreased Pleural effusion
114361	Nov 2014	Male	49	Atripla (Suspect)	Somnolence Depersonalisation/derealisation disorder
113917	Oct 2014	Female	55	Humira (Suspect) PREDNISONE (Concomitant) Viread (Suspect)	Arthralgia Arthritis
113323	Aug 2014	Male	60	LAMIVUDINE (Concomitant) Viread (Suspect)	Drug ineffective
110843	Mar 2014	Male	14	TACROLIMUS (Suspect) MYCOPHENOLATE (Suspect) LAMIVUDINE (Suspect) GABAPENTIN (Concomitant) Viread (Suspect)	Anaemia
110567	Mar 2014	Male	23	B-52 Berry Bomb (Suspect) ATAZANAVIR (Concomitant) RITONAVIR (Concomitant) Zyprexa (Suspect) Truvada (Suspect)	Psychotic disorder Judgement impaired
100560	Mar 2012	Female	45	EMTRICITABINE (Suspect) Viread (Suspect) EFAVIRENZ (Suspect)	Rash pruritic Rash maculo-papular
095932	Jun 2011	Male	67	Viread (Suspect) AMITRIPTYLINE (Suspect) EFAVIRENZ (Concomitant) DICLOFENAC (Concomitant) EMTRICITABINE (Concomitant)	Hypoaesthesia Paraesthesia
077998	Mar 2008	Male	45	Viread (Suspect) PREDNISONE (Concomitant)	Encephalopathy

				TACROLIMUS (Suspect) OMEPRAZOLE (Concomitant)	
075332	May 2007	Female	40	Viread (Suspect) EMTRICITABINE (Suspect) ATAZANAVIR (Suspect)	Vertigo Cognitive disorder Headache Dizziness
075221	May 2007	Male		RITONAVIR / LOPINAVIR (Suspect) Viread (Suspect)	Acute kidney injury
074995	Apr 2007	Male	55	EFAVIRENZ (Concomitant) DICLOFENAC (Concomitant) Truvada (Suspect) RITONAVIR / LOPINAVIR (Concomitant)	Tubulointerstitial nephritis Acute kidney injury Hepatic enzyme increased Hyperglycaemia
074996	Apr 2007	Male	43	Viread (Suspect)	Rash morbilliform Pruritus

NEW ZEALAND CONSUMER MEDICINE INFORMATION

TENOFOVIR DISOPROXIL EMTRICITABINE VIATRIS

Tenofovir disoproxil / Emtricitabine film coated tablet 300mg/200mg

What is in this leaflet

Please read this leaflet carefully before you start taking Tenofovir Disoproxil Emtricitabine Viatris.

This leaflet answers some common questions about Tenofovir Disoproxil Emtricitabine Viatris.

It does not contain all the available information. It does not take the place of talking to your doctor or pharmacist.

All medicines have risks and benefits. Your doctor has weighed the risks of you taking Tenofovir Disoproxil Emtricitabine Viatris against the benefits they expect it will have for you.

If you have any concerns about taking this medicine, ask your doctor or pharmacist.

Keep this leaflet with the medicine. You may need to read it again.

What Tenofovir Disoproxil Emtricitabine Viatris is used for

Tenofovir Disoproxil Emtricitabine Viatris is used to:

- Treat Human Immunodeficiency Virus-1 (HIV-1) infection in adults when taken in combination with other anit-HIV medicines.
- Help reduce the risk of getting HIV infection when used with safer sex practices in:
    - HIV-negative men who have sex with men, who are at highrisk of getting infected with HIV-1 through sex.
    - Male-female sex partners whenone partner has HIV-1 infectionand the other does not.

When Tenofovir Disoproxil Emtricitabine Viatris is used to treat HIV infection

When used with other HIV-1 medicines to treat HIV-1 infection, Tenofovir Disoproxil Emtricitabine Viatris may help:

- Reduce the amount of HIV-1 in your blood. This is called “viral load”.
- Increase the number of CD4+ (T) cells in your blood that help fight off other infections.

  Reducing the amount of HIV-1 and increasing the CD4+ (T) cells in your blood may help improve your immune system.

  This may reduce your risk of death or infections that can happen when your immune system is weak.

This medicine belongs to a group of antiviral medicines known as nucleoside and nucleoside reverse transcriptase inhibitors (NRTI).

Tenofovir Disoproxil Emtricitabine Viatris contains the active ingredient tenofovir disoproxil maleate and emtricitabine.

The two active ingredients are combined in one tablet to help control HIV infection.

Your doctor may have prescribed this medicine for another reason.

Use in children and elderly

Tenofovir Disoproxil Emtricitabine Viatris is for adults.

Do not take Tenofovir Disoproxil Emtricitabine Viatris if you are under the age of 18 years.
Do not take Tenofovir Disoproxil Emtricitabine Viatris if you are over the age of 65 before discussing with your doctor.

Ask your doctor if you have any questions about why this medicine has been prescribed for you.

This medicine is available only with a doctor’s prescription.

DoesTenofovir Disoproxil Emtricitabine Viatris cure HIV or AIDS

Tenofovir Disoproxil Emtricitabine Viatris is not a cure for HIV infection or AIDS. While taking Tenofovir Disoproxil Emtricitabine Viatris you may still develop infections or other illnesses associated with HIV infection.

If you have HIV-1 infection, you must keep taking HIV-1 medicines to control HIV-1 infection and decrease HIV-related illnesses.

Does Tenofovir Disoproxil Emtricitabine Viatris reduce the risk of passing HIV to others

Tenofovir Disoproxil Emtricitabine Viatris does not reduce the riskof passing HIV to others through sexual contact or blood contamination.

It is important to continue to take appropriate precautions to prevent

passing HIV to others.

When Tenofovir Disoproxil Emtricitabine Viatris is used to reduce the risk of HIV infection

When used with safer sex practices, Tenofovir Disoproxil Emtricitabine Viatris may help to reduce the riskof getting HIV-1 infection.

Tenofovir Disoproxil Emtricitabine Viatris works better to reduce the risk of getting HIV-1 when the medicines are in your bloodstream **before** you are exposed to HIV-1.

Before you take Tenofovir Disoproxil Emtricitabine Viatris

When you must not take it

Do not take Tenofovir Disoproxil Emtricitabine Viatris if you have an allergy to:

- any medicine containing tenofovir, emtricitabine
- any of the ingredients listed at the end of this leaflet.
- Some of the symptoms of an allergic reaction may include: shortness of breath; wheezing or difficulty breathing; swelling of the face, lips, tongue or other parts of the body; rash, itching or hives on the skin.

Do not take Tenofovir Disoproxil Emtricitabine Viatris if you are already taking any of the components of Tenofovir Disoproxil Emtricitabine Viatris (tenofovir or emtricitabine).

Do not take Tenofovir Disoproxil Emtricitabine Viatris if you are taking lamivudine.

Do not take Tenofovir Disoproxil Emtricitabine Viatris if you are taking adefovir dipivoxil.

Do not take Tenofovir Disoproxil Emtricitabine Viatris if you are taking tenofovir alafenamide.

Do not give this medicine to a child under the age of 18 years.
Safety and effectiveness in children younger than 18 years have not been established.

Do not take this medicine after the expiry date printed on the pack or if the packaging is torn or shows signs of tampering.
If it has expired or is damaged, return it to your pharmacist for disposal.

If you are not sure whether you should start taking this medicine, talk to your doctor.

For people using Tenofovir Disoproxil Emtricitabine Viatris to reduce the risk of getting HIV-1infection:

Tenofovir Disoproxil Emtricitabine Viatris can only help reduce your risk of getting HIV-1 before you are infected.

Do not take Tenofovir Disoproxil Emtricitabine Viatris to help reduce your risk of getting HIV-1 if:

- you already have HIV-1 infection. Ifyou are HIV-positive, you need to take other medicines with Tenofovir Disoproxil Emtricitabine Viatris to treat HIV. Tenofovir Disoproxil Emtricitabine Viatris by itself is not a complete treatment for HIV.
- you do not know your HIV-1 infection status. You may already beHIV-positive. You need to take otherHIV-1 medicines with Tenofovir Disoproxil Emtricitabine Viatris to treat HIV-1.
- Many HIV-1 tests can miss HIV-1 infection in a person who has recently become infected. If you have flu-like symptoms, you could have recently become infected with HIV-1. Tell your healthcare provider if you had a flu-like illness within the last month before starting Tenofovir Disoproxil Emtricitabine Viatris or at any time while taking Tenofovir Disoproxil Emtricitabine Viatris. Symptoms ofnew HIV-1 infection include: tiredness, fever, joint or muscle aches, headache, sore throat, vomiting or diarrhoea, rash, nightsweats or enlarged lymph nodes in the neck or groin.

Before you start to take it

Tell your doctor if you have allergies to any other medicines, foods, preservatives or dyes.

Tell your doctor if you have or have had any of the following medical conditions:

Tell your doctor if you are pregnant or plan to become pregnant or are breast-feeding.
Your doctor can discuss with you the risks and benefits involved.

The safe use of Tenofovir Disoproxil Emtricitabine Viatris in pregnancy has not been demonstrated. For this reason, it is important that women of child-bearing age receiving treatment with Tenofovir Disoproxil Emtricitabine Viatris use an effective method of contraception to avoid becoming pregnant.

If you are a female who is taking Tenofovir Disoproxil Emtricitabine Viatris to reduce the risk of getting HIV-1 infection and you become pregnant while taking Tenofovir Disoproxil Emtricitabine Viatris, talk to your healthcare provider to decide if you should keep taking Tenofovir Disoproxil Emtricitabine Viatris.

The active substances in this medicine (tenofovir disoproxil fumarate and emtricitabine) have been found in breastmilk at low concentrations.
Consequently, it is recommended thatnursing mothers do not breast-feed during treatment with Tenofovir Disoproxil Emtricitabine Viatris. In general, women infected with HIV should not breast-feed their infants inorder to avoid transmission of HIV totheir newborn infant.

Tell your doctor if you have liver problems, including hepatitis B, or Cvirus infection.

Tell your doctor if you are taking medication to treat your hepatitis Cvirus (HCV) infection (e.g. ledipasvir/sofosbuvir, sofosbuvir/velpatasvir).

Tell your doctor if you have kidneyproblems.

Tell your doctor if you have or haveever had abnormal bones or bone difficulties.

This medicine is only available from apharmacist after it has been prescribed by a doctor who specialisesin the treatment of HIV infection.

If you wish to continue receiving treatment with Tenofovir Disoproxil Emtricitabine Viatris it is important you remain under the careof a hospital or doctor who specialisesin the treatment of HIV infection.

Avoid doing things that increase your risk of gettingHIV-1 or spreading HIV-1 to other people:

- Do not have any kind of sex withoutprotection. Always practice safer sex. Use latex or non-latex condoms,except lambskin, to reduce contact with semen, vaginal fluids, or blood.
- Do not share personal items that canhave blood or body fluids on them, such as toothbrushes and razor blades.
- Do not share or re-use needles orother injection equipment.

Ask your healthcare provider if you have any questions about how to preventgetting HIV-1 or spreading HIV-1 to other people.

If you have a long standing viral infection of your liver (hepatitis B) it may flare up when you stop taking Tenofovir Disoproxil Emtricitabine Viatris.

This can cause serious illness particularly if your liver is already notworking very well. If you have both HIV and hepatitis B, when you start taking Tenofovir Disoproxil Emtricitabine Viatris and even after youstop, your doctor is likely to arrange tests from time to time to check how well your liver is working.

If you have not told your doctor about any of the above, tell them before you start taking Tenofovir Disoproxil Emtricitabine Viatris.

Taking other medicines

If you have HIV infection your doctor will generally prescribe Tenofovir Disoproxil Emtricitabine Viatris in combination with other anti-HIV medicines.

Tell your doctor or pharmacist if you are taking any other medicines, including medicines that you buy without a prescription from your pharmacy, supermarket or health food shop.

You should also tell any health professional who is prescribing a new medication for you that you are taking Tenofovir Disoproxil Emtricitabine Viatris.

Some medicines may interfere with Tenofovir Disoproxil Emtricitabine Viatris. These include:

- Didanosine
- Ledipasvir/sofosbuvir
- Sofosbuvir/velpatasvir
- Sofosbuvir/velpatasvir/voxilaprevir

These medicines may be affected by Tenofovir Disoproxil Emtricitabine Viatris or may affect how well it works. You may need different amounts of your medicines, or you may need to take different medicines.

Your doctor and pharmacist have more information on medicines to be careful with or avoid while taking this medicine.

How to take Tenofovir Disoproxil Emtricitabine Viatris

Take Tenofovir Disoproxil Emtricitabine Viatris exactly as prescribed. The usual dose is one Tenofovir Disoproxil Emtricitabine Viatris tablet orally once daily.Take Tenofovir Disoproxil Emtricitabine Viatris at the same time each day to keep Tenofovir Disoproxil Emtricitabine Viatris blood levels constant.

Tenofovir Disoproxil Emtricitabine Viatris is best taken with a meal or just afterwards, however taking it without food should not reduce the effectiveness of the medicine.

Tenofovir Disoproxil Emtricitabine Viatris is absorbed rapidly. Do not take another Tenofovir Disoproxil Emtricitabine Viatris dose if vomiting has occurred unless it occurswithin 1 hour after taking Tenofovir Disoproxil Emtricitabine Viatris.

Always take the dose recommendedby your doctor to ensure that your medicine is fully effective and to reduce the development of drug resistance.

If you do not understand the instructions on the bottle, ask your doctor or pharmacist for help.

How much to take

Take one Tenofovir Disoproxil Emtricitabine Viatris tablet once daily or as advised by your doctor.

If you are not sure how much Tenofovir Disoproxil Emtricitabine Viatris you should take, check with your doctor or pharmacist. Do not change the amount of Tenofovir Disoproxil Emtricitabine Viatris you take unless told to do so by your doctor.

Your doctor will tell you how much Tenofovir Disoproxil Emtricitabine Viatris to take and how often totake it. You will also find this information

on the label of your medicine container.

Because your medicine helps to control your condition, but does not cure it you will need to take Tenofovir Disoproxil Emtricitabine Viatris every day.

If you are taking Tenofovir Disoproxil Emtricitabine Viatris to reduce the risk of HIV-1 infection, take Tenofovir Disoproxil Emtricitabine Viatris every day for the period of time as prescribed by yourdoctor.

Do not miss any doses of Tenofovir Disoproxil Emtricitabine Viatris**. Missing a dose lowers the amount of medicine in your blood.**

Do not stop taking Tenofovir Disoproxil Emtricitabine Viatris **without first talking to your doctor.**

How to take it

Swallow the tablets whole with a full glass of water.

When to take it

Take your medicine at about the same time each day.
Taking it at the same time each day will have the best effect. It will also help you remember when to take it.

It does not matter if you take this medicine before or after food.

How long to take it

Continue taking your medicine for as long as your doctor tells you.
This medicine helps to control your condition, but does not cure it. It is important to keep taking your medicine even if you feel well.

Continue taking your medicine until you finish the pack.

If you forget to take it

It is important to take the prescribed daily dose in order to get the maximum benefit of treatment.

If you forget to take your daily dose of Tenofovir Disoproxil Emtricitabine Viatris, take it as soon as you remember that day, and then go back to taking your medicine as you would normally.

Do not take a double dose to make up for the dose that you missed.

Do not take more than one Tenofovir Disoproxil Emtricitabine Viatris tablet in a day.

If you are not sure what to do, ask your doctor or pharmacist.

If you have trouble remembering to take your medicine, ask your pharmacist for some hints.

While you are taking Tenofovir Disoproxil Emtricitabine Viatris

Things you must do

If you are about to be started on any new medicine, tell your doctor and pharmacist that you are taking Tenofovir Disoproxil Emtricitabine Viatris.

Tell any other doctors, dentists, and pharmacists who treat you that you are taking this medicine.

If you are going to have surgery, tell the surgeon or anaesthetist that you are taking this medicine.
It may affect other medicines used during surgery.

If you become pregnant while taking this medicine, tell your doctor immediately.

Tell your doctor if for any reason you have not taken your medicine exact as prescribed.

If you are about to have any blood tests, tell your doctor that you are taking this medicine.
It may interfere with the results of some tests.

Keep all of your doctor's appointments so that your progress can be checked.
Your doctor may do some tests from time to time to make sure the medicine is working and to prevent unwanted side effects.

<u>If you are taking Tenofovir Disoproxil Emtricitabine Viatris to reduce your risk of getting HIV</u>

Just taking Tenofovir Disoproxil Emtricitabine Viatris may not keep you from getting HIV.

You must continue using safer sex practices while you are taking Tenofovir Disoproxil Emtricitabine Viatris to reduce your risk of getting HIV.

You must stay HIV-negative to keep taking Tenofovir Disoproxil Emtricitabine Viatris to reduce your risk of infection.

Know your HIV status and the HIV status of your partners.

Get tested for HIV at least every 3 months or when your healthcare provider tells you.

Get tested for other sexually transmittedinfections such as syphilis and gonorrhea. These infections make it easier for HIV to infect you.
Tenofovir Disoproxil Emtricitabine Viatris will not stop you fromgetting these other infections.

If you think you were exposed to HIV, tell your healthcare provider right away.They may want to do more tests to be sure you are still HIV-negative.

Get information and support to helpreduce risky sexual behaviour.

Have fewer sex partners.

Do not miss any doses of Tenofovir Disoproxil Emtricitabine Viatris.Missing doses may increase your riskof getting HIV infection.

If you do become HIV-positive, you need more medicine than Tenofovir Disoproxil Emtricitabine Viatris alone to treat HIV. Tenofovir Disoproxil Emtricitabine Viatris by itselfis not a complete treatment for HIV.

If you have HIV and take only Tenofovir Disoproxil Emtricitabine Viatris, over time your HIV may become harder to treat.

Things you must not do

Do not take Tenofovir Disoproxil Emtricitabine Viatris to treat any other complaints unless your doctor tells you to.

Do not give your medicine to anyone else, even if they have the same condition as you.

Do not stop taking your medicine or lower the dosage without checking with your doctor.
If you stop taking it suddenly, your condition may worsen or you may have unwanted side effects.

If possible, your doctor will gradually reduce the amount you take each day before stopping the medicine completely.

Do not use Tenofovir Disoproxil Emtricitabine Viatris to treat any other complaints unless your doctor says so.

Things to be careful of

Be careful driving or operating machinery until you know how Tenofovir Disoproxil Emtricitabine Viatris affects you.
This medicine may cause dizziness in some people. If you have any of the symptom, do not drive, operate machinery or do anything else that could be dangerous.

Be careful when drinking alcohol while you are taking this medicine.

If you feel light-headed, dizzy or faint when getting out of bed or standing up, get up slowly.
Standing up slowly, especially when you get up from bed or chairs, will help your body get used to the change in position and blood pressure. If this problem continues or gets worse, talk to your doctor.

In case of overdose

If you take too much (overdose)

Immediately telephone your doctor or the National Poisons Centre (telephone 0800 POISON or 0800 764 766), or go to accident and emergency at your nearest hospital, if you think that you or anyone else may have taken too much Tenofovir Disoproxil Emtricitabine Viatris. Do this even if there are no signs of discomfort or poisoning. You may need urgent medical attention.

Side effects

Tell your doctor or pharmacist as soon as possible if you do not feel well while you are taking Tenofovir Disoproxil Emtricitabine Viatris
This medicine helps most people with HIV-1 infection, but it may have unwanted side effects in a few people.

All medicines can have side effects. Sometimes they are serious, most of the time they are not. You may need medical treatment if you get some of the side effects.

Ask your doctor or pharmacist to answer any questions you may have.

The most common side effects in peopletaking Tenofovir Disoproxil Emtricitabine Viatris to treat HIV-1 infection include:

- diarrhoea
- nausea
- tiredness
- headache
- dizziness
- depression
- problems sleeping
- abnormal dream
- rash

Common side effects in people who take Tenofovir Disoproxil Emtricitabine Viatris to reduce the risk of getting HIV-1 infection include:

- stomach-area (abdomen) pain
- headache
- decreased weight

Ask your doctor or pharmacist to answer any question you may have about these or other effects.

Allergy

Some people are allergic to medicines.

If you have any of the following symptoms soon after taking your medicine, DO NOT TAKE ANY MORE Tenofovir Disoproxil Emtricitabine Viatris and tell your doctor IMMEDIATELY or go to the accident and emergency departmentat your nearest hospital:

- Skin troubles such as lumpy skin rash or “hives”
- Swelling of the face, lips mouth or throat which may cause difficulty in swallowing or breathing
- Wheezing, chest pain or tightness
- Fainting

These are very serious effects. If youhave them, you may have a serious allergic reaction. You may need urgent medical attention or hospitalisation. All of these side effects are very rare.

Pancreatitis

If you have any of the following symptoms after starting your medication, tell your doctor IMMEDIATELY or go to the accident and emergency department at your nearest hospital:

- Severe stomach pain or cramps
- Nausea
- Vomiting

These side effects may be due to a condition called pancreatitis which sometimes occurs in patients taking anti-HIV medicines.

Serious liver problems (hepatotoxicity)

If you have any of the following symptoms after starting your medication, tell your doctor IMMEDIATELY or go to the accident and emergency

department at your nearest hospital:

- Your skin or the white part ofyour eyes turns yellow (jaundice)
- Your urine turns dark
- Your bowel movements (stools) turn light in colour
- You don't feel like eating food for several days or longer
- Nausea
- Stomach-area pains

These side effects may be due to a condition called hepatotoxicity with liver enlargement and fat deposits in theliver (steatosis) which sometimes occursin patients taking anti-HIV medicines

Lactic acidosis

If you have any of the following symptoms after starting your medication, tell your doctor IMMEDIATELY or go to the accident and emergency department at your nearest hospital:

- You feel very weak or tired
- You have unusual (not normal)muscle pain
- You have trouble breathing
- You have stomach pain withnausea and vomiting
- You feel cold, especially in yourarms and legs
- You feel dizzy or light headed
- You have a fast or irregular heartbeat

These side effects may be due to a condition called lactic acidosis (build-upof an acid in the blood).

Lactic acidosis can be a medical emergency and may need to be treated in the hospital.

You may be more likely to get lactic acidosis or liver problems if you are female, very overweight (obese), or have been taking similar nucleoside analog-containing medicines, like Tenofovir Disoproxil Emtricitabine Viatris, for a long time.

Hepatic Flares

Your doctor should test you to see if you have chronic hepatitis B infectionbefore you start taking Tenofovir Disoproxil Emtricitabine Viatris.

If you have chronic hepatitis B infection you should not stop your Tenofovir Disoproxil Emtricitabine Viatris treatment without first discussing this with your doctor, as some patients have had blood tests or symptoms indicating a worsening of their hepatitis ("hepatic flare") after stopping individual components (tenofovir disoproxil fumarate and emtricitabine) of Tenofovir Disoproxil Emtricitabine Viatris.

You may require medical exams andblood tests for several months after stopping treatment.

Tenofovir Disoproxil Emtricitabine Viatris is not approved for the treatment of hepatitis B, so you mustdiscuss your hepatitis B therapy withyour healthcare provider.

Other possible side effects:

This list of side effects is not complete.

Tenofovir Disoproxil Emtricitabine Viatris may cause other serious side effects.

Tell your doctor if you notice anything else that is making you feel unwell, even if it is not on this list:

New and worse kidney problems

If you have had kidney problems in the past or need to take another drug that can cause kidney problems, your healthcare provider may need to performadditional blood tests to check your kidneys

Bone problems

Bone problems can happen in some people who take Tenofovir Disoproxil Emtricitabine Viatris. Bone problems include bone pain, or softening or thinning of bones, which may lead to fractures. Your healthcareprovider may need to do tests to check your bones.

Signs and symptoms of inflammation

In some patients with advanced HIV infection (AIDS), signs and symptomsof inflammation from previous infections may occur soon after anti- HIV treatment is started. It is believedthat these symptoms are due to an improvement in the body's immune response, which lets the body fight infections that may have been present with no obvious symptoms. If you notice any symptoms of infection, please tell your doctor immediately.

Some people may get other side effectswhile taking Tenofovir Disoproxil Emtricitabine Viatris. If you are concerned, talk to your doctor or pharmacist.

Ask your doctor or pharmacist if you don't understand anything in this list.

Do not be alarmed by this list of possible side-effects. Most of them arevery rare and you may not experience any of them.

After taking Tenofovir Disoproxil Emtricitabine Viatris

Storage

Keep your tablets in the bottle until it is time to take it.
If you take the tablets out of the bottle they may not keep well.

Keep your tablets in a cool dry place where the temperature stays below 25°C.

Do not store taking Tenofovir Disoproxil Emtricitabine Viatris or any other medicine in the bathroom or near a sink. Do not leave it on a window sill or in the car.
Heat and dampness can destroy some medicines.

Keep it where children cannot reach it.
A locked cupboard at least one-and-a half metres above the ground is a good place to store medicines.

Disposal

If your doctor tells you to stop taking this medicine or the expiry date has passed, ask your

pharmacist what to do with any medicine that is left over.

Product description

What it looks like

A light green, film-coated, capsule shaped, biconvex tablet debossed with '**M'** on one side of the tablet and '**ETM'** on the other side.

Ingredients

Active ingredients:
Tenofovir Disoproxil Emtricitabine Viatris contains 300 mg of tenofovir disoproxil maleate (equivalent to 245 mg tenofovir disoproxil) and 200 mg of emtricitabine as the active ingredients.

Inactive ingredients:
Tenofovir Disoproxil Emtricitabine Viatris also contains:

- microcrystalline cellulose
- ferric oxide red
- lactose monohydrate
- hydroxypropyl cellulose
- silica colloidal anhydrous
- magnesium stearate
- hypromellose
- titanium dioxide
- triacetin
- FD & C Blue No.1
- iron oxide yellow

Contains lactose.

If you want to know more

Should you have any questions regarding this product, please contact your pharmacist or doctor.

Who supplies this medicine

Tenofovir Disoproxil Emtricitabine Viatris is supplied in New Zealand by:

Viatris Ltd
PO Box 11-183
Ellerslie
AUCKLAND
www.viatris.co.nz
Telephone 0800 168 169

Date of Preparation

9 June 2022.
(Based on datasheet dated 9 June 2022)

NEW ZEALAND DATA SHEET

TENOFOVIR DISOPROXIL EMTRICITABINE VIATRIS

1. Product Name

Tenofovir Disoproxil Emtricitabine Viatris 300 mg / 200 mg film coated tablets

2. Qualitative and Quantitative Composition

Tenofovir Disoproxil Emtricitabine Viatris immediate release film-coated tablets, each contains 300 mg tenofovir disoproxil maleate (equivalent to 245 mg tenofovir disoproxil) and 200 mg emtricitabine.

Tenofovir disoproxil maleate 300mg is equivalent to tenofovir disoproxil fumarate 300 mg. Maleate and fumarate are isomers of each other. This data sheet makes reference to both the fumarate and maleate salt form.

Excipient(s) with known effect

Tenofovir Disoproxil Emtricitabine Viatris tablets contain lactose. For the full list of excipients, see section 6.1.

3. Pharmaceutical Form

A light green, film-coated, capsule shaped, biconvex tablet debossed with '**M'** on one side of the tablet and '**ETM'** on the other side.

Dimensions: 19.80 mm x 9.00 mm (Length x Width).

4. Clinical Particulars

4.1 Therapeutic indications

Treatment of HIV-1 infection

Tenofovir Disoproxil Emtricitabine Viatris is indicated for the treatment of HIV infected adults over the age of 18 years, in combination with other antiretroviral agents.

Pre-exposure Prophylaxis

Tenofovir Disoproxil Emtricitabine Viatris is indicated in combination with safer sex practices for pre-exposure prophylaxis (PrEP) to reduce the risk of sexually acquired HIV-1 in adults at high risk. This indication is based on clinical trials in men who have sex with men (MSM) at high risk for HIV-1 infection and in heterosexual serodiscordant couples (see section 5.1).

4.2 Dose and method of administration

Tenofovir Disoproxil Emtricitabine Viatris tablets cannot be halved.

Recommended Dose for Treatment of HIV-1 Infection

Adults

The recommended dose of Tenofovir Disoproxil Emtricitabine Viatris is one tablet (containing 300 mg tenofovir disoproxil maleate and 200 mg emtricitabine), taken orally, once daily with or without food.

Recommended Dose for Pre-exposure Prophylaxis

Adults

The dose of tenofovir disoproxil/emtricitabine in HIV-1 uninfected adults is one tablet (containing 300 mg tenofovir disoproxil maleate and 200 mg of emtricitabine), taken orally, once daily. In order to optimise the absorption of tenofovir, it is recommended that Tenofovir Disoproxil Emtricitabine Viatris should be taken with food.

Special populations

Paediatric

The safety and efficacy of tenofovir and emtricitabine in combination have not been established in patients under the age of 18 years. Consequently, Tenofovir Disoproxil Emtricitabine Viatris should not be administered to children or adolescents.

Elderly

No data are available on which to make a dose recommendation for patients over the age of 65 years.

Renal impairment

Treatment of HIV-1 Infection

Significantly increased drug exposures occurred when tenofovir or emtricitabine were administered to patients with moderate to severe renal impairment (see individual data sheets for tenofovir and emtricitabine). Therefore, the dosing interval of Tenofovir Disoproxil Emtricitabine Viatris should be adjusted in patients with baseline creatinine clearance <60 mL/min using the recommendations in Table 1. The safety and effectiveness of these dosing interval adjustment recommendations have not been clinically evaluated, therefore, clinical response to treatment and renal function should be closely monitored in these patients.

Table 1. Dosage Adjustment for Patients with Altered Creatinine Clearance

	Creatinine Clearance (mL/min)[a]		
	≥ 60	30-59	<30 (Including Patients Requiring Haemodialysis)
Recommended Dosing Interval	Every 24 hours	Every 48 hours	Tenofovir Disoproxil Emtricitabine Viatris should not be administered.

[a] Calculated with Cockcroft Gault equation using ideal (lean) body weight.

Pre-exposure Prophylaxis

Do not use tenofovir disoproxil/emtricitabine for a PrEP indication in HIV-1 uninfected individuals with estimated creatinine clearance below 60 mL/min (see section 4.4).

Routine monitoring of estimated creatinine clearance should be performed in all individuals with mild renal impairment. If a decrease in estimated creatinine clearance is observed in uninfected individuals while using tenofovir disoproxil/emtricitabine for PrEP, evaluate potential causes and re-assess potential risks and benefits of continued use (see section 4.4).

Hepatic impairment

The pharmacokinetics of tenofovir disoproxil/emtricitabine, or emtricitabine have not been studied in subjects with hepatic impairment. There were no substantial alterations in tenofovir pharmacokinetics in subjects with hepatic impairment compared with unimpaired subjects. No change in tenofovir dosing is required in patients with hepatic impairment. Emtricitabine is not significantly metabolised by liver enzymes, so the impact of hepatic impairment should be limited.

4.3 Contraindications

Tenofovir Disoproxil Emtricitabine Viatris is contraindicated in patients with known hypersensitivity to tenofovir, tenofovir disoproxil fumarate, tenofovir disoproxil maleate, emtricitabine or any other components of the tablet (see section 6.1).

Tenofovir Disoproxil Emtricitabine Viatris must not be administered to children or adolescents under the age of 18 years.

Tenofovir Disoproxil Emtricitabine Viatris is a fixed-dose combination of tenofovir disoproxil maleate and emtricitabine. Tenofovir Disoproxil Emtricitabine Viatris should not be administered concomitantly with: medicines containing tenofovir disoproxil maleate or tenofovir disoproxil fumarate; medicines containing emtricitabine; medicines containing tenofovir alafenamide, lamivudine; or with adefovir dipivoxil.

Do not use Tenofovir Disoproxil Emtricitabine Viatris for PrEP in individuals with unknown or positive HIV-1 status.

Tenofovir Disoproxil Emtricitabine Viatris should be used in HIV-infected patients only in combination with other antiretroviral agents.

4.4 Special warnings and precautions for use

General

Patients receiving tenofovir disoproxil/emtricitabine or any other antiretroviral therapy may continue to develop opportunistic infections and other complications of HIV infection, and therefore should remain under close clinical observation by physicians experienced in the treatment of patients with HIV associated diseases.

Patients should also be informed that tenofovir disoproxil/emtricitabine therapy is not a cure for HIV infection.

Lactic Acidosis/Severe Hepatomegaly with Steatosis

Lactic acidosis and severe hepatomegaly with steatosis, including fatal cases have been reported with the use of antiretroviral nucleoside analogues alone or in combination, in the treatment of HIV infection. A majority of these cases have been in women. Obesity and prolonged nucleoside exposure may be risk factors. Particular caution should be exercised when administering nucleoside analogues to any patient or uninfected individual with known risk factors for liver disease, however, cases have also been reported in HIV-1 patients with no known risk factors.

Treatment with tenofovir disoproxil/emtricitabine should be suspended in any patient or uninfected individual who develops clinical or laboratory findings suggestive of lactic acidosis or pronounced hepatotoxicity (which may include hepatomegaly and steatosis even in the absence of marked transaminase elevations).

Renal Impairment

Tenofovir and emtricitabine are principally eliminated by the kidney.

Renal impairment, including cases of acute renal failure and Fanconi syndrome (renal tubular injury with severe hypophosphatemia), has been reported in association with the use of tenofovir (see section 4.8).

Tenofovir disoproxil/emtricitabine should be avoided with concurrent or recent use of a nephrotoxic agent.

It is recommended that creatinine clearance is calculated in all patients prior to initiating therapy and, as clinically appropriate, during tenofovir disoproxil/emtricitabine therapy. Patients at risk for, or with a history of, renal dysfunction including patients who have previously experienced renal events while receiving adefovir dipivoxil should be routinely monitored for changes in serum creatinine and phosphorus.

Treatment of HIV-1 infection

Dosing interval adjustment of tenofovir disoproxil/emtricitabine is required in all patients with creatinine clearance <60 mL/min (calculated using the Cockcroft Gault equation), (see section 4.2). Renal function should be closely monitored in these patients. The safety and efficacy of tenofovir and emtricitabine therapy have not been established in patients with creatinine clearance between 30 and 59 mL/min, and so the potential benefit of tenofovir disoproxil/emtricitabine therapy should be assessed against the potential risk of renal toxicity. Tenofovir disoproxil/emtricitabine should not be administered to patients with creatinine clearance <30 mL/min or patients requiring haemodialysis.

Pre-exposure Prophylaxis

Tenofovir disoproxil/emtricitabine for a PrEP indication should not be used if estimated creatinine clearance is less than 60 mL/min. If a decrease in estimated creatinine clearance is observed in uninfected individuals while using tenofovir disoproxil/emtricitabine for PrEP, evaluate potential causes and re-assess potential risks and benefits of continued use (see section 4.2).

Bone Effects

Bone toxicities including a reduction in bone mineral density have been observed in tenofovir disoproxil fumarate studies in three animal species. Clinically relevant bone abnormalities have not been seen in long term clinical studies (>3 years) of tenofovir in HIV-1 infected adults and were also not seen in studies in HIV-1 uninfected individuals but long term data are lacking in this population. However, bone abnormalities (infrequently contributing to fractures) may be associated with proximal renal tubulopathy (see section 4.8).

If bone abnormalities are suspected during therapy then appropriate consultation should be obtained.

Hepatitis B Virus (HBV) Co-infection

Individuals should be tested for the presence of chronic hepatitis B virus (HBV) before initiating tenofovir disoproxil/emtricitabine. Discontinuation of tenofovir disoproxil/emtricitabine therapy in patients co-infected with HBV may be associated with severe acute exacerbations of hepatitis. Patients with HIV infection co-infected with HBV should be closely monitored with both clinical and laboratory follow-up for at least several months after stopping tenofovir disoproxil/emtricitabine treatment. If appropriate, resumption of anti-hepatitis B therapy may be warranted. In patients with advanced liver disease or cirrhosis, treatment discontinuation is not recommended since post-treatment exacerbation of hepatitis may lead to hepatic decompensation.

Early Virologic Failure

Clinical studies in HIV-infected patients have demonstrated that certain regimens that only contain three nucleoside reverse transcriptase inhibitors (NRTI) are generally less effective than triple drug regimens containing two NRTIs in combination with either a non-nucleoside reverse transcriptase inhibitor or a HIV-1 protease inhibitor. In particular, early virological failure and high rates of resistance mutations have been reported in clinical studies of combinations of tenofovir, lamivudine

and abacavir or tenofovir, lamivudine and didanosine. Triple nucleoside regimens should therefore be used with caution. Patients on a therapy utilizing a triple nucleoside-only regimen should be carefully monitored and considered for treatment modification.

Immune Reconstitution Syndrome

Immune reconstitution syndrome has been reported in patients treated with combination antiviral therapy, including emtricitabine and tenofovir disoproxil fumarate.

In HIV-infected patients with severe immune deficiency at the time of initiation of antiretroviral therapy, an inflammatory reaction to asymptomatic or residual opportunistic pathogens may arise and cause serious clinical conditions, or aggravation of symptoms. Typically, such reactions have been observed within the first few weeks or months of initiation of antiretroviral therapy. Relevant examples include cytomegalovirus retinitis, generalised and/or focal mycobacterial infections and *Pneumocystis jiroveci* pneumonia. Any inflammatory symptoms should be evaluated and treatment instituted when necessary.

Autoimmune disorders have also been reported to occur in the setting of immune reconstitution; however, the reported time to onset is more variable, and these events can occur many months after initiation of treatment.

Comprehensive Management for use in Pre-exposure Prophylaxis (PrEP)

Tenofovir disoproxil/emtricitabine should only be used for PrEP as part of a comprehensive prevention strategy including other HIV-1 prevention measures, because tenofovir disoproxil/emtricitabine is not always effective in preventing the acquisition of HIV-1.

Counsel uninfected individuals about safer sex practices that include consistent and correct use of condoms, knowledge of their HIV-1 status and that of their partner(s), and regular testing for other sexually transmitted infections that can facilitate HIV-1 transmission (such as syphilis and gonorrhea). Counsel uninfected individuals prior to initiation of PrEP about risk and benefits, precautions and limitation of pre-exposure prophylaxis using tenofovir disoproxil/emtricitabine.

Tenofovir disoproxil/emtricitabine should only be used to reduce the risk of acquiring HIV-1 in individuals confirmed to be HIV-negative immediately prior to initiating and routinely reconfirmed while taking tenofovir disoproxil/emtricitabine for PrEP. Drug resistant HIV-1 variants have been identified in individuals with undetected HIV-1 infection who are taking tenofovir disoproxil/emtricitabine for a PrEP indication, because, tenofovir disoproxil/emtricitabine alone does not constitute a complete treatment regimen for HIV-1 infection.

When considering tenofovir disoproxil/emtricitabine for pre-exposure prophylaxis, the uninfected individuals should be counselled about the importance of strict adherence to the recommended tenofovir disoproxil/emtricitabine dosing schedule. The effectiveness of tenofovir disoproxil/emtricitabine in reducing the risk of acquiring HIV-1 is strongly correlated with patient adherence and detectable drug blood levels.

- Many HIV-1 tests, such as rapid tests, detect anti-HIV antibodies and may not identify HIV-1 during the acute stage of infection. Prior to initiating tenofovir disoproxil/emtricitabine for a PrEP indication, evaluate seronegative individuals for current or recent signs or symptoms consistent with acute viral infections (e.g. fever, fatigue, myalgia, skin rash, etc.) and ask about potential exposure events (e.g. unprotected, or condom broke during sex with an HIV-1 infected partner) that may have occurred within the last month.
    - If clinical symptoms consistent with acute viral infection are present and recent (<1 month) exposures are suspected, delay starting PrEP for at least one month and reconfirm negative HIV-1 status.
- While using tenofovir disoproxil/emtricitabine for a PrEP indication, HIV-1 screening tests should be repeated at least every 3 months. If symptoms consistent with acute HIV-1 infection develop following a potential exposure event, PrEP should be discontinued until negative HIV-1 infection status is confirmed.

Tenofovir disoproxil/emtricitabine does not reduce the risk of other sexually transmitted infections and regular monitoring is recommended. Monitoring of renal function, such as with urine dipstick testing, should be considered for patients at risk for renal disease (see section 4.4).

When considering tenofovir disoproxil/emtricitabine for pre-exposure prophylaxis the following factors may help to identify individuals at high risk of acquiring HIV-1 infection:

- Has partner(s) known to be HIV-1 infected, or
- Engages in high risk sexual behavior (see section 5.1) or sexual activity within a high prevalence area or social network or has partners from high prevalence areas.

When tenofovir disoproxil/emtricitabine is used to reduce the risk of acquiring HIV-1, advise uninfected individuals about the importance of the following:

- Confirming that they are HIV-negative before starting to take tenofovir disoproxil/emtricitabine to reduce the risk of acquiring HIV-1.
- Hepatitis B vaccination should be offered as appropriate.
- Tenofovir disoproxil/emtricitabine should only be used as part of a complete prevention strategy including other prevention measures. In clinical trials, tenofovir disoproxil/emtricitabine only protected some subjects from acquiring HIV-1.
- Using condoms consistently and correctly to lower the chance of sexual contact with any body fluids such as semen, vaginal secretions, or blood.
- Knowing their HIV status and the status of their partner(s).
- In the case of use of tenofovir disoproxil/emtricitabine for PrEP in an uninfected partner in a serodiscordant relationship, the importance of effective antiretroviral treatment of the HIV-1 infected partner in accordance with the current treatment guidelines should be fully explained.
- Getting tested regularly (at least every 3 months) for HIV-1 and ask their partner(s) to get tested as well.
- Counselled about the importance of safety risks including monitoring of kidney function.
- HIV-1 resistance substitutions may emerge in individuals with undetected HIV-1 infection who are taking tenofovir disoproxil/emtricitabine, because tenofovir disoproxil/emtricitabine alone does not constitute a complete regimen for HIV-1 treatment (see section 4.3, 4.4).
- Reporting any symptoms of acute HIV-1 infection (flu-like symptoms) to their healthcare provider immediately.
- Signs and symptoms of acute infection include: fever, headache, fatigue, arthralgia, vomiting, myalgia, diarrhea, pharyngitis, rash, night sweats, and adenopathy (cervical and inguinal).
- Getting tested for other sexually transmitted infections such as syphilis and gonorrhea that may facilitate HIV-1 transmission.
- Learning about sexual risk behavior and getting support to help reduce sexual risk behaviour.
- Taking tenofovir disoproxil/emtricitabine on a regular dosing schedule and strictly adhere to the recommended dosing schedule to reduce the risk of acquiring HIV-1. Uninfected individuals who miss doses are at greater risk of acquiring HIV-1 than those who do not miss doses (see section 4.4).
- Risks and benefits of tenofovir disoproxil/emtricitabine in women who may be pregnant or intending to become pregnant.

Paediatric

Safety and effectiveness in paediatric patients have not been established.

Elderly

Clinical studies of tenofovir and emtricitabine did not contain sufficient numbers of patients aged 65 years and over to determine whether they respond differently from younger patients. In general, dose selection for the elderly patient should be cautious, keeping in mind the greater frequency of decreased hepatic, renal or cardiac function, and of concomitant disease or other drug therapy (see section 4.2).

4.5 Interaction with other medicines and other forms of interaction

Tenofovir disoproxil fumarate and emtricitabine

The steady state pharmacokinetics of tenofovir and emtricitabine were unaffected when tenofovir disoproxil fumarate and emtricitabine were administered together versus each agent dosed alone.

In vitro and clinical pharmacokinetic drug-drug interaction studies have shown the potential for CYP450 mediated interactions involving tenofovir disoproxil fumarate and emtricitabine with other medicinal products is low.

Tenofovir and emtricitabine are primarily excreted by the kidneys by a combination of glomerular filtration and active tubular secretion. No drug-drug interactions due to competition for renal excretion have been observed; however, co-administration of tenofovir disoproxil/emtricitabine with drugs that are eliminated by active tubular secretion may increase serum concentrations of tenofovir, emtricitabine, and/or the co-administered drug. Drugs that decrease renal function may increase serum concentrations of tenofovir and/or emtricitabine.

No clinically significant drug interactions have been observed between tenofovir disoproxil fumarate and abacavir, efavirenz, emtricitabine, indinavir, lamivudine, lopinavir/ritonavir, methadone, nelfinavir, oral contraceptives, ribavirin, saquinavir/ritonavir, sofosbuvir and tacrolimus. In a study conducted in healthy volunteers dosed with a single 600 mg dose of ribavirin, no clinically significant drug interactions were observed between tenofovir disoproxil fumarate and ribavirin. Similarly, no clinically significant drug interactions have been observed between emtricitabine and famciclovir, indinavir, d4T, AZT and tenofovir disoproxil fumarate.

In drug interaction studies between regimens containing tenofovir disoproxil fumarate and ledipasvir/sofosbuvir, sofosbuvir, sofosbuvir/velpatasvir and sofosbuvir/velpatasvir/voxilaprevir, increases in tenofovir exposure were observed. Patients receiving a regimen containing tenofovir disoproxil fumarate concomitantly with ledipasvir/sofosbuvir, sofosbuvir/velpatasvir or sofosbuvir/velpatasvir/voxilaprevir should be monitored for adverse reactions associated with tenofovir disoproxil fumarate. Table 2 summarises the changes in pharmacokinetic parameters for tenofovir DF in the presence of ledipasvir/sofosbuvir, sofosbuvir, sofosbuvir/velpatasvir, and sofosbuvir/velpatasvir/voxilaprevir.

Table 2: Drug interactions: Changes in pharmacokinetic parameters for Tenofovir[a] in the presence of the co-administered drug

Co-administered Drug	Dose of Co-administered Drug (mg)	N	% Change of Tenofovir Pharmacokinetic Parameters[b] (90% CI)		
			Cmax	AUC	Cmin
Ledipasvir/ Sofosbuvir[c,d]	90/400 oncedaily x 10 days	24	↑47 (↑37 to ↑ 58)	↑35 (↑29 to ↑ 42)	↑47 (↑38 to ↑57)
Ledipasvir/ Sofosbuvir[c,e]		23	↑64 (↑54 to ↑ 74)	↑50 (↑42 to ↑59)	↑59 (↑49 to ↑ 70)
Co-administered Drug	**Dose of Co-administered**	**N**	**% Change of Tenofovir Pharmacokinetic Parameters[b] (90% CI)**		
Ledipasvir/ Sofosbuvir[f]	90/400 once daily x 14 days	15	↑79 (↑56 to ↑104)	↑ 98 (↑77 to 123)	↑163 (↑132 to↑197)
Ledipasvir/ Sofosbuvir[g]	90/400 oncedaily x 10 days	14	↑32 (↑25 to ↑39)	↑40 (↑31 to ↑50)	↑91 (↑74 to ↑110)
Ledipasvir/ Sofosbuvir[h]		29	↑61 (↑51 to ↑72)	↑65 (↑59 to ↑71)	↑115 (↑105 to ↑126)

Sofosbuvir[i]	400 once daily	16	↑25 (↑8 to ↑45)	⇔	⇔
Sofosbuvir/ Velpatasvir[j]	400/100 once daily	24	↑55 (↑43 to ↑68)	↑30 (↑24 to ↑36)	↑39 (↑31 to ↑48)
Sofosbuvir/ Velpatasvir[k]		29	↑55 (↑45 to ↑66)	↑39 (↑33 to ↑44)	↑52 (↑45 to ↑59)
Sofosbuvir/ Velpatasvir[l]		15	↑77 (↑53 to ↑104)	↑81 (↑68 to ↑94)	↑121 (↑100 to ↑143)
Sofosbuvir/ Velpatasvir[m]		24	↑36 (↑25 to ↑47)	↑35 (↑29 to ↑42)	↑45 (↑39 to ↑51)
Sofosbuvir/ Velpatasvir[n]		24	↑44 (↑33 to ↑55)	↑40 (↑34 to ↑46)	↑84 (↑76 to ↑92)
Sofosbuvir/ Velpatasvir[o]		30	↑46 (↑39 to ↑54)	↑40 (↑34 to ↑45)	↑70 (↑61 to ↑79)
Sofosbuvir/Velpatasvir/ Voxilaprevir[p]	400 /100 /100 + Voxilaprevir[q] 100 once daily	29	↑48 (↑36 to ↑61)	↑39 (↑32to ↑46)	↑47 (↑38 to ↑56)

a. Subjects received tenofovir DF 300 mg once daily.
b. Increase = ↑; Decrease = ↓; No Effect = ⇔
c. Data generated from simultaneous dosing with ledipasvir/sofosbuvir. Staggered administration (12 hours apart)provided similar results.
d. Comparison based on exposures when administered as atazanavir/ritonavir + emtricitabine/ tenofovir DF.
e. Comparison based on exposures when administered as darunavir/ritonavir + emtricitabine/ tenofovir DF.
f. Study conducted with efavirenz / tenofovir disoproxil/emtricitabine coadministered with ledipasvir/sofosbuvir.
g. Study conducted with emtricitabine/rilpivirine/tenofovir DF coadministered with ledipasvir/sofosbuvir.
h. Study conducted with tenofovir disoproxil/emtricitabine + dolutegravir coadministered with ledipasvir/sofosbuvir.
i. Study conducted with tenofovir disoproxil/emtricitabine coadministered with sofosbuvir.
j. Comparison based on exposures when administered as atazanavir/ritonavir + tenofovir disoproxil/emtricitabine.
k. Comparison based on exposures when administered as darunavir/ritonavir + tenofovir disoproxil/emtricitabine.
l. Study conducted with efavirenz/ tenofovir disoproxil/emtricitabine coadministered with sofosbuvir/velpatasvir.
m. Study conducted with elvitegravir/cobicistat/ tenofovir disoproxil/emtricitabine coadministered with sofosbuvir/velpatasvir.
n. Study conducted with efavirenz/ tenofovir disoproxil/emtricitabine coadministered with sofosbuvir/velpatasvir.
o. Administered as raltegravir + tenofovir disoproxil/emtricitabine.
p. Comparison based on exposures when administered as darunavir/ritonavir + tenofovir disoproxil/emtricitabine.
q. Study conducted with additional voxilaprevir 100 mg to achieve voxilaprevir exposures expected in HCV-infected patients.

Sofosbuvir

In a drug interaction study of a regimen containing tenofovir disoproxil fumarate given concomitantly with sofosbuvir, tenofovir C_{max} increased by 25%. Tenofovir AUC and C_{min} were unaltered by sofosbuvir coadministration. No dose adjustment of efavirenz/ tenofovir disoproxil/emtricitabine or tenofovir disoproxil/emtricitabine is required (see Table 2).

When unboosted atazanavir (400 mg) was co-administered with tenofovir disoproxil fumarate, atazanavir increased tenofovir C_{max} by 14% and AUC by 24%. Similarly, lopinavir (400 mg)/ritonavir (100 mg) increased tenofovir AUC by 32%.

Co-administration of tenofovir disoproxil fumarate with didanosine and atazanavir results in changes in the pharmacokinetics of didanosine and atazanavir that may be of clinical significance. Concomitant dosing of tenofovir disoproxil fumarate with didanosine buffered tablets or enteric-coated capsules significantly increases the C_{max} and AUC of didanosine. When didanosine 250 mg enteric-coated capsules were administered with tenofovir disoproxil fumarate, systemic exposures of didanosine were similar to those seen with the 400 mg enteric-coated capsules alone under fasted conditions. The mechanism of this interaction is unknown. Higher didanosine concentrations could

potentiate didanosine-associated adverse events, including pancreatitis, lactic acidosis and neuropathy. Suppression of CD4 cell counts has been observed in patients receiving tenofovir disoproxil fumarate with didanosine at a dose of 400 mg daily. In adults weighing ≥60kg, the didanosine dose should be reduced to 250 mg daily when it is co-administered with tenofovir disoproxil/emtricitabine. Data are not available to recommend a dose adjustment of didanosine for patients weighing <60 kg.

When co-administered, tenofovir disoproxil/emtricitabine and didanosine EC may be taken under fasted conditions or with a light meal (<400 kcal, 20% fat). Co-administration of didanosine buffered tablet formulation with tenofovir disoproxil/emtricitabine should be under fasted conditions. **Co-administration of tenofovir disoproxil/emtricitabine and didanosine should be undertaken with caution and patients receiving this combination should be monitored closely for didanosine-associated adverse events. Didanosine should be discontinued in patients who develop didanosine-associated adverse events.**

Tenofovir disoproxil fumarate affects the pharmacokinetics of atazanavir (see Table 3). Tenofovir decreases atazanavir concentration. Tenofovir disoproxil/emtricitabine should only be administered with boosted atazanavir (ATZ 300 mg/RTV 100 mg). The safety and efficacy of this regimen has been substantiated over 48 weeks in a clinical study.

Table 3 summarises the effects of tenofovir disoproxil fumarate on the pharmacokinetics of didanosine and atazanavir.

Table 3: Drug interactions Change in pharmacokinetic parameters for didanosine and atazanavir in the presence of tenofovir DF

Co-administered Drug	Dose of Co-administered Drug (mg)	N	% Change of Co-administeredDrug Pharmacokinetic Parameters[1] (90% CI)		
			C_{max}	AUC	C_{min}
Didanosine[3] enteric-coated capsules	400 once / with or without food[2]	26	↑ 48–64% (↑ 25–↑ 89)	↑ 48–60% (↑ 31–↑ 79)	NC
	250 once / Simultaneously with tenofovir DF, fasted[4]	28	⇔	↑ 14 (0–↑ 31)	NC
	250 once / Simultaneously with tenofovir DF, fed[2, 4]	28	↓ 29 (↓ 39–↓ 18)	↓ 11 (↓ 23–↑ 2)	NC
Atazanavir [5]	400 once daily x 14 days	34	↓ 21 (↓ 27 to ↓ 14)	↓ 25 (↓ 30 to ↓ 19)	↓ 40 (↓ 48 to ↓ 32)
	Atazanavir/Ritonavir[6] 300/100 once daily x 42 days	10	↓ 28 (↓ 50 to ↑ 5) [6]	↓ 25 (↓ 42 to ↓ 3) [6]	↓ 23 (↓ 46 to ↑ 10) [6]

1. Increase = ↑; Decrease = ↓; No Effect = ⇔; NC = Not Calculated
2. Administration with food was with a light meal (~373 kcal, 20% fat).
3. See PRECAUTIONS regarding use of didanosine with tenofovir disoproxil fumarate.
4. Relative to 400 mg alone, fasted.
5. REYATAZ™ Prescribing Information (Bristol-Myers Squibb).
6. In HIV-infected patients, addition of tenofovir DF to atazanavir 300 mg plus ritonavir 100 mg, resulted in AUC and C_{min} values of atazanavir that were 2.3- and 4-fold higher than the respective values observed for atazanavir 400 mg when given alone (REYATAZ™ March 2004 UnitedStates Package Insert).

Since tenofovir and emtricitabine are primarily eliminated by the kidneys, co-administration of tenofovir disoproxil/emtricitabine with drugs that reduce renal function or compete for active tubular secretion may increase serum concentrations of tenofovir, emtricitabine, and/or other renally eliminated drugs.

Paediatric population

Interaction studies have only been performed in adults.

4.6 Fertility, pregnancy and lactation

Pregnancy

Pregnancy Category B3

No clinical data are available for pregnant women being treated with tenofovir disoproxil fumarate or emtricitabine. No embryofoetal development studies have been conducted with tenofovir disoproxil fumarate and emtricitabine in combination.

Reproductive toxicity studies performed in rats and rabbits did not reveal any evidence of harm to the foetus due to tenofovir at respective exposures (AUC) of 4-13 and 66-fold the human exposure. Subcutaneous treatment of pregnant rhesus monkeys with a dose of 30 mg/kg/day of the tenofovir base during the last half of pregnancy resulted in reduced foetal serum phosphorus concentrations. No evidence of embryofoetal toxicity or teratogenicity was observed in mice or rabbits at respective emtricitabine exposures (AUC) of 50 and 130 fold the clinical exposure. Impaired weight gain observed in pregnant rabbits at doses resulting in emtricitabine exposures (AUC) at least 33 times the clinical exposure was not associated with any adverse foetal effects. Because animal reproduction studies are not always predictive of human response, tenofovir disoproxil/emtricitabine should be used during pregnancy only if clearly needed. If an uninfected individual becomes pregnant while taking tenofovir disoproxil/emtricitabine for a PrEP indication, careful consideration should be given to whether use of tenofovir disoproxil/emtricitabine should be continued, taking into account the potential increased risk of HIV-1 infection during pregnancy.

Breast-feeding

Because of the potential for HIV transmission and for serious adverse reactions in nursing infants, mothers should be instructed not to breast feed if they are receiving tenofovir disoproxil/emtricitabine for treatment or to reduce the risk of acquiring HIV-1.

Tenofovir disoproxil fumarate*:* In humans, samples of breast milk obtained from five HIV-1 infected mothers show that tenofovir is secreted in human milk at low concentrations (estimated neonatal concentrations 128 to 266 times lower than the tenofovir IC_{50}) (50% maximal inhibitory concentration). Tenofovir associated risks, including the risk of developing viral resistance to tenofovir, in infants breastfed by mothers being treated with tenofovir disoproxil fumarate are unknown.

Emtricitabine*:* Samples of breast milk obtained from five HIV-1 infected mothers show that emtricitabine is secreted in human milk at estimated neonatal concentrations 3 to 12 times higher than the emtricitabine IC_{50} but 3 to 12 times lower than the C_{min} (minimal expected trough concentration in adults) achieved from oral administration of emtricitabine. Breastfeeding infants whose mothers are being treated with emtricitabine may be at risk for developing viral resistance to emtricitabine. Other emtricitabine-associated risks in infants breastfed by mothers being treated with emtricitabine are unknown.

Fertility

No reproductive toxicity studies have been conducted with tenofovir disoproxil fumarate and emtricitabine in combination. Male and female rat fertility and mating performance or early embryonic development were unaffected by an oral tenofovir disoproxil fumarate dose (600 mg/kg/day) that achieved systemic drug exposures that were in excess of the expected value in humans receiving the therapeutic dose (5-fold based on plasma AUC). There was, however, an alteration of the oestrous cycle in female rats.

Emtricitabine did not affect fertility in male rats or in female and male mice at respective approximate exposures (AUC) of 130 and 50-80 times the exposure in humans. The fertility of offspring was

unaffected by treatment of mice from early gestation to the end of lactation (50 times the human exposure).

4.7 Effects on ability to drive and use machines

No studies on the effects of tenofovir disoproxil/emtricitabine on the ability to drive and use machines have been performed. However, patients should be informed that dizziness has been reported during treatment with both tenofovir disoproxil fumarate and emtricitabine.

4.8 Undesirable effects

Adverse Effects for Clinical Trials Experience in HIV-1 Infected Patients

Four hundred and forty seven HIV-1 infected patients have received combination therapy with emtricitabine and tenofovir disoproxil fumarate 300 mg tablet with either a non-nucleoside reverse transcriptase inhibitor or protease inhibitor for 48 weeks in ongoing clinical studies.

Study 934 – Treatment Emergent Adverse Events

Study 934 was an open-label active-controlled study in which 511 antiretroviral-naïve patients received either emtricitabine + tenofovir disoproxil fumarate administered in combination with efavirenz (n=257) or lamivudine/zidovudine administered in combination with efavirenz (n=254). Adverse events observed in this study were generally consistent with those seen in previous studies in treatment-experienced or treatment-naïve patients (Table 4). Adverse events leading to study drug discontinuation occurred in significantly smaller number of patients in the tenofovir disoproxil/emtricitabine group compared to the lamivudine/zidovudine group (5% vs 11%, p=0.010). The most frequently occurring adverse event leading to study drug discontinuation was anaemia (including decreased haemoglobin), no patient in the tenofovir disoproxil/emtricitabine group and 6% of patients in the lamivudine/zidovudine group.

Table 4. Frequency of Adverse Reactions to Emtricitabine and/or Tenofovir Disoproxil Fumarate (Grade 2-4) Occurring in ≥ 3% of Patients Receiving Emtricitabine and Tenofovir Disoproxil Fumarate (or Tenofovir disoproxil/emtricitabine) in Study 394 (0-144 weeks)[1]

Adverse Reaction	Tenofovir and Emtricitabine[2] + Efavirenz N=257	Lamivudine/ Zidovudine + Efavirenz N=254
Gastrointestinal Disorders		
Diarrhoea	9%	5%
Nausea	9%	7%
Nervous System Disorders		
Headache	6%	5%
Dizziness	8%	7%
Psychiatric Disorders		
Insomnia	5%	7%
Abnormal Dreams	4%	3%
Skin and Subcutaneous Tissue Disorders		
Rash	5%	4%

1. Frequencies of adverse reactions are based on all treatment-emergent adverse events, regardless of relationship to study drug.
2. Patients received emtricitabine and tenofovir disoproxil fumarate up to week 96 and switched to tenofovir disoproxil/emtricitabine from week 96 to 144.

Laboratory Abnormalities: Laboratory abnormalities observed in this study were generally consistent with those seen in previous studies (Table 5).

Table 5. Grade 3/4 Laboratory Abnormalities Reported in >1% of Patients of Either Treatment Group, Study 934 (0-144 weeks)

	Tenofovir and Emtricitabine[1] + Efavirenz N=254	Lamivudine/ Zidovudine + Efavirenz N=251
Any ≥ Grade 3 Laboratory Abnormality	30%	26%
Creatine Kinase (M: >990 U/L) (F: >845 U/L)	9%	7%
Serum Amylase (>175 U/L)	8%	4%
AST (M: >180 U/L) (F: >170 U/L)	3%	3%
ALT (M: >215 U/L) (F: >170 U/L)	2%	2%
Hyperglycaemia (>250 mg/dL)	2%	1%
Haematuria (>75 RBC/HPF)	3%	2%
Neutrophil (<750/mm^3)	3%	5%
Triglyceride (>750 mg/dL)	5%	3%
Haemoglobin (<7.0 g/dL)	0%	2%

1. Patients received emtricitabine and tenofovir disoproxil fumarate up to week 96 and switched to tenofovir disoproxil/emtricitabine from week 96 to 144.

Tenofovir Disoproxil Fumarate

From Clinical Studies

More than 12,000 patients have been treated with tenofovir disoproxil fumarate alone or in combination with other antiretroviral medicinal products for periods of 28 days to 215 weeks in Phase I-III clinical trials and expanded access studies. A total of 1,544 patients have received tenofovir disoproxil fumarate 300 mg once daily in Phase I-III clinical trials; over 11,000 patients have received tenofovir disoproxil fumarate in expanded access studies

Treatment-Experienced Patients

Treatment-Emergent Adverse Events

The most common adverse events that occurred in patients receiving tenofovir disoproxil fumarate with other antiretroviral agents in clinical trials were mild to moderate gastrointestinal events, such as nausea, diarrhoea, vomiting and flatulence. Less than 1% of patients discontinued participation in the clinical studies due to gastrointestinal adverse events (Study 907).

A summary of treatment-emergent adverse events that occurred during the first 48 weeks of Study 907 is provided in Table 6 (below).

Table 6. Selected Treatment-Emergent Adverse Events (Grades 2-4) Reported in ≥ 3% in Any Treatment Group in Study 907 (0-4 weeks)

	Tenofovir disoproxil fumarate (N=368) (Week 0–24)	Placebo (N=182) (Week 0-24)	Tenofovir disoproxil fumarate (N=368) (Week 0–48)	Placebo Crossover to Tenofovir disoproxil fumarate (N=170) (Week 24–48)
Body as a Whole				
Asthenia	7%	6%	11%	1%
Pain	7%	7%	12%	4%
Headache	5%	5%	8%	2%
Abdominal Pain	4%	3%	7%	6%

Back Pain	3%	3%	4%	2%
Chest Pain	3%	1%	3%	2%
Fever	2%	2%	4%	2%
Digestive System				
Diarrhoea	11%	10%	16%	11%
Nausea	8%	5%	11%	7%
Vomiting	4%	1%	7%	5%
Anorexia	3%	2%	4%	1%
Dyspepsia	3%	2%	4%	2%
Flatulence	3%	1%	4%	1%
Respiratory				
Pneumonia	2%	0%	3%	2%
Nervous System				
Depression	4%	3%	8%	4%
Insomnia	3%	2%	4%	4%
Peripheral Neuropathy[1]	3%	3%	5%	2%
Dizziness	1%	3%	3%	1%
Skin and Appendage				
Rash Event[2]	5%	4%	7%	1%
Sweating	3%	2%	3%	1%
Musculoskeletal				
Myalgia	3%	3%	4%	1%
Metabolic				
Weight Loss	2%	1%	4%	2%

1. Peripheral neuropathy includes peripheral neuritis and neuropathy.
2. Rash event includes rash, pruritus, maculopapular rash, urticaria, vesiculobullous rash, and pustular rash.

Laboratory Abnormalities: Laboratory abnormalities observed in this study occurred with similar frequency in the tenofovir disoproxil fumarate and placebo-treated groups. A summary of Grade 3 and 4 laboratory abnormalities is provided in Table 7 (below).

Table 7. Grade 3/4 Laboratory Abnormalities Reported in ≥ 1% of Tenofovir Disoproxil Fumarate-Treated Patients in Study 907 (0-48 weeks)

	Tenofovir disoproxil fumarate (N=368) (Week 0–24)	**Placebo (N=182) (Week 0–24)**	**Tenofovir disoproxil fumarate (N=368) (Week 0–48)**	**Placebo Crossover to Tenofovir disoproxil fumarate (N=170) (Week 24–48)**
	(%)	**(%)**	**(%)**	**(%)**
Any ≥ Grade 3 Laboratory Abnormality	25%	38%	35%	34%
Triglycerides (>750 mg/dL)	8%	13%	11%	9%
Creatine Kinase (M: >990 U/L) (F: >845 U/L)	7%	14%	12%	12%
Serum Amylase (>175 U/L)	6%	7%	7%	6%
Urine Glucose (≥3+)	3%	3%	3%	2%
AST (M: >180 U/L) (F: >170 U/L)	3%	3%	4%	5%

ALT (M: >215 U/L) (F: >170 U/L)	2%	2%	4%	5%
Serum Glucose (>250 U/L)	2%	4%	3%	3%
Neutrophils (<750 mg/dL)	1%	1%	2%	1%

Treatment-Naïve Patients

Treatment-Emergent Adverse Effects

The adverse reactions seen in a double-blind active controlled study in which 600 treatment-naïve patients received tenofovir disoproxil fumarate (N=299) or stavudine (N=301) in combination with lamivudine and efavirenz for 144 weeks (Study 903) were generally consistent, with the addition of dizziness, with those seen in treatment- experienced patients (Table 8).

Mild adverse events (Grade 1) were common with a similar incidence in both arms, and included dizziness, diarrhoea and nausea.

Table 8. Selected Treatment-Emergent Adverse Events (Grade 2-4) Reported in ≥ 5% in Any Treatment Group in Study 903 (0-144 weeks)

	Tenofovir disoproxil fumarate + lamivudine + efavirenz	**Stavudine + lamivudine + efavirenz**
	N=299	**N=301**
Body as a Whole		
Headache	14%	17%
Pain	13%	12%
Back Pain	9%	8%
Fever	8%	7%
Abdominal Pain	7%	12%
Asthenia	6%	7%
Digestive System		
Diarrhoea	11%	13%
Nausea	8%	9%
Vomiting	5%	9%
Dyspepsia	4%	5%
Metabolic Disorders		
Lipodystrophy	1%	8%
Musculoskeletal		
Arthralgia	5%	7%
Myalgia	3%	5%
Nervous System		
Depression	11%	10%
Anxiety	6%	6%
Insomnia	5%	8%
Dizziness	3%	6%
Peripheral Neuropathy[1]	1%	5%
Respiratory		
Pneumonia	5%	5%
Skin and Appendages		
Rash Event[2]	18%	12%

1. Peripheral neuropathy includes peripheral neuritis and neuropathy
2. Rash event includes rash, pruritus, maculopapular rash, urticaria, vesiculobullous rash, and pustular rash

Laboratory Abnormalities: With the exception of triglyceride elevations that were more common in the stavudine group (14%) compared with tenofovir disoproxil fumarate (3%), laboratory abnormalities observed in this study occurred with similar frequency in the tenofovir disoproxil fumarate and stavudine treatment arms. A summary of Grade 3 and 4 laboratory abnormalities is provided in Table 9.

Table 9. Grade 3/4 Laboratory Abnormalities Reported in ≥1% of Tenofovir Disoproxil Fumarate-Treated Patients in Study 903 (0-144 weeks)

	Tenofovir disoproxil fumarate + lamivudine + efavirenz	Stavudine + lamivudine + efavirenz
	N=299	N=301
Any ≥ Grade 3 Laboratory Abnormality	36%	42%
Creatine Kinase (M: > 990 U/L) (F: > 845 U/L)	12%	12%
Serum Amylase (>175 U/L)	9%	8%
AST (M: >180 U/L) (F: >170 U/L)	5%	7%
ALT (M: >215 U/L) (F: >170 U/L)	4%	5%
Haematuria (>100 RBC/HPF)	7%	7%
Neutrophil (<750/mm^3)	3%	1%
Triglyceride (>750 mg/dL)	3%	13%

Adverse Reactions from Clinical Trial Experience in HIV-1 Uninfected Adult Subjects

No new adverse reactions to tenofovir disoproxil/emtricitabine were identified from two randomised placebo-controlled clinical trials (iPrEx, Partners PrEP) in which 2830 HIV-1 uninfected adults received tenofovir disoproxil/emtricitabine once daily for pre-exposure prophylaxis. Subjects were followed for a median of 71 weeks and 87 weeks, respectively. These trials enrolled HIV-negative individuals ranging in age from 18 to 67 years. The iPrEx trial enrolled only males or transgender females of Hispanic/Latino (72%), White (18%), Black (9%) and Asian (5%) race. The Partners PrEP trial enrolled both males (61-64% across treatment groups) and females in Kenya and Uganda. Table 10 provides a list of all adverse events that occurred in ≥2% of patients in any treatment group in the iPrEx and Partners PrEP trials.

Laboratory Abnormalities: Table 11 provides a list of laboratory abnormalities observed in both trials. Six subjects in the Tenofovir Disoproxil Fumarate-containing arms of the Partners PrEP trial discontinued participation in the study due to an increase in blood creatinine compared with no discontinuations in the placebo group. One patient in the tenofovir disoproxil/emtricitabine arm of the iPrEx trial discontinued from the study due to an increase in blood creatinine and another due to low phosphorous.

In addition to the laboratory abnormalities described above, Grade 1 proteinuria (1+) occurred in 6% of subjects receiving tenofovir disoproxil/emtricitabine in the iPrEx trial. Grades 2-3 proteinuria (2-4+) and glycosuria (3+) occurred in less than 1% of subjects treated with tenofovir disoproxil/emtricitabine in the iPrEx trial and Partners PrEP trial.

Table 10. Selected Adverse-Events (All Grades) Reported in ≥ 2% in Any Treatment Group in the iPrEx Trial and Partners PrEP Trial

	iPrEx Trial		Partners PrEP Trial	
	Emtricitabine/Tenofovir Disoproxil Fumarate (N=1251)	Placebo (N=1248)	Emtricitabine/Tenofovir Disoproxil Fumarate (N=1579)	Placebo (N=1584)
Gastrointestinal Disorders				
Diarrhoea	7%	8%	2%	3%
Abdominal pain	4%	2%	-[a]	-
Infections and Infestations				
Pharyngitis	13%	16%	-	-
Urethritis	5%	7%	-	-
Urinary tract infection	2%	2%	5%	7%
Syphilis	6%	5%	-	-
Secondary syphilis	6%	4%	-	-
Anogenital warts	2%	3%	-	-
Musculoskeletal and Connective Tissue Disorders				
Back pain	5%	5%	-	-
Nervous System Disorders				
Headache	7%	6%	-	-
Psychiatric Disorders				
Depression	6%	7%	-	-
Anxiety	3%	3%	-	-
Reproductive System and Breast Disorders				
Genital ulceration	2%	2%	2%	2%
Investigations				
Weight decreased	3%	2%	-	-

a. Not reported or reported below 2%.

Table 11. Laboratory Abnormalities (Highest Toxicity Grade) Reported for Each Subject in the iPrEx Trial and Partners PrEP Trial

	Grade[b]	iPrEx Trial		Partners PrEP Trial	
		Emtricitabine/Tenofovir Disoproxil Fumarate N= 1251	Placebo N=1248	Emtricitabine/Tenofovir Disoproxil Fumarate N=1579	Placebo N=1584
Creatinine	1 (1.1 - 1.3 x ULN)	27 (2%)	21 (2%)	18 (1%)	12 (<1%)
	2-4 (>1.4 x ULN)	5 (<1%)	3 (<1%)	2 (<1%)	1 (<1%)
Phosphorus	1 (2.5 - <LLN mg/dL)	81 (7%)	110 (9%)	NR[a]	NR[a]
	2-4 (<2.0 mg/dL)	123 (10%)	101 (8%)	140 (9%)	136 (9%)
AST	1 (1.25 - <2.5 x ULN)	175 (14%)	175 (14%)	20 (1%)	25 (2%)
	2-4 (> 2.6 x ULN)	57 (5%)	61 (5%)	10 (<1%)	4 (<1%)
ALT	1 (1.25 - <2.5 x ULN)	178 (14%)	194 (16%)	21 (1%)	13 (<1%)
	2-4 (> 2.6 x ULN)	84 (7%)	82 (7%)	4 (<1%)	6 (<1%)
Hemoglobin	1 (8.5 - 10 mg/dL)	49 (4%)	62 (5%)	56 (4%)	39 (2%)
	2-4 (< 9.4 mg/dL)	13 (1%)	19 (2%)	28 (2%)	39 (2%)

Neutrophils	1 (1000 - 1300/mm^3)	23 (2%)	25 (2%)	208 (13%)	163 (10%)
	2-4 (<750/mm^3)	7 (<1%)	7 (<1%)	73 (5%)	56 (3%)

a. Grade 1 phosphorus was not reported for the Partners PrEP trial.
b. Grading is per DAIDS criteria.

Changes in Bone Mineral Density:

In clinical trials of HIV-1 uninfected individuals, decreases in BMD were observed. In the iPrEx trial, a substudy of 503 subjects found mean changes from baseline in BMD ranging from -0.4% to -1.0% across total hip, spine, femoral neck, and trochanter in the tenofovir disoproxil/emtricitabine group compared with the placebo group, which returned toward baseline after discontinuation of treatment. Thirteen percent of subjects receiving tenofovir disoproxil/emtricitabine vs. 6% of subjects receiving placebo lost at least 5% of BMD at the spine during treatment. Bone fractures were reported in 1.7% of the tenofovir disoproxil/emtricitabine group compared with 1.4% in the placebo group. No correlation between BMD and fractures was noted (see section 5.1). The Partners PrEP trial found similar fracture rates between treatment and placebo groups (0.8% and 0.6%, respectively). No BMD evaluations were conducted during this trial (see section 5.1).

From Post Marketing Surveillance

In addition to adverse events reported from clinical trials, the following events have been identified during post-approval use of tenofovir disoproxil fumarate.

Immune System Disorders

Allergic reaction (including angioedema).

Metabolism and Nutrition Disorders

Hypokalaemia, hypophosphataemia, lactic acidosis.

Respiratory, Thoracic and Mediastinal Disorders

Dyspnoea.

Gastrointestinal Disorders

Increased amylase, abdominal pain, pancreatitis.

Hepatobiliary Disorders

Hepatic steatosis, increased liver enzymes (most commonly AST, ALT, gamma GT), hepatitis.

Skin and Subcutaneous Tissue Disorders

Rash.

Musculoskeletal and Connective Tissue Disorders

Rhabdomyolysis, muscular weakness, myopathy, osteomalacia (manifested as bone pain and infrequently contributing to fractures).

Renal and Urinary Disorders

Increased creatinine, renal insufficiency, renal failure, acute renal failure, Fanconi syndrome, proximal renal tubulopathy, nephrogenic diabetes insipidus, proteinuria, acute tubular necrosis, polyuria, interstitial nephritis (including acute cases).

General Disorders and Administration Site Conditions

Asthaenia.

The following adverse reactions, listed under the body system headings above, may occur as a consequence of proximal renal tubulopathy: rhabdomyolysis, osteomalacia (manifested as bone pain and infrequently contributing to fractures), hypokalaemia, muscular weakness, myopathy, hypophosphataemia. These events are not considered to be causally associated with tenofovir disoproxil fumarate therapy in the absence of proximal renal tubulopathy.

Adverse reactions attendant to class: Nephrotoxicity (elevation in serum creatinine and urine protein, and decrease in serum phosphorus) is the dose-limiting toxicity associated with other nucleotide analogues (cidofovir and high doses of adefovir dipivoxil evaluated for HIV disease (60 mg and 120 mg)).

Emtricitabine

More than 2000 adult patients with HIV infection have been treated with emtricitabine alone or in combination with other antiretroviral agents for periods of 10 days to 200 weeks in Phase I-III clinical trials.

Assessment of adverse reactions is based on data from studies 303 and 301A in which 440 treatment experienced (303) and 571 treatment naïve (301A) patients received emtricitabine 200 mg (N=580) or comparator drug (N=431) for 48 weeks.

The most common adverse events that occurred in patients receiving emtricitabine with other antiretroviral agents in clinical trials were headache, diarrhoea, nausea, and rash, which were generally of mild to moderate severity. Approximately 1% of patients discontinued participation in the clinical studies because of these events. All adverse events were reported with similar frequency in emtricitabine and control treatment groups with the exception of skin discolouration which was reported with higher frequency in the emtricitabine treated group.

Skin discolouration, manifested by hyperpigmentation on the palms and/or soles was generally mild and asymptomatic. The mechanism and clinical significance are unknown.

In addition to the adverse reactions reported in adults, anaemia has been reported commonly and hyperpigmentation very commonly, in paediatric patients.

A summary of emtricitabine treatment emergent clinical adverse events in studies 303 and 301A is provided in Table 12.

Table 12. Selected Treatment-Emergent Adverse Events (All Grades, Regardless of Causality) Reported in ≥ 3% of Emtricitabine-Treated Patients in Either Study 303 or 301A (0-48 Weeks)

	303		301A	
	Emtricitabine + Zidovudine/ Stavudine + NNRTI/PI (N=294)	**Lamivudine + Zidovudine/ Stavudine + NNRTI/PI (N=146)**	**Emtricitabine + Didanosine + Efavirenz (N=286)**	**Stavudine + Didanosine + Efavirenz (N=285)**
Body as a Whole				
Abdominal Pain	8%	11%	14%	17%
Asthenia	16%	10%	12%	17%
Headache	13%	6%	22%	25%
Digestive System				
Diarrhoea	23%	18%	23%	32%
Dyspepsia	4%	5%	8%	12%
Nausea	18%	12%	13%	23%
Vomiting	9%	7%	9%	12%

Musculoskeletal				
Arthralgia	3%	4%	5%	6%
Myalgia	4%	4%	6%	3%
Nervous System				
Abnormal Dreams	2%	<1%	11%	19%
Depressive Disorders	6%	10%	9%	13%
Dizziness	4%	5%	25%	26%
Insomnia	7%	3%	16%	21%
Neuropathy/Peripheral Neuritis	4%	3%	4%	13%
Paresthaesia	5%	7%	6%	12%
Respiratory				
Increased Cough	14%	11%	14%	8%
Rhinitis	18%	12%	12%	10%
Skin				
Rash Event[1]	17%	14%	30%	33%

1. Rash event includes rash, pruritus, maculopapular rash, urticaria, vesiculobullous rash, pustular rash, and allergic reaction.

Laboratory Abnormalities: Laboratory abnormalities observed in the emtricitabine studies occurred with similar frequency in the treatment and placebo-treated/comparator groups.

A summary of Grade 3 and 4 laboratory abnormalities is provided in Table 13.

Table 13. Treatment-Emergent Grade 3/4 Laboratory Abnormalities Reported in > 1% of Emtricitabine-Treated Patients in Either Study 303 or 301A

	303		301A	
	Emtricitabine + Zidovudine/ Stavudine + NNRTI/PI (N=294)	**Lamivudine + Zidovudine/ Stavudine + NNRTI/PI (N=146)**	**Emtricitabine + Didanosine + Efavirenz (N=286)**	**Stavudine + Didanosine + Efavirenz (N=285)**
Percentage with Grade 3 or Grade 4 laboratory	31%	28%	34%	38%
ALT (>5.0 x ULN[1])	2%	1%	5%	6%
AST (>5.0 x ULN)	3%	<1%	6%	9%
Bilirubin (>2.5 x ULN)	1%	2%	<1%	<1%
Creatine Kinase (>4.0 x ULN)	11%	14%	12%	11%
Neutrophils (<750 mm^3)	5%	3%	5%	7%
Pancreatic Amylase (>2.0 x ULN)	2%	2%	<1%	1%
Serum Amylase (>2.0 x ULN)	2%	2%	5%	10%
Serum Glucose (<40 or >250 mg/dL)	3%	3%	2%	3%
Serum Lipase (>2.0 x ULN)	<1%	<1%	1%	2%
Triglycerides (>750 mg/dL)	10%	8%	9%	6%

1. ULN=Upper limit of normal.

From Post Marketing Surveillance

No additional events have been identified for inclusion in this section.

Tenofovir disoproxil/emtricitabine

From Post Marketing Surveillance

Immune Reconstitution Syndrome: In HIV-infected patients with severe immune deficiency at the time of initiation of antiretroviral therapy, an inflammatory reaction to infectious pathogens (active or inactive) may arise (see section 4.4).

Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicine is important. It allows continued monitoring of the benefit/risk balance of the medicine. Healthcare professionals are asked to report any suspected adverse reactions https://nzphvc.otago.ac.nz/reporting/

4.9 Overdose

There is no known antidote for Tenofovir Disoproxil Emtricitabine Viatris. If overdose occurs the patient must be monitored for evidence of toxicity, and standard supportive treatment applied as necessary.

Tenofovir disoproxil fumarate

Clinical experience of doses higher than the therapeutic dose of tenofovir disoproxil fumarate is available from two studies. In one study, intravenous tenofovir, equivalent to 16.7 mg/kg/day of tenofovir disoproxil fumarate, was administered daily for 7 days. In the second study, 600 mg of tenofovir disoproxil fumarate was administered to patients orally for 28 days. No unexpected or severe adverse reactions were reported in either study. The effects of higher doses are not known.

Tenofovir is efficiently removed by haemodialysis with an extraction coefficient of approximately 54%. Following a single 300 mg dose of tenofovir disoproxil fumarate, a four-hour haemodialysis session removed approximately 10% of the administered tenofovir dose.

Emtricitabine

Limited clinical experience is available at doses higher than the therapeutic dose of emtricitabine. In one clinical pharmacology study, single doses of emtricitabine 1200 mg were administered to 11 patients. No severe adverse reactions were reported. The effects of higher doses are not known.

Haemodialysis treatment removes approximately 30% of the emtricitabine dose over a three-hour dialysis period starting within 1.5 hours of emtricitabine dosing (blood flow rate of 400 mL/min and a dialysate flow rate of 600 mL/min). It is not known whether emtricitabine can be removed by peritoneal dialysis.

For further advice on management of overdose please contact the National Poisons Information Centre (0800 POISON or 0800 764 766).

5. Pharmacological Properties

5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Antivirals for treatment of HIV infections, combinations; nucleoside and nucleotide reverse transcriptase inhibitors. ATC code: J05AR03.

Mechanism of action

Tenofovir disoproxil maleate: Tenofovir disoproxil maleate is an acyclic nucleoside phosphonate diester analog of adenosine monophosphate. Tenofovir disoproxil fumarate requires initial diester hydrolysis for conversion to tenofovir and subsequent phosphorylations by cellular enzymes to form tenofovir diphosphate. Tenofovir diphosphate inhibits the activity of HIV-1 reverse transcriptase by competing with the natural substrate deoxyadenosine 5′-triphosphate and, after incorporation into

DNA, by DNA chain termination. Tenofovir diphosphate is a weak inhibitor of mammalian DNA polymerases α, β, and mitochondrial DNA polymerase ɣ.

Emtricitabine: Emtricitabine, a synthetic nucleoside analog of cytidine, is phosphorylated by cellular enzymes to form emtricitabine 5'-triphosphate. Emtricitabine 5'-triphosphate inhibits the activity of the HIV-1 reverse transcriptase by competing with the natural substrate deoxycytidine 5'-triphosphate by being incorporated into nascent viral DNA which results in chain termination. Emtricitabine 5′-triphosphate is a weak inhibitor of mammalian DNA polymerase α, β, ε and mitochondrial DNA polymerase ɣ.

Antiviral activity *in vitro*

Tenofovir plus Emtricitabine: In combination studies evaluating the *in vitro* antiviral activity of tenofovir and emtricitabine together, synergistic antiviral effects were observed. Additive to synergistic effects were observed in combination studies with protease inhibitors, integrase strand transfer inhibitors, and with nucleoside and non-nucleoside analogue inhibitors of HIV-1 reverse transcriptase.

Tenofovir disoproxil fumarate: The *in vitro* antiviral activity of tenofovir against laboratory and clinical isolates of HIV-1 was assessed in lymphoblastoid cell lines, primary monocyte/macrophage cells and peripheral blood lymphocytes. The IC_{50} (50% inhibitory concentration) values for tenofovir were in the range of 0.04-8.5 μM. In drug combination studies of tenofovir with nucleoside reverse transcriptase inhibitors (abacavir, didanosine, lamivudine (3TC), stavudine (d4T), zalcitabine, zidovudine (AZT)), non-nucleoside reverse transcriptase inhibitors (delavirdine, efavirenz, nevirapine), and protease inhibitors (amprenavir, indinavir, nelfinavir, ritonavir, saquinavir), additive to synergistic effects were observed. Tenofovir displayed antiviral activity *in vitro* against HIV-1 clades A, B, C, D, E, F, G and O (IC_{50} values ranged from 0.5-2.2 μM). In addition, tenofovir has also been shown to be active *in vitro* against HIV-2, with similar potency as observed against HIV-1.

Emtricitabine: The *in vitro* antiviral activity of emtricitabine against laboratory and clinical isolates of HIV was assessed in lymphoblastoid cell lines, the MAGI-CCR5 cell line, and peripheral blood mononuclear cells. The IC_{50} value for emtricitabine was in the range of 0.0013-0.64 μM (0.0003-0.158 μg/mL). In drug combination studies of emtricitabine with nucleoside reverse transcriptase inhibitors (abacavir, 3TC, d4T, zalcitabine, AZT), nonnucleoside reverse transcriptase inhibitors (delavirdine, efavirenz, nevirapine), and protease inhibitors (amprenavir, nelfinavir, ritonavir, saquinavir), additive to synergistic effects were observed. Emtricitabine displayed antiviral activity *in vitro* against HIV-1 clades A, C, D, E, F, and G (IC_{50} values ranged from 0.007-0.075 μM) and showed strain specific activity against HIV-2 (IC_{50} values ranged from 0.007-1.5 μM).

Prophylactic Activity in a Nonhuman Primate Model of HIV Transmission

Emtricitabine and Tenofovir Disoproxil Fumarate: The prophylactic activity of the combination of daily oral emtricitabine and tenofovir disoproxil fumarate was evaluated in a controlled study of macaques inoculated once weekly for 14 weeks with SIV/HIV-1 chimeric virus (SHIV) applied to the rectal surface. Of the 18 control animals, 17 became infected after a median of 2 weeks. In contrast, 4 of the 6 animals treated daily with oral emtricitabine and tenofovir disoproxil fumarate remained uninfected and the two infections that did occur were significantly delayed until 9 and 12 weeks and exhibited reduced viremia. An M184I-expressing FTC-resistant variant emerged in 1 of the 2 macaques after 3 weeks of continued drug exposure.

Anti-Hepatitis B Virus Activity *in vitro*

Tenofovir disoproxil fumarate: Tenofovir inhibits HBV production in HepG2 2.2.15 cells with an IC_{50} value of 1.1 μM.

Emtricitabine: Emtricitabine inhibits HBV production against laboratory strains of HBV with IC_{50} values in the range of 0.01 to 0.04 μM.

Drug Resistance

Tenofovir disoproxil fumarate: HIV-1 isolates with reduced susceptibility to tenofovir have been selected *in vitro*. These viruses expressed a K65R mutation in reverse transcriptase and showed a 2-4 fold reduction in susceptibility to tenofovir. In addition, a K70E substitution in HIV-1 reverse transcriptase has been selected by tenofovir and results in low-level reduced susceptibility to abacavir, emtricitabine, tenofovir and lamivudine.

Tenofovir-resistant isolates of HIV-1 have also been recovered from some patients treated with tenofovir disoproxil fumarate in combination with other antiretroviral agents. In treatment-naïve patients treated with tenofovir disoproxil fumarate + lamivudine + efavirenz through 144 weeks, viral isolates from 8/47 (17%) patients with virologic failure showed reduced susceptibility to tenofovir. In treatment-naïve patients treated with emtricitabine + tenofovir disoproxil fumarate + efavirenz through 144 weeks, none of the HIV isolates from 19 patients analyzed for resistance showed reduced susceptibility to tenofovir or the presence of the K65R mutation. In treatment-experienced patients, 14/304 (4.6%) of the tenofovir disoproxil fumarate-treated patients with virologic failure showed reduced susceptibility to tenofovir. Genotypic analysis of the resistant isolates showed the K65R mutation in the HIV-1 reverse transcriptase gene.

Emtricitabine: Emtricitabine-resistant isolates of HIV have been selected *in vitro*. Genotypic analysis of these isolates showed that the reduced susceptibility to emtricitabine was associated with a mutation in the HIV reverse transcriptase gene at codon 184 which resulted in an amino acid substitution of methionine by valine or isoleucine (M184V/I).

Emtricitabine-resistant isolates of HIV have been recovered from some patients treated with emtricitabine alone or in combination with other antiretroviral agents. In a clinical study, viral isolates from 37.5% of treatment-naïve patients with virologic failure showed reduced susceptibility to emtricitabine. Genotypic analysis of these isolates showed that the resistance was due to M184V/I mutations in the HIV reverse transcriptase gene. In a second study in treatment-naïve patients, genotyping of viral isolates from 2/12 (17%) patients showed development of the M184V/I mutation.

iPrEx Trial: In a clinical study of HIV-1 seronegative subjects (see section 5.1), no amino acid substitutions associated with resistance to emtricitabine or tenofovir were detected at the time of seroconversion among 48 subjects in the tenofovir disoproxil/emtricitabine group and 83 subjects in the placebo group who became infected with HIV-1 during the trial. Ten subjects were observed to be HIV-1 infected at time of enrollment. The M184V/I substitutions associated with resistance to emtricitabine were observed in 3 of the 10 subjects (2 of 2 in the tenofovir disoproxil/emtricitabine group and 1 of 8 in the placebo group). One of the two subjects in the tenofovir disoproxil/emtricitabine group harbored wild type virus at enrollment and developed the M184V substitution 4 weeks after enrollment. The other subject had indeterminate resistance at enrollment but was found to have the M184I substitution 4 weeks after enrollment.

Partners PrEP Trial: In a clinical study of HIV-1 seronegative subjects (see section 5.1), no variants expressing amino acid substitutions associated with resistance to emtricitabine or tenofovir were detected at the time of seroconversion among 12 subjects in the tenofovir disoproxil/emtricitabine group, 15 subjects in the tenofovir disoproxil fumarate group, and 51 subjects in the placebo group. Fourteen subjects were observed to be HIV-1 infected at the time of enrollment (3 in the tenofovir disoproxil/emtricitabine group, 5 in the tenofovir disoproxil fumarate group, and 6 in the placebo group). One of the three subjects in the tenofovir disoproxil/emtricitabine group who was infected with wild type virus at enrollment selected an M184V expressing virus by week 12. Two of the five subjects in the tenofovir disoproxil fumarate group had tenofovir-resistant viruses at the time of seroconversion; one subject infected with wild type virus at enrollment developed a K65R substitution by week 16, while the second subject had virus expressing the combination of D67N and K70R substitutions upon seroconversion at week 60, although baseline virus was not genotyped and it is unclear if the resistance emerged or was transmitted. Following enrollment, 4 subjects (2 in the tenofovir disoproxil fumarate group, 1 in the tenofovir disoproxil/emtricitabine group, and 1 in the placebo group) had virus expressing K103N or V106A substitutions, which confer high-level resistance to NNRTIs but have not been associated with tenofovir or emtricitabine and may have been present in the infecting virus.

Cross-resistance

Cross-resistance among certain reverse transcriptase inhibitors has been recognized.

Tenofovir disoproxil fumarate: The K65R and K70E substitutions can also be selected by abacavir or didanosine and result in reduced susceptibility to these agents plus abacavir, didanosine, emtricitabine, tenofovir and lamivudine. Patients with HIV-1 expressing three or more thymidine analogue associated mutations (TAMs) that included either the M41L or L210W reverse transcriptase mutation showed reduced susceptibility to tenofovir disoproxil fumarate. Multinucleoside resistant HIV-1 with a T69S double insertion mutation in the reverse transcriptase showed reduced susceptibility to tenofovir.

Emtricitabine: Emtricitabine-resistant isolates (M184V/I) were cross-resistant to lamivudine and zalcitabine but retained sensitivity to abacavir, didanosine, d4T, tenofovir, zidovudine, and NNRTIs (delavirdine, efavirenz, and nevirapine). HIV-1 isolates containing the K65R mutation, selected *in vivo* by abacavir, didanosine, tenofovir, and zalcitabine, demonstrated reduced susceptibility to inhibition by emtricitabine. Viruses harbouring mutations conferring reduced susceptibility to d4T and zidovudine (M41L, D67N, K70R, L210W, T215Y/F, K219Q/E) or didanosine (L74V) remained sensitive to emtricitabine. HIV-1 containing the K103N mutation associated with resistance to NNRTIs was susceptible to emtricitabine.

Clinical efficacy and safety

Clinical study 934, which demonstrated the safety and efficacy of emtricitabine tablet and tenofovir disoproxil fumarate 300 mg tablet in combination with efavirenz in treatment-naïve adults, supports the use of tenofovir disoproxil/emtricitabine tablets for the treatment of HIV-1 infection. Additional supportive data are derived from study 903, in which lamivudine and tenofovir were used in combination in treatment-naïve adults. In clinical study 303 emtricitabine and lamivudine demonstrated comparable efficacy, safety and resistance patterns as part of multidrug regimens. For additional information about these trials, please refer to the individual Data Sheet for tenofovir disoproxil fumarate and Data sheet for emtricitabine. The iPrEx study and Partners PrEP study support the use of tenofovir disoproxil/emtricitabine tablets to help reduce the risk of acquiring HIV-1.

Tenofovir disoproxil/emtricitabine

Study 934: Emtricitabine + tenofovir disoproxil fumarate + efavirenz compared with lamivudine/zidovudine + efavirenz

Study 934 is a randomized, open-label, active controlled multicentre study comparing two different dosing regimens in 511 antiretroviral-naïve HIV-1 infected patients. Patients were randomised to receive either emtricitabine + tenofovir disoproxil fumarate administered in combination with efavirenz or lamivudine/zidovudine administered in combination with efavirenz. For patients randomised to receive emtricitabine + tenofovir disoproxil fumarate the two drugs were administered individually for the first 96 weeks and then switched to tenofovir disoproxil/emtricitabine (fixed dose combination) during weeks 96 to 144, without regard to food.

For inclusion in the study, antiretroviral treatment naïve adult patients (≥ 18 years) with plasma HIV RNA greater than 10,000 copies/mL, must have an estimated glomerular filtration rate as measured by Cockroft-Gault method of ≥ 50 mL/min, adequate haematologic function, hepatic transaminases and alanine aminotransferases ≤ 3 ULN, total bilirubin ≤ 1.5 mg/dL, serum amylase ≤ 1.5 ULN and serum phosphorus ≥ 2.2 mg/dL. Exclusion criteria included: a new AIDS defining condition diagnosed within 30 days (except on the basis of CD4 criteria), ongoing therapy with nephrotoxic drugs or agents that interacted with efavirenz, pregnancy/lactation, a history of clinically significant renal / bone disease or malignant disease other than Kaposi's sarcoma or basal-cell carcinoma, or a life expectancy of less than one year. If efavirenz-associated central nervous system toxicities occurred, nevirapine could be substituted for efavirenz. Patients who were not receiving their originally assigned treatment regimen after week 48 or 96 and during the 30-day extension study window were not eligible to continue to weeks 96 or 144 respectively.

Patients had a mean age of 38 years (range 18 to 80), 86% were male, 59% were Caucasian and 23% were Black. The mean baseline CD4 cell count was 245 cells/mm^3 (range 2 to 1191) and median baseline plasma HIV-1 RNA was 5.01 log_{10} copies/mL (range 3.56 to 6.54). Patients were stratified by baseline CD4 count (< or ≥ 200 cells/mm^3); 41% had CD4 cell counts <200 cells/mm^3 and 51% of patients had baseline viral loads > 100,000 copies/mL Treatment outcomes at 48 and 144 weeks for those patients who did not have efavirenz resistance at baseline are presented in Table 14.

Table 14. Outcomes of Randomised Treatment at Weeks 48 and 144 (Study 934) in Treatment Naïve Patients

	WEEK 48		WEEK 144	
Outcome at Weeks 48 and 144	**Emtricitabine + tenofovir disproxil fumarate + efavirenz (N=244)**	**Lamivudine/ zidovudine + efavirenz (N=243)**	**Tenofovir disoproxil/ emtricitabine[4] + efavirenz (N=227)**	**Lamivudine/ Zidovudine + efavirenz (N=229)**
Responder[1]	84%	73%	71%	58%
Virologic failure[2]	2%	4%	3%	6%
Rebound	1%	3%	2%	5%
Never suppressed	0%	0%	0%	0%
Change in antiretroviral regimen	1%	1%	1%	1%
Death[3]	<1%	1%	1%	1%

1. Patients achieved and maintained confirmed HIV-1 RNA < 400 copies/mL.
2. Includes confirmed viral rebound and failure to achieve confirmed < 400 copies/mL.
3. All deaths were unrelated to study drugs.
4. Patients received emtricitabine and tenofovir disoproxil fumarate up to week 96 and switched to tenofovir disoproxil/emtricitabine from week 96 to 144.

In this study, emtricitabine + tenofovir disoproxil fumarate in combination with efavirenz was statistically significantly superior to lamivudine/zidovudine in combination with efavirenz with regards to the primary and secondary endpoints: achieving and maintaining HIV-1 RNA < 400 copies/mL through 48 and 144 weeks (Table 14). The difference in the proportions of responders between the emtricitabine + tenofovir disoproxil fumarate group and the lamivudine/zidovudine group was 11.4%, and the 95% CI was 4.3% to 18.6% (p=0.002) at week 48 and a difference of 12.9% (95% CI was 4.2% to 21.6%, p=0.004) at week 144.

Through 48 weeks of therapy, 80% and 70% of patients in the emtricitabine + tenofovir disoproxil fumarate and the lamivudine/zidovudine arms, respectively, achieved and maintained HIV-1 RNA < 50 copies/mL. The difference in the proportions of responders between the emtricitabine + tenofovir disoproxil fumarate group and the lamivudine/zidovudine group was 9.1%, and the 95% CI was 1.6% to 16.6% (p=0.021) at week 48. The proportion of patients responding at 144 weeks of therapy was higher in the tenofovir disoproxil/emtricitabine group (64%) compared with the lamivudine/zidovudine group (56%); p=0.082, a difference of 8.1% and the 95% CI was -0.8% to 17.0%.

The mean increase from baseline in CD4 cell count was 190 cells/mm^3 and 312 cells/ mm^3 for the emtricitabine + tenofovir disoproxil fumarate + efavirenz arm, and 158 cells/mm^3 and 271 cells/ mm^3 for the lamivudine/zidovudine + efavirenz arm (p=0.002 and p=0.088) at weeks 48 and 144 respectively.

Resistance analysis was performed on HIV isolates from all patients with > 400 copies/mL of HIV-1 RNA at week 144 while on study drug or after treatment switch. Genotypic resistance to efavirenz, predominantly the K103N mutation, was the most common form of resistance that developed in both treatment groups. Resistance to efavirenz occurred in 68% (13/19) analysed patients in the tenofovir disoproxil/emtricitabine group and in 72% (21/29) analysed patients in the lamivudine/zidovudine group. The M184V mutation, associated with resistance to emtricitabine and lamivudine developed significantly less in the analysed patients in the tenofovir disoproxil/emtricitabine group 11% (2/19) compared with the analysed patients in the lamivudine/zidovudine group, 34% (10/29). Two patients in the lamivudine/zidovudine group developed thymidine analog mutations, specifically D67N or K70R mutations in the reverse transcriptase gene. No patient in either treatment group developed the K65R mutation, which is associated with reduced susceptibility to tenofovir disoproxil fumarate.

iPrEx Trial

The iPrEx trial was a randomised double-blind placebo-controlled multinational study evaluating tenofovir disoproxil/emtricitabine in 2499 HIV-seronegative men or transgender women who have sex with men and with evidence of high risk behaviour for HIV-1 infection. Evidence of high risk behaviour included any one of the following reported to have occurred up to six months prior to study screening: no condom use during anal intercourse with an HIV-1 positive partner or a partner of unknown HIV status; anal intercourse with more than 3 sex partners; exchange of money, gifts, shelter or drugs for anal sex; sex with male partner and diagnosis of sexually transmitted infection; no consistent use of condoms with sex partner known to be HIV-1 positive.

All subjects received monthly HIV-1 testing, risk-reduction counselling, condoms and management of sexually transmitted infections. Of the 2499 enrolled, 1251 received tenofovir disoproxil/emtricitabine, and 1248 received placebo. The mean age of subjects was 27 years, 5% were Asian, 9% Black, 18% White, and 72% Hispanic/Latino.

Subjects were followed for 4237 person-years. The primary outcome measure for the study was the incidence of documented HIV seroconversion. At the end of treatment, emergent HIV-1 seroconversion was observed in 131 subjects, of which 48 occurred in the tenofovir disoproxil/emtricitabine group and 83 occurred in the placebo group, indicating a 42% (95% CI: 18% to 60%) reduction in risk.

In a post-hoc case control study of plasma and intracellular drug levels in about 10% of study subjects, risk reduction appeared to be the greatest in subjects with detectable intracellular tenofovir. Efficacy was therefore strongly correlated with adherence.

Partners PrEP Trial

The Partners PrEP trial was a randomised, double-blind, placebo-controlled 3 arm trial conducted in 4758 serodiscordant heterosexual couples in Kenya and Uganda to evaluate the efficacy and safety of TDF (N=1589) and FTC/TDF (N=1583) versus (parallel comparison) placebo (N=1586), in preventing HIV-1 acquisition by the uninfected partner.

All subjects received monthly HIV-1 testing, evaluation of adherence, assessment of sexual behaviour, and safety evaluations. Women were also tested monthly for pregnancy. Women who became pregnant during the trial had study drug interrupted for the duration of the pregnancy and while breastfeeding. The uninfected partner subjects were predominantly male (61-64% across study drug groups), and had a mean age of 33-34 years.

Following 7827 person-years of follow up, 82 emergent HIV-1 seroconversions were reported, with an overall observed seroincidence rate of 1.05 per 100 person-years. Of the 82 seroconversions, 13 and 52 occurred in partner subjects randomised to tenofovir disoproxil/emtricitabine and placebo, respectively. Two of the 13 seroconversions in the tenofovir disoproxil/emtricitabine arm and 3 of the 52 seroconversions in the placebo arm occurred in women during treatment interruptions for pregnancy. The risk reduction for tenofovir disoproxil/emtricitabine relative to placebo was 75% (95% CI: 55% to 87%). In a post-hoc case control study of plasma drug levels in about 10% of study subjects, risk reduction appeared to be the greatest in subjects with detectable plasma tenofovir. Efficacy was therefore strongly correlated with adherence.

Tenofovir disoproxil fumarate

The demonstration of benefit of tenofovir disoproxil fumarate is based on analyses of plasma HIV-1 RNA levels and CD4 cell counts in controlled studies of tenofovir disoproxil fumarate 300 mg tablet in treatment-naïve adults and in treatment-experienced adults.

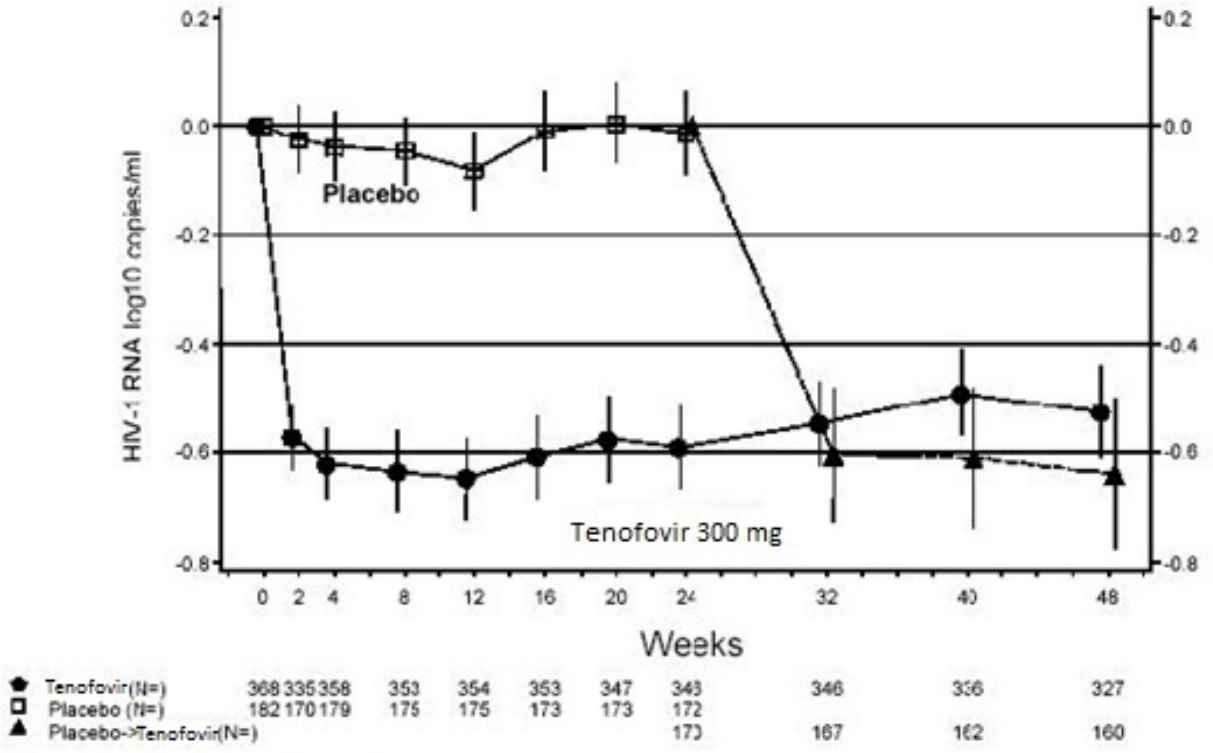
Treatment-Experienced Patients

Study 907: Tenofovir + Standard Background Therapy (SBT) Compared With Placebo + SBT

Study 907 was a 24 week, double-blind placebo-controlled multicentre study of tenofovir disoproxil fumarate added to a stable background regimen of antiretroviral agents in 550 treatment-experienced patients. After 24 weeks of blinded study treatment, all patients continuing on study were offered open-label tenofovir disoproxil fumarate for an additional 24 weeks. Patients had a mean baseline CD4 cell count of 427 cells/mm^3 (range 23-1385), median baseline plasma HIV RNA of 2340 (range 50–75,000) copies/mL, and mean duration of prior HIV treatment was 5.4 years. Mean age of the patients was 42 years, 85% were male and 69% were Caucasian, 17% Black and 12% Hispanic.

Changes from baseline in $\log_{10}$ copies/mL plasma HIV-1 RNA levels over time up to week 48 are presented in Figure 1.

Figure 1. Mean Change from Baseline in Plasma HIV-1 RNA (Log_{10} Copies/mL) Through Week 48: Study 907 (All Available Data)



†Patients on placebo after 24 weeks received Tenofovir.

The percent of patients with HIV RNA < 400 copies/mL and outcomes of patients through 48 weeks are summarised in Table 15.

Table 15. Outcomes of randomised treatment (Study 907)

Outcomes	0-24 weeks		0-48 weeks	24-48 weeks
	Tenofovir disoproxil fumarate (N=368) % (95% CI)	Placebo (N=182) % (95% CI)	Tenofovir disoproxil fumarate (N=368) %	Placebo Crossover to tenofovir disoproxil fumarate (N=170) %

HIV RNA < 400 copies/mL[1]	40%[4] (35% to 45%)	11%[4] (6% to 16%)	28%	30%
Virologic Failure[2]	53%	84%	61%	64%
Discontinued Due to Adverse Event	3%	3%	5%	5%
Discontinued for Other Reasons[3]	3%	3%	5%	1%

1. Patients with HIV RNA < 400 copies/mL and no prior study drug discontinuation at weeks 24 and 48 respectively.
2. Patients with HIV RNA ≥ 400 copies/mL efficacy failure or missing HIV RNA at weeks 24 and 48 respectively.
3. Includes lost to follow-up, patient withdrawal, non-compliance, protocol violation and other reasons.
4. Difference 29%, p < 0.001.

At 24 weeks of therapy, there was a higher proportion of patients in the tenofovir disoproxil fumarate arm compared to the placebo arm with HIV RNA < 50 copies/mL (19% and 1%, respectively). Mean change in absolute CD4 counts by week 24 was +12 cells/mm^3 for the tenofovir group and -5 cells/mm^3 for the placebo group. Mean change in absolute CD4 counts by week 48 was +4 cells/mm^3 for the tenofovir disoproxil fumarate group.

Treatment-Naïve Patients

Study 903: Tenofovir disoproxil fumarate + Lamivudine + Efavirenz Compared to Stavudine + Lamivudine + Efavirenz

Data through 144 weeks are reported for Study 903, a double-blind, active-controlled multicentre study comparing tenofovir disoproxil fumarate (300 mg once daily) administered in combination with lamivudine and efavirenz versus stavudine, lamivudine, and efavirenz in 600 antiretroviral-naïve patients. Patients had a mean age of 36 years (range 18–64), 74% were male, 64% were Caucasian and 20% were Black. The mean baseline CD4 cell count was 279 cells/mm^3 (range 3–956) and median baseline plasma HIV-1 RNA was 77,600 copies/mL (range 417–5,130,000). Patients were stratified by baseline HIV-1 RNA and CD4 count. Forty-three percent of patients had baseline viral loads > 100,000 copies/mL and 39% had CD4 cell counts < 200 cells/mL. Treatment outcomes through 144 weeks are presented in Table 16 below.

Table 16. Outcomes of Randomized Treatment (Study 903)

	At Week 48		**At Week 144**	
Outcomes	**Tenofovir + lamivudine + efavirenz (N=299)**	**Stavudine + lamivudine + efavirenz (N=301)**	**Tenofovir disoproxil fumarate + lamivudine + efavirenz (N=299)**	**Stavudine + lamivudine + efavirenz (N=301)**
	%	**%**	**%**	**%**
Responder[1]	79%[4]	82%[4]	68%[5]	62%[5]
Virologic failure[2]	6%	4%	10%	8%
Rebound	5%	3%	8%	7%
Never suppressed	0%	1%	0%	0%
Added an antiretroviral agent	1%	1%	2%	1%
Death	<1%	1%	<1%	2%

Discontinued due to adverse event	6%	6%	8%	13%
Discontinued for other reasons[3]	8%	7%	14%	15%

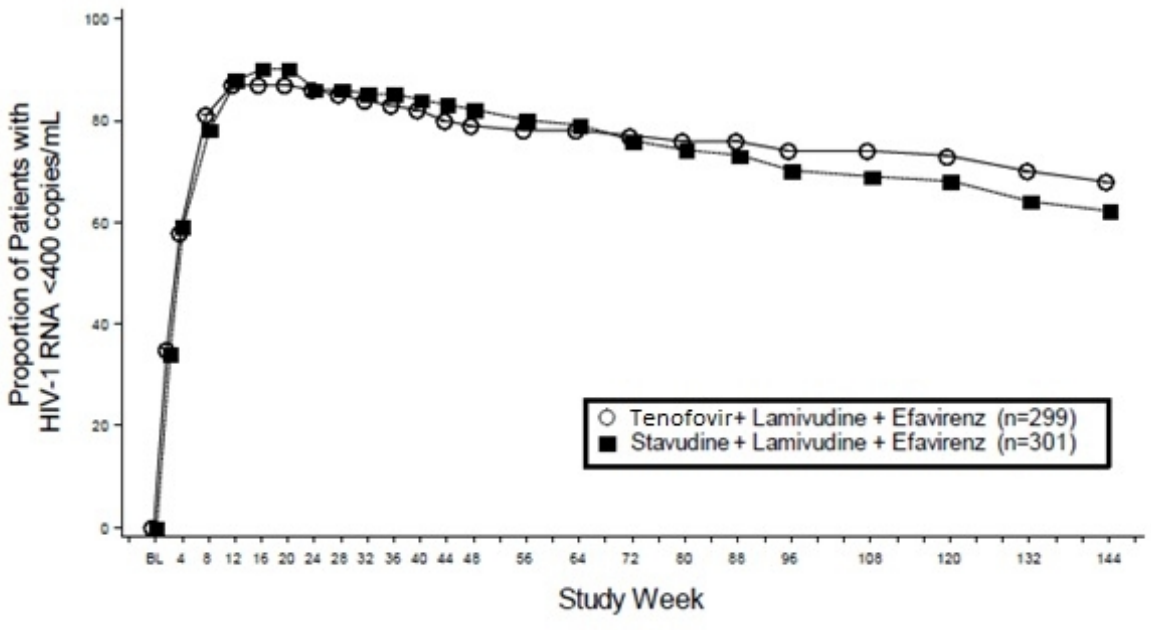
1. Patients achieved and maintained confirmed HIV-1 RNA < 400 copies/mL through Weeks 48 and 144.
2. Includes confirmed viral rebound and failure to achieve confirmed < 400 copies/mL through Weeks 48 and 144.
3. Includes lost to follow-up, patient's withdrawal, non-compliance, protocol violation and other reasons.
4. Difference -3.0% (-9.2% to 3.1%) p=0.48. The difference and confidence interval are stratum weighted on baseline HIV-1 RNA and CD4.
5. Difference 6.1% (-1.4% to 13.7%) p=0.11. The difference and confidence interval are stratum weighted on baseline HIV-1 RNA and CD4.

Achievement of plasma HIV-1 RNA concentrations of less than 400 copies/mL at week 144 was similar between the two treatment groups for the population stratified at baseline on the basis of HIV-1 RNA concentration (≤ or > 100,000 copies/mL) and CD4 cell count (< or ≥ 200 cells/mm^3). Through 144 weeks of therapy, 62% and 58% of patients in the tenofovir disoproxil fumarate 300 mg tablet and stavudine arms, respectively achieved and maintained confirmed HIV-1 RNA < 50 copies/mL. The mean increase from baseline in CD4 cell count was 263 cells/mm^3 for the tenofovir disoproxil fumarate arm and 283 cells/mm^3 for the stavudine arm.

The proportion of patients who achieved and maintained confirmed HIV RNA < 400 using intent-to-treat analysis through 144 weeks of treatment in study 903 is presented in Figure 2 below.

Genotypic analyses of patients with virologic failure showed development of efavirenz-associated and lamivudine-associated mutations to occur most frequently and with no difference between the treatment arms. The K65R mutation occurred in 8 patients on the tenofovir disoproxil fumarate arm and in 2 patients on the stavudine arm. Of the 8 patients who developed K65R in the tenofovir disoproxil fumarate 300 mg tablet arm through 144 weeks, 7 of these occurred in the first 48 weeks of treatment and the last one at week 96. Among these patients, 5/8 patients subsequently gained full virologic control (< 50 copies/mL) upon switching to new regimens that included a protease inhibitor in combination with nucleoside reverse transcriptase inhibitors through a median of 155 weeks of follow-up. From both genotypic and phenotypic analyses there was no evidence for other pathways of resistance to tenofovir disoproxil fumarate.

Figure 2. Virologic Response Through Week 144, Study 903*‡



* Roche Amplicor HIV-1 Monitor Test.

‡ Responders at each visit are patients who had achieved and maintained HIV-1 RNA < 400 copies/mL without discontinuation by that visit.

Genotypic Analyses of Tenofovir Disoproxil Fumarate in Patients with Previous Antiretroviral Therapy (Study 902 and 907)

The virologic response to tenofovir disoproxil fumarate therapy has been evaluated with respect to baseline viral genotype (N=222) in treatment experienced patients participating in trials 902 and 907. In both of these studies, 94% of the participants evaluated had baseline HIV isolates expressing at least one NRTI mutation. These included resistance mutations associated with zidovudine (M41L, D67N, K70R, L210W, T215Y/F or K219Q/E/N), the lamivudine/abacavir-associated mutation (M184V), and others. In addition the majority of participants evaluated had mutations associated with either PI or NNRTI use. Virologic responses for patients in the genotype substudy were similar to the overall results in studies 902 and 907.

Several exploratory analyses were conducted to evaluate the effect of specific mutations and mutational patterns on virologic outcome. Descriptions of numerical differences in HIV RNA response are displayed in Table 17. Because of the large number of potential comparisons, statistical testing was not conducted.

Varying degrees of cross-resistance to tenofovir disoproxil fumarate from pre-existing zidovudine-associated mutations were observed and appeared to depend on the number and type of mutations. Tenofovir disoproxil fumarate 300 mg tablet-treated patients whose HIV expressed 3 or more zidovudine-associated mutations that included either the M41L or L210W reverse transcriptase mutation showed reduced responses to tenofovir disoproxil fumarate therapy; however, these responses were still improved compared with placebo. The presence of the D67N, K70R, T215Y/F or K219Q/E/N mutation did not appear to affect responses to tenofovir disoproxil fumarate therapy. The HIV RNA responses by number and type of baseline zidovudine-associated mutations are shown in Table 17.

Table 17. HIV RNA Response at Week 24 by Number of Baseline AZT-Associated Mutations in Studies 902 and 907 (Intent-To-Treat)[1]

Number of baseline AZT-associated mutations[2]	Change in HIV RNA[3] (N)	
	Tenofovir disoproxil fumarate	Placebo
None	-0.80 (68)	-0.11 (29)
Any	-0.50 (154)	0 (81)
1 – 2	-0.66 (55)	-0.04 (33)
≥ 3 including M41L or L210W	-0.21 (57)	+0.01 (29)
≥ 3 without M41L or L210W	-0.67 (42)	+0.07 (19)

1. Genotypic testing performed by Virco Laboratories and Visibly Genetics TruGene™ technology
2. M41L, D67N, K70R, L210W, T2/15Y/F or K219Q/E/N in RT
3. Average HIV RNA change from baseline through week 24 ($DAVG_{24}$) in log_{10} copies/mL

In the protocol defined analyses, virologic response to tenofovir disoproxil fumarate was not reduced in patients with HIV that expressed the lamivudine/abacavir-associated M184V mutation. In the absence of zidovudine-associated mutations, patients with the M184V mutation receiving tenofovir disoproxil fumarate showed a –0.84 log_{10} copies/mL decrease in their HIV RNA relative to placebo. In the presence of zidovudine-associated mutations, the M184V mutation did not affect the mean HIV RNA responses to tenofovir disoproxil fumarate treatment. HIV-1 RNA responses among these patients were durable through week 48.

There were limited data on patients expressing some primary nucleoside reverse transcriptase inhibitor mutations and multi-drug resistant mutations at baseline. However, patients expressing mutations at K65R (N=6), or L74V without zidovudine-associated mutations (N=6) appeared to have reduced virologic responses to tenofovir disoproxil fumarate.

The presence of at least one HIV protease inhibitor or non-nucleoside reverse transcriptase inhibitor mutation at baseline did not appear to affect the virologic response to tenofovir disoproxil fumarate.

Cross-resistance between tenofovir disoproxil fumarate and HIV protease inhibitors is unlikely because of the different enzyme targets involved.

Phenotypic Analyses of Tenofovir Disoproxil Fumarate in Patients with Previous Antiretroviral Therapy (Study 902 and 907)

The virologic response to tenofovir disoproxil fumarate therapy has been evaluated with respect to baseline phenotype (N=100) in treatment experienced patients participating in trials 902 and 907. Phenotypic analysis of baseline HIV from patients in Studies 902 and 907 demonstrated a correlation between baseline susceptibility to tenofovir disoproxil fumarate and response to tenofovir disoproxil fumarate therapy. Table 18 summarises the HIV RNA response by baseline tenofovir disoproxil fumarate susceptibility.

Table 18. HIV RNA Response at Week 24 by Baseline Tenofovir Disoproxil Fumarate Susceptibility in Studies 902 and 907 (Intent-to-treat)[1]

Baseline tenofovir disoproxil fumarate Susceptibility[2]	Change in HIV RNA[3] (N)
≤ 1	-0.74 (35)
> 1 and ≤ 3	-0.56 (49)
> 3 and < 4	-0.3 (7)
≤ 4	-0.61 (91)
> 4	-0.12 (9)

1. Tenofovir susceptibility was determined by recombinant phenotypic Antivirogram™ assay (Virco)
2. Fold change in susceptibility from wild-type
3. Average HIV RNA change from baseline through week 24 ($DAVG_{24}$) in log_{10} copies/mL

Emtricitabine

Treatment-Experienced Patients

Study 303: Emtricitabine once daily + Stable Background Therapy (SBT) Compared to Lamivudine twice daily + SBT

Study 303 was a 48 week, open-label, active-controlled multicentre study comparing emtricitabine (200 mg once daily) to lamivudine, in combination with stavudine or zidovudine and a protease inhibitor or NNRTI in 440 patients who were on a lamivudine-containing triple-antiretroviral drug regimen for at least 12 weeks prior to study entry and had HIV RNA ≤ 400 copies/mL.

Patients were randomised 1:2 to continue therapy with lamivudine (150 mg twice daily) or to switch to emtricitabine (200 mg once daily). All patients were maintained on their stable background regimen. Patients had a mean age of 42 years (range 22–80), 86% were male, 64% Caucasian, 21% African-American and 13% Hispanic. Patients had a mean baseline CD4 cell count of 527 cells/mm^3 (range 37–1909), and a median baseline plasma HIV RNA of 1.7 log_{10} copies/mL (range 1.7–4.0). The median duration of prior antiretroviral therapy was 27.6 months. Treatment outcomes through 48 weeks are presented in Table 19.

Table 19. Outcomes of randomised treatment at week 48 (Study 303)

Outcome at Week 48	Emtricitabine + zidovudine/ stavudine + NNRTI/PI (N=294)	Lamivudine + zidovudine/ stavudine + NNRTI/PI (N=146)
Responder[1]	77% (67%)	82% (72%)
Virologic Failure[2]	7%	8%
Death	0%	<1%
Study Discontinuation Due to Adverse Event	4%	0%
Study Discontinuation For Other Reasons[3]	12%	10%

1. Patients achieved and maintained confirmed HIV RNA <400 copies/mL (<50 mL) through week 48.
2. Includes patients who failed to achieve virologic suppression or rebounded after achieving virologic suppression.

3. Includes lost to follow-up, patient withdrawal, non-compliance, protocol violation and other reasons.

The mean increase from baseline in CD4 cell count was 29 cells/mm^2 for the emtricitabine arm and 61 cells/mm^3 for the lamivudine arm.

Treatment-Naïve Patients

Study 301A: Emtricitabine once daily + Didanosine once daily + Efavirenz once daily Compared to Stavudine twice daily + Didanosine once daily + Efavirenz once daily

Study 301A was a 48 week double-blind, active-controlled multicentre study comparing emtricitabine (200 mg once daily) administered in combination with didanosine and efavirenz versus stavudine, didanosine and efavirenz in 571 antiretroviral naïve patients. Patients had a mean age of 36 years (range 18-69), 85% were male, 52% Caucasian, 16% African-American and 26% Hispanic. Patients had a mean baseline CD4 cell count of 318 cells/mm^3 (range 5-1317) and a median baseline plasma HIV RNA of 4.9 $\log_{10}$ copies/mL (range 2.6-7.0). Thirty-eight percent of patients had baseline viral loads > 100,000 copies/mL and 31% had CD4 cell counts < 200 cells/mL. Treatment outcomes through 48 weeks are presented in Table 20.

Table 20. Outcomes of randomised treatment at week 48 (Study 301A)

Outcome at Week 48	Emtricitabine + Didanosine + Efavirenz (N=286)	Stavudine + Didanosine + Efavirenz (N=285)
Responder[1]	81% (78%)	68% (59%)
Virologic Failure[2]	3%	11%
Death	0%	<1%
Study Discontinuation Due to Adverse Event	7%	13%
Study Discontinuation For Other Reasons[3]	9%	8%

1. Patients achieved and maintained confirmed HIV RNA <400 copies/mL (<50 copies/mL) through week 48.
2. Includes patients who failed to achieve virologic suppression or rebounded after achieving virologic suppression.
3. Includes lost to follow-up, patient withdrawal, non-compliance, protocol violation and other reasons.

The mean increase from baseline in CD4 cell count was 168 cells/mm^3 for the emtricitabine arm and 134 cells/mm^3 for the stavudine arm.

5.2 Pharmacokinetic properties

Pharmacokinetics in Adults: One tenofovir disoproxil fumarate/emtricitabine tablet was bioequivalent to one tenofovir disoproxil fumarate tablet (300 mg) plus one emtricitabine capsule (200 mg) following single-dose administration to fasting healthy subjects (N=39).

Tenofovir disoproxil fumarate: The pharmacokinetic properties of tenofovir disoproxil fumarate are summarised in Table 21. Following oral administration of a tenofovir disoproxil fumarate 300 mg tablet, maximum tenofovir serum concentrations are achieved in 1.0 ± 0.4 hour. *In vitro* binding of tenofovir to human plasma proteins is <0.7% and is independent of concentration over the range of 0.01-25 µg/mL. Approximately 70-80% of the intravenous dose of tenofovir is recovered as unchanged drug in the urine. Tenofovir is eliminated by a combination of glomerular filtration and active tubular secretion. Following a single oral dose of tenofovir disoproxil fumarate 300 mg, the terminal elimination half-life of tenofovir is approximately 17 hours.

Emtricitabine: The pharmacokinetic properties of emtricitabine are summarized in Table 21. Following oral administration of emtricitabine 200 mg, emtricitabine is rapidly absorbed with peak plasma concentrations occurring at 1-2 hours post-dose. *In vitro* binding of emtricitabine to human plasma proteins is <4% and is independent of concentration over the range of 0.02-200 µg/mL. Following administration of radiolabelled emtricitabine approximately 86% is recovered in the urine and 13% is recovered as metabolites. The metabolites of emtricitabine include 3′-sulfoxide diastereomers and their glucuronic acid conjugate. Emtricitabine is eliminated by a combination of

glomerular filtration and active tubular secretion. Following a single oral dose of emtricitabine 200 mg, the plasma emtricitabine half-life is approximately 10 hours.

Table 21. Single Dose Pharmacokinetic Parameters for Tenofovir and Emtricitabine in Adults[1]

	Tenofovir	Emtricitabine
Fasted Oral Bioavailability (%)	25	93
Plasma Terminal Elimination Half-Life (hr)	17	10
C_{max} (µg/mL)	0.30 ± 0.09	1.8 ± 0.7[2]
AUC (µg*hr/mL)	2.29 ± 0.69	10.0 ± 3.1[2]
CL/F (mL/min)	1043 ± 115	302 ± 94
CL_{renal} (mL/min)	243 ± 33	213 ± 89

1. Data presented as mean values.
2. Data presented as steady state values.

Effects of Food

Tenofovir Disoproxil Emtricitabine Viatris may be administered with or without food. Administration of tenofovir disoproxil/emtricitabine following a high fat meal (~700-1000 kcal containing 40-60% fat) delayed the time of tenofovir C_{max} by approximately 0.75 hour. An increase in tenofovir AUC of approximately 40% and an increase in C_{max} of approximately 14% were observed. Similar findings were observed when tenofovir disoproxil/emtricitabine were administered with a light meal. Emtricitabine systemic exposures (AUC and C_{max}) were unaffected when tenofovir disoproxil/emtricitabine was administered with either a high fat or a light meal. See section 4.2.

Special Populations

Age, gender and ethnicity

Children and Elderly Patients: Pharmacokinetics of tenofovir and emtricitabine have not been fully evaluated in children (<18 years) or in the elderly (>65 years) (see section 4.4).

Gender: Tenofovir and emtricitabine pharmacokinetics are similar in male and female patients.

Patients with Impaired Renal Function

The pharmacokinetics of tenofovir and emtricitabine are altered in subjects with renal impairment (see section 4.4). In subjects with creatinine clearance <50 mL/min, or with end-stage renal disease (ESRD) requiring dialysis, C_{max}, and $AUC_{0-\infty}$ of tenofovir and emtricitabine were increased. It is required that the dosing interval for tenofovir disoproxil/emtricitabine be modified in HIV-infected patients with creatinine clearance <60 mL/min (see section 4.2).

Tenofovir disoproxil/emtricitabine should not be used in patients with creatinine clearance <30 mL/min and in patients with ESRD requiring dialysis (see section 4.4).

Tenofovir disoproxil/emtricitabine for a PrEP indication should not be used in HIV-1 uninfected individuals with estimated creatinine clearance below 60 mL/min. If a decrease in estimated creatinine clearance is observed in uninfected individuals while using tenofovir disoproxil/emtricitabine for PrEP, evaluate potential causes and re-assess potential risks and benefits of continued use (see section 4.2).

Patients with Hepatic Impairment

The pharmacokinetics of tenofovir following a 300 mg dose of tenofovir disoproxil fumarate have been studied in non-HIV infected patients with moderate to severe hepatic impairment. There were no substantial alterations in tenofovir pharmacokinetics in patients with hepatic impairment compared with unimpaired patients.

The pharmacokinetics of tenofovir disoproxil/emtricitabine, or emtricitabine alone, have not been studied in patients with hepatic impairment; however, emtricitabine is not significantly metabolized by liver enzymes, so the impact of liver impairment should be limited.

5.3 Preclinical safety data

Animal Toxicology

Tenofovir and tenofovir disoproxil fumarate administered in toxicology studies to rats, dogs and monkeys at exposures (based on AUCs) greater than or equal to 6-fold those observed in humans caused bone toxicity. In monkeys the bone toxicity was diagnosed as osteomalacia. Osteomalacia observed in monkeys appeared to be reversible upon dose reduction or discontinuation of tenofovir. In rats and dogs, the bone toxicity manifested as reduced bone mineral density. The mechanism(s) underlying bone toxicity is unknown.

Evidence of renal toxicity was noted in 4 animal species. Increases in serum creatinine, BUN, glycosuria, proteinuria, phosphaturia and/or calciuria and decreases in serum phosphate were observed to varying degrees in these animals. These toxicities were noted at exposures (based on AUCs) 2–20 times higher than those observed in humans. The relationship of the renal abnormalities, particularly the phosphaturia, to the bone toxicity is not known.

Carcinogenicity and Mutagenicity

No carcinogenicity studies have been conducted with tenofovir disoproxil fumarate and emtricitabine in combination. In a long-term carcinogenicity study conducted in mice with tenofovir disoproxil fumarate there was a low incidence of duodenal tumours with the highest dose of 600 mg /kg/day. These were associated with a high incidence of duodenal mucosal hyperplasia, which was also observed with a dose of 300 mg/kg/day. These findings may be related to high local drug concentrations in the gastro-intestinal tract, likely to result in much higher exposure margins than that based on the AUC. At therapeutic doses the risk of these duodenal effects occurring in humans is likely to be low. The systemic drug exposure (AUC) with the 600 mg/kg/day dose was approximately 15 times the human exposure at the therapeutic dose of 300 mg/day. No tumourigenic response was observed in rats treated with doses of up to 300 mg/kg/day (5 times the human systemic exposure at the therapeutic dose based on AUC).

In long-term oral carcinogenicity studies of emtricitabine, no drug-related increases in tumour incidence were found in mice at doses up to 750 mg/kg/day (32 times the human systemic exposure at the therapeutic dose of 200 mg/day) or in rats at doses up to 600 mg/kg/day (31 times the human systemic exposure at the therapeutic dose).

Tenofovir disoproxil fumarate was mutagenic in an *in vitro* mouse L5178Y lymphoma cell assay (*tk* locus) and in an *ex vivo* assay for unscheduled DNA synthesis in rat hepatocytes but it was negative in *in vitro* bacterial assays for gene mutation and an *in vivo* mouse micronucleus test for chromosomal damage. Emtricitabine was not mutagenic in bacteria or mouse lymphoma cell assays *in vitro,* nor clastogenic in mouse micronucleus test *in vivo.*

6. Pharmaceutical Particulars

6.1 List of excipients

Tenofovir Disoproxil Emtricitabine Viatris tablets also contain:

- microcrystalline cellulose

- ferric oxide red
- lactose monohydrate,
- hydroxypropyl cellulose
- silica colloidal anhydrous
- magnesium stearate
- hypromellose
- titanium dioxide
- triacetin,
- FD & C Blue No.1
- iron oxide yellow

6.2 Incompatibilities

Not applicable.

6.3 Shelf life

2 years.

6.4 Special precautions for storage

Store at or below 25°C.

6.5 Nature and contents of container

HDPE bottle or Aluminium blister packs containing 30, 60 or 90 film-coated tablets.

Not all pack types and sizes may be marketed.

6.6 Special precautions for disposal

Not applicable.

7. Medicines Schedule

Prescription Medicine

8. Sponsor Details

Viatris Ltd
PO Box 11-183
Ellerslie
AUCKLAND
www.viatris.co.nz
Telephone 0800 168 169

9. Date of First Approval

16 February 2017

10. Date of Revision of the Text

9 June 2022

Summary table of changes

Section	Summary of new information
All	Product name change to Tenofovir Disoproxil Emtricitabine Viatris.

NZSHS
THE NEW ZEALAND SEXUAL HEALTH SOCIETY INCORPORATED
SEXUAL HEALTH FOR ALL

Burnett Foundation Aotearoa

PrEP and PEP Guidelines for Aotearoa New Zealand

The 2023 New Zealand Sexual Health Society (NZSHS) *PrEP and PEP Guidelines for Aotearoa New Zealand* were produced by NZSHS in collaboration with Burnett Foundation Aotearoa, with funding from Te Whatu Ora.

These guidelines are an adaptation and update of the 2021 ASHM (formerly the Australasian Society of HIV, Viral Hepatitis and Sexual Health Medicine) PrEP Guidelines Update for New Zealand, which was initially adapted to the NZ context from the 2018 ASHM PrEP Guidelines. The PEP section is a new addition to these guidelines and is an adaptation and update of the ASHM Australian National Guidelines for post-exposure prophylaxis after non-occupational and occupational exposure to HIV (second edition). The *PrEP and PEP Guidelines for Aotearoa New Zealand* panel acknowledges the work of ASHM and the authors in the previous versions that these guidelines are adapted from.

ASHM has not been involved in the 2023 update of the NZSHS PrEP and PEP Guidelines for Aotearoa New Zealand.

The NZ PrEP and PEP Guidelines panel:

Dr Rose Forster (chair)
Dr Massimo Giola
Dr Sarah Metcalf
Dr Rupert Handy
Dr Sunita Azariah
Dr Brendan Arnold
Dr Edward Coughlan
Dr Teena Mathew
Dr Anne Robertson
Dr Hemi Enright (Ngā Puhi, Ngāruahine, Ngāti Ruanui)
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Associate Professor Peter Saxton
Brooke Hollingshead (Burnett Foundation Aotearoa)
Cameron Leakey (Burnett Foundation Aotearoa)
Simran Saini (Burnett Foundation Aotearoa)
Dion Reid (PATHA representative)

Thanks to Dr Jacek Kolodziej
Copy editor Dr Ruth Allen

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Contents

1. Introduction

Availability and uptake of human immunodeficiency virus (HIV) pre- and post-exposure prophylaxis (PrEP and PEP) among people at high risk of acquisition have the potential to significantly reduce HIV transmission in Aotearoa New Zealand (NZ) and globally.

Combination HIV prevention involves the simultaneous use of complementary behavioural, biomedical and structural prevention strategies, which address the specific but diverse needs of populations at risk of HIV infection.[1] Combination HIV prevention includes, but is not limited to, condom promotion and distribution, harm reduction, education, antiretroviral therapy for those living with HIV, interventions to reduce stigma and discrimination, PrEP, PEP and access to sexual and reproductive healthcare services, including screening and treatment of sexually transmitted infections (STIs).

When used with optimal medication adherence, PrEP is a highly effective HIV-prevention strategy for people at elevated risk of HIV infection,[2-12] and is now recommended as standard care in clinical guidelines globally.[13-16]

People not receiving PrEP who seek care within 72 hours after a sexual, injection-related or occupational HIV exposure should be evaluated for the need for PEP (see Chapter 9: HIV post-exposure prophylaxis), with the option of transitioning to PrEP thereafter for those with ongoing risk.

PrEP is an essential part of the *National HIV Action Plan for Aotearoa New Zealand 2023-2030*,[17] which has the aim of eliminating HIV transmission within NZ. The HIV Action Plan supports the UNAIDS target of 95% of people who are at risk of HIV using combination prevention.[18]

There are limited data about PrEP use in Māori in Aotearoa New Zealand. Available data are presented in this guideline; however, further research by Kaupapa Māori methodologically trained Māori researchers is urgently needed. Inequities in healthcare are not acceptable, and it is critical that inequities in PrEP and PEP provision are eliminated.

Co-formulated tenofovir disoproxil and emtricitabine (TD* and FTC) has been funded for use as PrEP by the NZ Pharmaceutical Management Agency (PHARMAC) since March 2018, with a widening of access criteria in July 2022. Access and prescribing criteria for PHARMAC-funded PEP were also widened in July 2022.[19] PHARMAC-funded PrEP and PEP can be prescribed by any relevant prescriber including (but not limited to) general practitioners, nurse practitioners, and sexual health physicians. People who are ineligible for publicly funded healthcare (e.g., temporary migrants) can purchase PrEP or PEP from a pharmacy with a private script (starting at approximately $30 per monthly supply, 2023).

These New Zealand Sexual Health Society (NZSHS) *PrEP and PEP Guidelines for Aotearoa New Zealand* are an adaptation and update of the 2021 ASHM (formerly Australasian Society of HIV, Viral Hepatitis and Sexual Health Medicine) *PrEP Guidelines Update for New Zealand*, which was initially adapted to the NZ context from the 2018 *ASHM PrEP Guidelines*. The PEP section (see Chapter 9) is a new addition to these guidelines, and is adapted from the ASHM *Australian Post-*

Exposure Prophylaxis (PEP) for HIV Guidelines.[20] ASHM has not been involved in the 2023 update of the NZSHS PrEP and PEP Guidelines for Aotearoa New Zealand.

The recommendations in these guidelines are designed to:

- support the safe prescribing of PrEP and PEP for people at elevated risk of HIV infection
- assist clinicians in their evaluation and HIV risk assessment of patients who are seeking PrEP or PEP
- assist clinicians in educating their patients about the role that PrEP and PEP can play alongside other prevention tools such as condoms
- assist clinicians in initiating their patients on PrEP or PEP by providing information on dosing schedules
- assist clinicians in the monitoring of patients on PrEP or PEP, including testing requirements and management of side-effects and toxicity
- assist clinicians to be aware of more complex situations such as the use of PrEP or PEP in pregnancy and in chronic hepatitis B infection
- assist clinicians in transitioning patients from PEP to PrEP, where elevated risk of HIV infection is likely to be ongoing
- assist clinicians in understanding how to safely cease PrEP.

These guidelines are intended for use by:

- clinicians who provide care to people at elevated risk of acquiring HIV infection
- peer workers
- counsellors and people performing HIV testing, including point-of-care testing
- health programme policymakers
- health consumers and others with an interest in HIV PrEP.

People not receiving PrEP who seek care within 72 hours after a sexual, injection-related or occupational HIV exposure should be evaluated for the need for PEP (see Chapter 9: HIV post-exposure prophylaxis).

PrEP should be recommended by clinicians as an important HIV-prevention strategy for people at elevated risk for HIV (see Chapter 4: Suitability for PrEP).

PrEP and PEP should be provided as part of a wider suite of sexual health and STI prevention strategies that include continued promotion of condoms to prevent HIV and other STIs, timely and more frequent HIV testing, immediate access to HIV treatment on diagnosis and comprehensive STI screening.

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2. PrEP safety and efficacy

For a full review of PrEP safety and efficacy, please see the *Pre-exposure prophylaxis for the prevention of HIV Infection in the United States – 2017 update* starting from page 16: https://www.cdc.gov/hiv/pdf/risk/prep/cdc-hiv-prep-guidelines-2017.pdf

For a review of efficacy of PrEP 2-1-1, please see the World Health Organization's 2019 update, *What's the 2+1+1? Event-driven oral pre-exposure prophylaxis to prevent HIV for men who have sex with men: Update to WHO's recommendation on oral PrEP*, starting from page 6:

https://apps.who.int/iris/bitstream/handle/10665/325955/WHO-CDS-HIV-19.8-eng.pdf?ua=1

3. Indications for PrEP in Aotearoa New Zealand

HIV epidemiology in Aotearoa New Zealand

In 2021, there were 112 people (93 men and 19 women) notified with HIV in Aotearoa New Zealand, of whom 39 had been previously diagnosed overseas.[1]

Aotearoa New Zealand has a concentrated HIV epidemic; in 2021, 67% of those newly diagnosed with HIV with a known mode of transmission were men who have sex with men (MSM), 28% acquired HIV heterosexually, and 3% acquired HIV through unsafe injecting drug use (IDU) practice.[1] Overall in NZ, MSM are estimated to be 348 times more likely to be living with diagnosed HIV than heterosexual men and women.[2] This trend has continued since 1996 when enhanced surveillance began.[3] A 2011 study of undiagnosed HIV in a community sample of MSM in Auckland found an undiagnosed HIV prevalence of 1.3% overall, or 1 in 5 (21%) of those living with HIV.[4] Preliminary data from a 2022 study suggests the proportion undiagnosed is now likely to be lower.[5]

There are limited local data on transgender and non-binary people and HIV in Aotearoa New Zealand;[1] however, incidence appears to be low in contrast to many other areas of the world. The most vulnerable parts of the transgender and non-binary community in NZ are likely to be people whose sexual networks include MSM.

Globally, sex workers are disproportionately affected by HIV; however, rates in NZ are very low. A study of HIV prevalence in sexual health clinics over a 12-month period in 2005-2006 found no HIV cases, diagnosed or undiagnosed, among current sex workers.[6] Among 358 sex workers attending an Auckland Sexual Health Service outreach clinic between 2018-2020, only one person (on treatment and undetectable) was living with HIV.[7]

Since 2007, there have been no children known to be born with perinatally acquired HIV in NZ.[1]

Aotearoa New Zealand recorded the highest number of new HIV diagnoses ever in 2016. Since then, HIV notifications have decreased significantly, largely driven by a sharp decline in the number of MSM who acquired HIV locally. This may be due to the combination prevention measures of condom use, access to PrEP, and early testing and treatment, as well as the impacts of the COVID-19 pandemic. The number of NZ-acquired HIV diagnoses through heterosexual contact remains low.[1] HIV transmission via IDU is rare in NZ.[8]

Approximately one third (36%) of new HIV diagnoses among MSM between 2011 and 2020 were late presentations (CD4 count < 350 cells/μL),[9] living a median 4 years with unrecognised infection.[10] This proportion has improved since the period 2005-2010 (when it was 41%)[10] and is consistent with proportions recorded in Europe, UK and Australia.[9] Late diagnosis is more common among people with heterosexually acquired HIV, in whom over half (55%) of cases between 2011 and 2020 had a CD4 count below 350 cells/μL at the time of diagnosis.[9]

Among Māori, the majority of HIV diagnoses occur among Māori MSM (some of whom identify as Takatāpui).[1] Evidence from 2011 suggests Māori MSM have the same prevalence of HIV as other NZ MSM, although proportionately less of that is diagnosed.[4] HIV diagnosis in this group may therefore occur later, supported by surveillance data showing Māori MSM being more likely than

European MSM to present with advanced HIV disease (CD4 < 200 cells/μL).[9] While cases in European MSM have declined sharply since 2016, cases in non-European ethnicities, including Māori, have declined less steeply.[12]

HIV risk categories

Data from the Sydney-based Health in Men (HIM) study[13] have provided useful evidence of subpopulations at greatest HIV risk, on the assumption that Aotearoa New Zealand and Australia have a broadly similar HIV epidemic profile.

Table 3.1 summarises the main factors associated with an increased risk of HIV acquisition among gay and bisexually identified men in the HIM study.[13] Although the HIM study collected data from 2001 to 2007 and HIV notification trends have changed since then, the same factors are likely to remain relevant to HIV transmission and its prevention today. These factors were validated as eligibility criteria in an analysis of data from the Victorian PrEPX study[14] and continue to guide PrEP prescribing throughout Australia and NZ.

Table 3.1 Factors associated with elevated risk of HIV acquisition among men who have sex with men in the Health in Men (HIM) study, Australia, 2001–2007[13]

Risk factor	HIV incidence per 100 person years (95% CI)	
All gay and bisexual men regardless of behavioural practices	0.78	(0.59–1.02)
A regular sexual partner of an HIV-positive man with whom condoms were not consistently used in the last 6 months	5.36	(2.78–10.25)
At least one episode of receptive, unprotected anal intercourse with any casual male partner with HIV infection or a male partner of unknown HIV status during the last 6 months	2.31	(1.48–3.63)
Rectal gonorrhoea diagnosis in last 6 months	7.01	(2.26–21.74)
Rectal chlamydia diagnosis in last 6 months	3.57	(1.34–9.52)
Methamphetamine use in last 6 months	1.89	(1.25–2.84)
More than one episode of anal intercourse during the last 3 months when proper condom use was not achieved (e.g., condoms slipped off or broke)	1.30	(0.95–1.77)
A regular sexual partner of CLAI or having at least one episode of insertive CLAI where the serostatus of partner is not known or is HIV-positive	0.94	(0.35–2.52)
In uncircumcised men having at least one episode of insertive CLAI where the serostatus of partner is not known or is HIV-positive	1.73	(0.43–6.90)
In circumcised men (comparison group, low risk, PrEP not recommended)	0.65	(0.16–2.61)

Notes: The HIM study uses the terminology 'gay and bisexual men'; this guideline uses 'MSM' to focus on behaviour rather than identity. CI: confidence interval; CLAI: condomless anal intercourse; HIV: human immunodeficiency virus; PrEP: pre-exposure prophylaxis.

Of note, due to the specifics of data collection for the HIM study, not all indicators were available to support each individual eligibility criterion for PrEP. Some indicators were collected in different forms or had a different denominator or reference period. Most importantly, the HIV viral load of HIV-positive regular partners is now known to have a significant impact on HIV transmission,[15-17]

and data on the HIV viral load of the source partners were not collected in the HIM study. Early and sustained antiretroviral treatment that leads to viral suppression (sometimes referred to as undetectable or undetectable viral load) benefits the health of people living with HIV, reduces stigma and prevents the sexual transmission of HIV. People who take antiretroviral therapy for HIV daily as prescribed, and who achieve and maintain an undetectable viral load, cannot sexually transmit the virus to an HIV-negative partner. This is known as U=U (undetectable = untransmissible).[18]

Infectious syphilis was uncommon in the HIM cohort and was not associated with HIV transmission; however, its incidence has increased greatly since 2007 in Australia and NZ. Syphilis is associated with an increased risk of HIV among MSM globally,[19, 20] and is therefore included in the PrEP suitability assessment. Drug use is another important factor that influences sexual behaviour and HIV risk acquisition and that has emerged since the HIM study. Methamphetamine use has been associated with increased risk of HIV infection in high-income countries internationally.[21] In New Zealand, MSM who reported any drug use, polydrug use, or specifically cannabis, alkyl nitrites (poppers) or methamphetamine use, also reported significantly elevated rates of sexual partnering, unprotected sex with casual male partners or STI diagnoses.[22]

Combination HIV prevention

The HIV and sexual health sector in NZ has been an early adopter and advocate of PrEP, resulting in its public funding on 1 March 2018 for people at highest risk of acquiring HIV. Access criteria were widened in July 2022, with PrEP being funded for those considered to be at elevated risk of HIV exposure, where PrEP is clinically appropriate.

Box 3.1 Goals from the National HIV Action Plan for Aotearoa New Zealand 2023-2030

Goal	Objectives
• Reduced number of new locally acquired HIV infections	Increase knowledge and understanding of new infections and behaviours driving HIV transmission, and increasing uptake of combination prevention. This includes meeting the UNAIDS target of 95% of people who are at risk of HIV using combination prevention.
• Improved Māori health and wellbeing in relation to HIV by delivering on Tiriti o Waitangi obligations	Equity for Māori across outcomes for HIV.
• Decreased mortality and negative consequences of HIV on health and wellbeing	Ensuring people living with HIV are diagnosed early, have timely access to treatment and are able to access suitable support services.
• Decreased experiences of stigma and discrimination for people living with HIV	Ensure that people have a better understanding of HIV and that we have better regulatory frameworks and practices that help reduce stigma and discrimination experienced by people living with HIV. Address the intersecting types of stigma and discrimination experienced by different communities living with HIV.
• Equity in relation to all HIV goals and objectives	Focus efforts on populations that are more likely to experience HIV transmission, delayed diagnosis, poor clinical outcomes, and complex and layered stigma and discrimination

PrEP is an essential part of the *National HIV Action Plan for Aotearoa New Zealand 2023-2030*,[23] which has the aim of eliminating HIV transmission within NZ, and the vision that all people living with HIV have healthy lives free from stigma and discrimination (see Box 3.1). In order to realise these objectives, clear goals have been set. These goals have been informed by the *UNAIDS Global AIDS Strategy 2021-2026*,[24] the 2021 *UN Political Declaration on HIV and AIDS*,[25] and the *Aotearoa New Zealand Sexually Transmitted and Blood Borne Infection Strategy 2023-2030*.[26]

The HIV Action Plan supports the UNAIDS target of 95% of people who are at risk of HIV using combination prevention. Currently, uptake in Aotearoa New Zealand falls short of this target. It is estimated that at least 5847 individuals meet the criteria for PrEP.[27] However, according to community dispensing data from 2021, only 1648 individuals (one-quarter of those eligible) had their PrEP prescriptions initiated or renewed in the previous 3 months, indicating continuous PrEP use.[28] According to 2021 PHARMAC data, Māori account for 9.5% of PrEP dispensing, with 3.8% in Pacific Peoples.[28]

Data from the 'Flux' study[29] showed that among a 2018/19 cohort of Aotearoa New Zealand MSM reporting casual sex, 27.4% consistently used condoms for anal sex, 22.7% used PrEP, 6.2% reported living with HIV and relying on undetectable viral load as a method of HIV prevention and 31.8% of the study participants reported condomless anal sex and no PrEP use.[29]

PrEP in NZ is seen as part of a wider suite of sexual health and STI prevention strategies. Our most at-risk communities suffer from (1) an ongoing epidemic of syphilis (including a resurgence of congenital syphilis cases); (2) high rates of gonorrhoea; and (3) stubbornly high chlamydia rates.[30] The sexual and mental health (including drug and alcohol addiction) of our gender and sexually diverse minorities remain poor. Free access to quality blood borne virus and sexual health care remains problematic for Māori, Pasifika, regional and remote areas, recent immigrants and other culturally and linguistically diverse communities. Transgender and non-binary people face barriers accessing services such as gender-affirming surgery and, in some areas, gender-affirming hormonal therapy or mental health support.

An enduring and effective public health response to HIV and STIs in Aotearoa New Zealand will require high rates of condom use for sex among MSM and other affected communities. Care should be taken to position PrEP as a universal prevention strategy for all. Both condoms and PrEP are highly effective in preventing HIV, with condoms also providing broad protection against other STIs.

Like other biomedical interventions, PrEP risks privileging those with higher health literacy and access. Although Aotearoa New Zealand's healthcare system has funded PrEP for people at elevated risk of HIV, there are still barriers: not all regions have easily accessible free sexual healthcare; temporary migrants are often excluded from publicly funded healthcare; and many PrEP-seeking MSM report discomfort requesting PrEP from a clinician.[31] Other barriers include insufficient knowledge about PrEP and PEP among communities at risk of HIV, difficulty finding prescribers willing to offer PrEP (especially in rural areas), the need to disclose sensitive information to the prescriber, and stigma. In addition, there are acknowledged barriers to accessing culturally safe healthcare for Māori within Aotearoa New Zealand which impacts on access to PrEP and uptake. To be an effective public health intervention, PrEP must be delivered as part of a comprehensive sexual healthcare package that is accessible regardless of ethnicity, location, income, age, literacy, culture or migrant status.

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4. Suitability for PrEP

Pre-exposure prophylaxis (PrEP) is publicly funded by PHARMAC. All general practitioners and other relevant prescribers can prescribe PrEP using the PHARMAC special authority form.

No specialist training is required to prescribe PrEP; however, it is recommended that the available resources and training guidance[1] are reviewed by those unfamiliar with PrEP prescribing.

PrEP is funded in Aotearoa New Zealand for HIV-negative individuals who are at elevated risk of HIV exposure, where use of PrEP is clinically appropriate.

Men who have sex with men (MSM) are 348 times more likely to be diagnosed with HIV in Aotearoa New Zealand than the heterosexual community.[2] MSM, trans and non-binary people who share sexual networks with MSM should be assessed to determine whether PrEP is appropriate for them. PrEP is generally not indicated for cisgender heterosexual people in Aotearoa New Zealand due to the low risk of HIV acquisition; however, there are situations where PrEP use is appropriate (see Box 4.1).

Doctors and nurse practitioners who are not comfortable prescribing PrEP to people at elevated risk of HIV acquisition should refer the patient immediately to a colleague, or another service that does provide PrEP.

People requesting PrEP who are not eligible for publicly funded healthcare should still be assessed to determine if they would benefit from PrEP and these people then have the option of self-funding. The cost is approximately NZ$30 (2023) for a one-month supply; however, it must be acknowledged that the associated costs of the required laboratory testing and consultations will significantly add to this.

It should also be highlighted that sexual history-taking is a necessary and routine part of medical practice, and when this process identifies that a patient may be at elevated risk of HIV, clinicians should proactively offer these patients PrEP. Furthermore, clinicians are encouraged to raise PrEP as an HIV prevention strategy with patients whom they perceive to be at elevated risk of HIV infection, even if the purpose of the patient's visit is not related to sexual health, sexually transmitted infections (STIs) or drug use.

These PrEP guidelines recommend daily PrEP for all people at elevated risk of HIV infection. In addition, it is recommended that event-driven PrEP (also known as on-demand PrEP or PrEP 2-1-1) may be considered as an alternative option for certain populations[3] (see Chapter 6: Providing PrEP).

PrEP providers need to obtain a thorough sexual and drug-use history at baseline to determine a person's suitability for PrEP and to review their ongoing need for PrEP at each 3-monthly clinical review. It is important to acknowledge that a person's behaviour may change over time, and that a person may wish to continue PrEP even if their current HIV acquisition risk is not high. In addition, people may feel reluctant to disclose their HIV risk to their healthcare provider due to societal stigma.

These guidelines acknowledge that PrEP should be recommended as an HIV prevention strategy for people who have been at risk of HIV infection during the previous 3 months and who foresee having similar risks in the next 3 months. PrEP is also recommended for people who have not been at risk of HIV infection during the previous 3 months, but whose circumstances have changed, and they foresee HIV risk occurring in the next 3 months.

Please note that people who are eligible for PrEP based on their sexual behaviour may be simultaneously eligible for PrEP based on their injecting and other drug-use behaviour and vice versa.

The following suitability criteria can be used to help structure a discussion with a patient about their sexual health and behaviour. Guidance on how to initiate and guide a discussion about a person's sexual and drug-using behaviour in primary practice is available.[4]

There may be other situations where PrEP use is indicated, and clinicians who have limited experience with prescribing PrEP are encouraged to discuss with a PrEP-experienced clinician those patients whose PrEP suitability is unclear.

Box 4.1 PrEP suitability criteria for men (cis or trans) who have sex with men, and trans women and non-binary people who share sexual networks with MSM*

HIV risk in the previous 3 months and/or the future 3 months

The clinician should offer PrEP if the patient describes a history of any of the following HIV acquisition risks in the previous 3 months, and/or if the patient forsees that there are likely to be similar risks in the next 3 months:

- Condomless anal or vaginal intercourse with a regular HIV-positive partner who is either not on treatment, or who is on treatment but has a detectable HIV viral load >200 copies/ml
- Condomless anal or vaginal intercourse with any casual or non-exclusive MSM partner
- One or more episodes of rectal gonorrhoea, rectal chlamydia or infectious syphilis
- One or more episodes of anal intercourse where a condom slipped off or broke, where the HIV serostatus of the partner was not known, or where the partner was HIV-positive and not on treatment or had a detectable viral load >200 copies/ml
- When a person presents with concerns of deteriorating mental health and the possibility of increased HIV acquisition risk behaviour in this setting
- When a person presents with a history of intermittent binge drinking of alcohol or recreational drug use (especially methamphetamine use) and has concerns about their HIV acquisition risk behaviour in this setting

The clinician could also consider prescribing PrEP in the following circumstances:

- When an HIV-serodiscordant couple experience undue suffering and anxiety about inter-couple HIV transmission despite the positive partner being virologically suppressed on treatment
- When a person reports being so anxious about HIV infection that it may prevent them from having regular HIV testing or engaging in any form of anal sex.

Notes: *Cis: gender identity or expression matches the sex assigned at birth. *Trans: gender expression or identity differs from sex assigned at birth.

Only a small proportion of participants in PrEP studies have been transgender (trans) or non-binary people.[5-7] As a result, limited data are available for these populations. Incorrect assumptions can be made about trans and non-binary people and their sexual practices, as they may practise vaginal or neovaginal and anal intercourse, both insertive and receptive.

Trans and non-binary people who are at elevated risk of acquiring HIV on the basis of their sexual history, or future anticipated risk, are eligible to access PrEP. It is essential for clinicians to take a sexual history using appropriate and sensitive language to assess risk. The Aotearoa New Zealand STI Management Guidelines for use in Primary Care provide useful guidance for clinicians.[4]

Box 4.2 PrEP suitability criteria for heterosexual people

HIV risk in the previous 3 months and/or the future 3 months

The clinician should offer PrEP if the patient describes a history of any of the following HIV acquisition risks in the previous 3 months, and/or if the patient foresees that there are likely to be similar risks in the next 3 months:

- At least one episode of condomless intercourse (insertive or receptive) with a regular HIV-positive partner who is either not on treatment, or who is on treatment with a detectable viral load >200 copies/ml
- Condomless intercourse with any casual MSM partner of unknown HIV status
- Overseas travel to a high HIV-prevalence country, and condomless sex with partners of unknown HIV status.

The clinician could also consider prescribing PrEP in the following circumstance:

- When an HIV-serodiscordant couple experience undue suffering and anxiety about inter-couple HIV transmission despite the positive partner being virologically suppressed on treatment.

PrEP suitability criteria for people who inject drugs

HIV transmission via injecting drug use is rare in NZ.[8] In the first instance, people who inject drugs should be advised of and provided with options for using sterile needles, syringes and other injecting equipment, and offered opioid substitution therapy for those who use opioids. People who inject drugs can be referred to local needle and syringe programmes, including the New Zealand Needle Exchange Programme. Patients disclosing injecting drug use should also be offered other harm reduction resources, including information about overdose prevention and anonymous drug-checking services, especially if accessing drugs from an illicit supply.

Because people who inject drugs are susceptible to a range of infections and injuries, PrEP and other HIV-prevention interventions should be integrated into prevention and clinical care services for hepatitis A, B and C infection and other infectious diseases, and overdose prevention. These interventions include screening for hepatitis A, B and C viruses and providing vaccination for hepatitis A and B where clinically indicated, as well as screening for injection-related injuries and infections including abscesses, septicaemia and endocarditis.[9]

The NZ PrEP and PEP Guidelines panel is cognisant of the concerns of the International Network of People who Use Drugs. The network cautions against prioritising PrEP at the expense of other proven interventions as the prime HIV-prevention strategy for people who inject drugs, and emphasises that access to harm-reduction services remains a critical component of HIV prevention in people who inject drugs.[10] This approach is particularly relevant in Australia and NZ where sterile needle and syringe coverage is high and HIV prevalence and incidence among people who inject drugs remains low and stable.[11,12]

A recent systematic review of HIV-treatment adherence among people who inject drugs in the USA and Canada, undertaken to inform potential PrEP adherence interventions for people who inject drugs, found that younger age, female sex, homelessness and incarceration were obstacles to HIV treatment adherence.[13] By comparison, self-sufficiency, use of opioid substitution therapy

and high quality patient-provider relationships were facilitators of adherence.[13] Self-reports from HIV-negative people who inject drugs were that HIV–related stigma in social networks, negative experiences with healthcare providers, lack of money, homelessness and the criminal justice system were likely barriers to PrEP access.[14] These factors should be considered when providing support to people commencing PrEP when they are at risk of HIV through injecting drug use.

In people whose sexual partners include injecting drug users, PrEP should be considered, taking into account the risks and benefits, as well as patient preference. If other risk factors for HIV acquisition are present, PrEP should be offered accordingly.

Box 4.3 PrEP suitability criteria for people who inject drugs

HIV risk in the previous 3 months and/or the future 3 months

The clinician should offer PrEP if the patient describes a history of any of the following HIV acquisition risks in the previous 3 months, and/or foresees that there are likely to be similar risks in the next 3 months:

- Shared injecting equipment with an HIV-positive person or with MSM of unknown HIV status.

NB: Some people who inject drugs may also be at elevated risk for HIV acquisition through sexual behaviour.

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5. Clinical assessment before starting PrEP

All patients whose sexual or drug injecting history indicates the recommendation or consideration of PrEP, and who are interested in taking PrEP, must undergo laboratory testing. The tests identify those for whom this intervention would be harmful, or for whom it could present specific health risks that would require close monitoring.

HIV testing

For patients' safety, those with acute or chronic HIV infection should be identified through taking a medical history and HIV testing. A negative HIV test result must be documented at the time the patient is evaluated for PrEP, as the daily or event-driven tenofovir disoproxil* and emtricitabine (TD*/FTC) combination alone is insufficient for treatment of acute or chronic HIV infection.

HIV testing must be repeated every 3 months when patients attend for a prescription refill. This requirement for quarterly visits should be explained to patients during the initial discussion about whether PrEP is appropriate for them.

A fourth-generation HIV antibody and p24 antigen venous blood test should be used and should be performed within 14 days of the patient's being evaluated for PrEP. If there is no recent HIV test result, clinicians can prescribe PrEP on the same day as an HIV test and advise patients to start PrEP once informed the test is negative.

Rapid, point-of-care tests (PoCT) should not be used alone to screen for HIV infection when considering PrEP because they are less sensitive than blood tests. Failure to detect very early HIV infection by rapid testing in the PrEP context has been reported.[1] These tests include rapid home-based HIV testing kits which are available in NZ. However, a rapid PoCT can be used for the same-day initiation of PrEP, providing that a venous blood test for a fourth generation HIV antibody and antigen test is obtained and tested simultaneously. A PoCT can exclude potential PrEP users who are found to be HIV-positive, and any reactive PoCT should be confirmed by conventional laboratory testing in line with the New Zealand HIV Testing Guidelines.[2] Clinicians should not accept patient-reported HIV test results, including home-based HIV test results, or documented anonymous test results. Any positive HIV antibody test result must be managed according to local health pathways.

A course of post-exposure prophylaxis (PEP) may be required before transitioning to PrEP (see Chapter 9) if a patient has had a recent high-risk exposure (within 72 hours).

The window period for fourth-generation serological HIV testing is 45 days.[3] PrEP use in people with primary HIV infection (defined as the period following HIV acquisition in which the virus spreads throughout the body, the viral reservoir is established, and seroconversion occurs) may delay detection of infection, prolong seroconversion, and lead to the development of resistance mutations.[4] However, PrEP start should not be delayed in patients likely to be at ongoing elevated risk of HIV infection, who have had a recent high-risk exposure outside the 72-hour window for the commencement of PEP. Primary HIV infection at the time of starting PrEP is rare in NZ. People who would benefit from PrEP may never be outside the window period for testing. Delaying

starting PrEP in this situation would mean withholding an effective method of HIV prevention from those who would benefit most. Patients who have had a recent high-risk exposure outside the 72-hour window for the commencement of PEP should be assessed for PrEP, and closely monitored for seroconversion with an additional fourth-generation HIV blood test 1 month after starting, before reverting to standard PrEP monitoring. HIV viral load and HIV proviral DNA tests are not routinely recommended to screen for early HIV infection.

Acute HIV infection should be considered in people at high risk of HIV who may have had recent exposure to HIV (e.g., no condom or a condom broke during sex with an HIV-positive partner not on treatment, or a casual partner of men who have sex with men; recent injecting drug use with shared injecting equipment with MSM, or person known to be HIV-positive).

In a prospective study of 2226 people at high risk of HIV infection who underwent twice-weekly HIV nucleic acid testing, 50 people were evaluated for their clinical signs and symptoms during acute HIV infection. Symptoms and signs occurred in 94% of participants with acute HIV infection, just before and around the time of peak HIV viraemia.[5] The most common symptoms were fever, headache and malaise, while the most common signs were related to the head, eyes, ears, nose, throat, tachycardia and lymphadenopathy (Table 5.1).

Table 5.1 Symptoms and abnormalities associated with primary or acute HIV infection, overall and by region.[3]

Symptoms and abnormalities	Africa (*n* = 31)		Thailand (*n* = *17*)		Overall (*n* = 48)	
	n	%	*n*	%	*n*	%
Symptom						
Fever	18	55	7	41	25	50
Headache	17	52	6	35	23	46
Feeling of illness	14	42	5	29	19	38
Coughing	10	30	9	53.5	19	38
Abnormality						
HEENT[a]	6	18	16	94	22	44
Lymphadenopathy[b]	9	9	16	94	19	38
Tachycardia	11	33	5	29	16	32

Notes: a. Head, ears, eyes, nose and throat. b. A condition or disease affecting the lymph glands of the body resulting in lymph nodes that are abnormal in size, consistency or number.

Initiation of TD*/FTC PrEP in people with undiagnosed primary or acute (symptomatic) HIV infection has been associated with the development of resistance to TD*/FTC, mostly commonly to the FTC component.[6-9]

People who present with signs or symptoms consistent with acute HIV infection should not be commenced on PrEP until HIV infection has been excluded.

Patients with indeterminate HIV test results at baseline should not be started on PrEP. They should be assessed for early HIV infection and discussed with local infectious diseases or sexual health specialists as indicated. Such patients can only be started on PrEP if and when HIV infection is excluded.

Concerns about TD* or FTC resistance

PrEP is highly effective at preventing HIV acquisition, and the overall risk of developing resistance mutations to tenofovir or emtricitabine during PrEP use is very low.[10] Resistance mutations are predominately acquired through unrecognised primary HIV infection at the time of starting PrEP, or through suboptimal PrEP adherence.[10,11]

In those with unrecognised HIV infection at the time of starting PrEP, the development of resistance mutations has been observed in up to 45.8% of cases,[12] most commonly emtricitabine-specific mutations (M184V/I), which can potentially occur within days.[13] Resistance mutations for TDF are rare,[12] consistent with the higher genetic barrier to TDF compared with FTC.[14] Suboptimal PrEP adherence increases seroconversion rates; however, the emergence of resistance among these patients is less common because drug selection pressure is low. Only 4.9% of patients who had a primary HIV infection while using PrEP developed drug-related resistance, predominantly emtricitabine-specific mutations.[12]

Much evidence related to the development of resistance is from clinical trials and case studies. The prevalence of drug-resistant HIV strains must be monitored globally as PrEP use is scaled-up; however, mathematical modelling indicates that the number of HIV-1 infections that would be averted by PrEP greatly exceeds the number of drug-resistant infections that could occur.[15] People with emtricitabine-specific mutations (M184V/I) alone generally achieve viral suppression when rapidly linked to care and initiated on antiretroviral therapy.[13,16]

Assessment of renal function at baseline

In HIV-positive patients, the use of TD* was reviewed in a meta-analysis and was associated with a statistically significant loss of renal function, with the effect being judged as clinically modest.[17] TD* use was not associated with increased risk of fractures, hypophosphataemia or severe proteinuria.[17] Rarely, proximal renal tubular dysfunction (including Fanconi syndrome) may occur with TD* use.[17-19]

Overall, TD* use in PrEP studies has not been associated with significant clinical renal problems.[20-22] The Iniciativa Profilaxis Pre-Exposición (iPrEx) study showed a small but statistically significant mean decline in creatinine clearance (CrCL) from baseline but the decline in CrCL was reversible with PrEP cessation.[20] Factors associated with a decline in estimated glomerular filtration rate (eGFR) include commencement of PrEP at age 40 years or over, a baseline eGFR below 90 mL/min/1.73m^2, and good adherence.[22] **There are no data for people using PrEP who have an eGFR below 60 mL/min/1.73m^2; therefore starting PrEP in people whose eGFR is well established to be below 60 mL/min/1.73m^2 is not recommended**. However, see comments below on managing people who are found to newly have an eGFR around 60 mL/min/1.73m^2 at baseline testing.

Data from the iPrEx open-label extension (iPrEx-OLE) study found a significant increase in both urine alpha-1 microglobulin, a urine marker of impaired tubular reabsorption, and proteinuria after 6 months of TD*/FTC exposure, suggesting that subclinical tubular injury occurs on PrEP.[23]

There are limited data regarding whether event-driven versus daily PrEP reduces the likelihood of renal toxicity. However, in the Intervention Préventive de l'Exposition aux Risques avec et pour les Gays (IPERGAY) study, no significant decline was observed in the mean slope of eGFR in the TD*/FTC versus placebo arms over a median of 9.4 months follow-up,[24] suggesting that event-

driven PrEP may not influence renal function. In the Alternative Dosing to Augment PrEP Pill Taking (ADAPT) study, a creatinine elevation was observed in 9% of 178 participants evaluated, but creatinine elevation did not differ between participants in the daily, time-driven and event-driven PrEP study arms (p = .05).[25]

Recent data from the DISCOVER study, where MSM and transgender women at risk of HIV were randomised to TDF/FTC versus tenofovir alafenamide (TAF)/FTC, reported a significant difference in change in eGFR and tubular proteins during the study favouring TAF/FTC.[26] More broadly, the DISCOVER study found that TAF/FTC was non-inferior to TDF/FTC in terms of preventing HIV infection;[26] however, TAF/FTC has not been licensed yet in NZ for use as PrEP.

For all patients considered for PrEP, their risk factors for chronic kidney disease should be assessed at baseline. These risk factors include diabetes, hypertension, smoking, concurrent medications and a known history of renal impairment or history of kidney injury or structural abnormality. Measurements of baseline serum creatinine, eGFR, the urine protein: creatinine ratio (PCR) and blood pressure should also be taken. The Cockcroft–Gault formula for estimating creatinine clearance (CrCl) is regarded as the ideal way to measure the eGFR. However, for most practitioners, this is not practical. Instead, it is reasonable to measure the patient's renal function using the eGFR as reported by the laboratories.

For people who are found to newly have an eGFR around 60 mL/min/1.73m^2 at baseline, the eGFR should be repeated within 7 days because clinical situations occur when the eGFR may be unreliable, e.g., recent consumption of cooked meat. In this setting, the clinician should ask the individual to fast or avoid a cooked meat meal within 4 hours of repeat eGFR testing. Exceptional dietary intake, e.g., vegetarian diet, high protein diet, creatinine supplements, and extremes of body size (e.g., high muscle mass) may underestimate eGFR. Being underweight or having low muscle mass may overestimate eGFR.

If after repeat testing a person's eGFR remains just below or just above 60 mL/min/1.73m^2, it is recommended that the clinician speak to a specialist in PrEP as these patients may still be able to commence PrEP with close monitoring. Of note, in this setting, event-driven PrEP may be a suitable option if criteria are met (see Chapter 6).

These guidelines recommend that creatinine, eGFR and urinary PCR measurements for each person are evaluated at baseline. The eGFR should be repeated 3 months after commencing PrEP and 6-monthly thereafter. More intensive monitoring may be warranted in the following people:

- those over the age of 40 years
- those with a baseline eGFR of less than 90 mL/min/1.73 m^2
- those with other comorbidities (e.g., hypertension, diabetes)
- those taking nephrotoxic drugs.

A minority of people may experience a decline in eGFR; further investigations and consideration of a referral to a specialist renal service are recommended when there is sustained decrease in eGFR of 25% or more or a sustained decrease in eGFR of 15 mL/ min/1.73 m^2.[27]

Assessment and management of sexually transmitted infections at baseline

People at risk for HIV infection are also at high risk for STIs. Clinicians should screen for STIs (specifically gonorrhoea, chlamydia and infectious syphilis) using the standard-of-care tests and procedures, and manage any detected STI as recommended by the Aotearoa New Zealand STI Management Guidelines for use in Primary Care.[28] Importantly, the presence of an STI at baseline should not delay the commencement of PrEP. Of note, in the NZPrEP study it was reported that 18% of study participants tested positive for rectal chlamydia or gonorrhoea at baseline.[29]

Patients starting on PrEP should be informed about:

- prevention of STI acquisition and transmission
- combining condom and PrEP use for the prevention of STIs
- frequency of STI testing
- signs and symptoms of STIs.

Patients should be encouraged to present for testing and treatment whenever signs or symptoms of STIs appear.

Assessment of hepatitis A, B and C status

People being assessed for PrEP can also be at risk of acquiring hepatitis A (HAV), hepatitis B virus (HBV)[30] and hepatitis C virus (HCV) infection.[31] HBV and HCV infection status should be documented by screening serology when PrEP is initiated. Screening for hepatitis A immunity should be offered; however, it is not funded for this indication in NZ, and is not mandatory when initiating PrEP.

Vaccination against HBV is recommended (but not funded) for adults at risk of sexual exposure, including MSM, as well as current or recent injecting drug users.[32] People identified at baseline as having undiagnosed chronic hepatitis B should be referred to the Hepatitis Foundation of New Zealand, with assessment as per local health pathways. Those with chronic hepatitis B infection who would like to commence PrEP should be managed in conjunction with a specialist, and should only be offered daily PrEP and not event-driven PrEP. They should also be counselled on the importance of strict adherence to PrEP to prevent both a flare in their hepatitis B infection and the development of hepatitis B resistance to TD*/FTC.

People identified at baseline with undiagnosed hepatitis C infection should be managed as per local health pathways. Effective treatment for Hepatitis C is available. A diagnosis of hepatitis B or hepatitis C is not an obstacle to HIV PrEP initiation.

Hepatitis A vaccination is recommended (but not funded) for men who have sex with men, and should be considered for injecting drug users.[32] Hepatitis A serology is not mandatory before vaccination. There is no harm in vaccinating an already immune person; however, some groups with a higher probability of prior infection may wish to avoid the expense of vaccination if found not to be immune.

Assessment of bone health

Low bone mineral density (BMD) was observed at baseline in approximately 10% of people receiving TD*/FTC for PrEP in the iPrEx study.[33] People should be counselled about the effects of TD* on BMD and counselled to decrease alcohol and cigarette use, to undertake weight-bearing exercise and ensure their diet provides adequate amounts of calcium and vitamin D.[34] A clinician may suspect that a person is vitamin D deficient and may wish to test their vitamin D levels. There is no evidence that over-the-counter vitamin D supplements reduce tenofovir-related BMD changes.

A small but statistically significant decline in BMD was observed by week 24 in participants of the iPrEX study. The decline in BMD correlated directly with levels of intracellular TD*-DP and was found to be reversible once PrEP was ceased.[35]

There are no data available on whether event-driven PrEP is less likely to cause a decline in BMD.

Recent data from the DISCOVER study found that TAF/FTC versus TDF/FTC was associated with less decline in BMD.[26]

A person with a history of osteoporosis will require careful monitoring while on PrEP. If the clinician suspects that a person may have osteoporosis, they may recommend BMD testing. In those people over the age of 40 years thought to be at risk of having reduced BMD, a FRAX® tool to evaluate fracture risk can be used to assess the need for dual-energy X-ray absorptiometry (DXA) scanning. For further information see https://www.sheffield.ac.uk/FRAX/tool.aspx?country=31.

Assessment for pregnancy in people of childbearing potential

The risk of HIV transmission to women increases by over two-fold when they are pregnant.[36] As reviewed recently, current evidence suggests that PrEP can be used safely during pregnancy and breastfeeding.[37]

See *Chapter 8: Special clinical considerations* for further information about PrEP use in pregnancy and breastfeeding.

The NZ PrEP and PEP Guidelines panel will continue to monitor the safety of TD*/FTC PrEP regimens when used during pregnancy and breastfeeding.

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6. Providing PrEP

Goals of PrEP

The ultimate goal of human immunodeficiency virus (HIV) pre-exposure prophylaxis (PrEP) is to reduce the acquisition of HIV infection and its resultant morbidity, mortality and associated cost to people and society. Therefore, clinicians initiating PrEP should:

- prescribe medication regimens that are proven safe and effective for HIV-negative people who are suitable for PrEP to reduce their risk of HIV acquisition. Only co-formulated tenofovir and emtricitabine (TD*/FTC) is licensed in Aotearoa New Zealand for use as PrEP and is the only regimen that should be used.
- educate patients about the medications and the dosing regimen to optimise safe medication use.
- provide counselling on sexually transmitted infections (STIs) and their prevention including the use of condoms.
- provide medication-adherence support and counselling to help patients achieve and maintain protective levels of medication.
- provide HIV risk-reduction support and offer harm reduction including referrals to help patients minimise their risk of acquiring HIV, viral hepatitis B and C and STIs.
- provide effective contraception to people who are taking PrEP who do not wish to become pregnant.
- monitor patients on a quarterly basis to screen for HIV infection, STIs and toxicity and to determine whether PrEP remains indicated.

PrEP licensing in New Zealand

Co-formulated tenofovir disoproxil* and emtricitabine (TD*/FTC) is registered by the NZ Medicines and Medical Devices Safety Authority, Medsafe, for daily use and is subsidised by the NZ Pharmaceutical Management Agency, PHARMAC.

Daily PrEP

Daily PrEP is the most commonly prescribed PrEP regimen in NZ. Daily use of TD*/FTC is highly efficacious at preventing HIV transmission in the setting of high medication adherence.[1,2,3,4,5] A detailed review of these and other studies that have demonstrated the efficacy and effectiveness of daily PrEP is beyond the scope of these guidelines. For more information, see *Chapter 2: PrEP safety and efficacy*.

The NZ PrEP and PEP Guidelines panel recommends that daily TD*/FTC should be offered to all populations at elevated risk of HIV infection.

Event-driven PrEP

Event-driven PrEP involves taking 2 tablets of TD*/FTC 2–24 hours before a potential sexual exposure to HIV, followed by a third tablet 24 hours after the first dose and a fourth tablet 48 hours after the first dose. This regimen is referred to as 2 + 1 + 1 dosing of PrEP.[6] If sex continues

for several days, people take one tablet of TD*/FTC daily until the last sex act, following which one dose 24 hours later and again at 48 hours are taken after the last episode of sex.

Evidence in support of event-driven PrEP dosing

Data on the efficacy of non-daily PrEP dosing are available for cisgender MSM. Very few transgender women have been evaluated in randomised controlled trials of event-driven PrEP;[7-9] nor have such trials been undertaken in cisgender women, transgender men, non-binary people, or in people whose principal HIV exposure risk is injecting drug use. Pharmacological studies in cisgender women suggest that event-driven PrEP does not provide adequate tissue levels of PrEP to provide high levels of HIV protection; therefore, event-driven PrEP should not be recommended for cisgender women.

Data on how efficacious event-driven PrEP is for MSM in reducing HIV transmission came initially from the randomised, placebo-controlled trial, IPERGAY (Intervention Préventive de l'Exposition aux Risques avec et pour les Gays).[10] This study evaluated the efficacy of event-driven PrEP comprising 2 tablets of TDF/ FTC (versus placebo) taken 2–24 hours before potential sexual exposure to HIV, followed by a third tablet 24 hours after the first dose and a fourth tablet 48 hours after the first dose. If multiple episodes of sex occurred, the participants were advised to continue to take one tablet daily until the last sex act then take the 2 final doses, 24 hours apart. If sexual activity was resumed within a week, a single rather than a double dose before sex was recommended. If sexual activity resumed more than a week later, the loading dose schedule (2 tablets) was recommenced. The incidence of HIV was high in the placebo group (6.6 per 100 person-years) and a risk reduction in the TDF-FTC group of 86% [95% confidence interval (CI), 40 to 98; $p = .002$] was observed.[10]

Demonstration studies have been undertaken to determine how effective event-driven PrEP is when used in community settings. In an open-label extension study of the IPERGAY study, an HIV risk reduction of 97% (95% CI, 81–100) with event-driven PrEP was reported in 361 participants with a median follow-up of 18 months.[8] In a study of 1069 people commencing PrEP in a single clinic in France, four HIV infections were diagnosed over 486 years of person follow-up.[7] In the French ANRS Prévenir study, of 3049 participants, 50.5% took daily PrEP and 49.5% took event-driven PrEP, with some shifting between regimens occurring within the study.[9] The median number of partners in the 3 months before PrEP commencement was 12 (interquartile range [IQR] 6-25) in the daily group and 10 (IQR 5-15) in the event-driven group ($p < .0001$). The median number of condomless sex events in the previous 4 weeks was 2 (0 to 8) and 2 (0 to 4) in the daily and event-driven participants, respectively ($p < .0001$). Follow-up in the daily and event-driven groups was 2713 years and 2723 years, respectively. The HIV-1 incidence was 3 in both study groups with an incidence of 1.1 per 1000 person-years for each group (95% CI 0.2-3.2).

The efficacy of event-driven PrEP in people who use it infrequently

To address the question of whether event-driven PrEP is efficacious for people using it infrequently, the IPERGAY study team undertook a post-hoc analysis of IPERGAY study participants who reported relatively infrequent sex.[11] Overall, IPERGAY participants reported using a median of 15 PrEP tablets per month. The post-hoc study looked at the follow-up time between two consecutive visits during which participants in the placebo and active study arms used less than 15 tablets per month and reported they used PrEP 'systematically or often' during sexual intercourse. During these periods of lower PrEP use, participants had a median of 5 episodes of sex per month (IQR 2-10) and used a median of 9.5 tablets per month (IQR 6-13). Six HIV infections occurred in the placebo arm (incidence: 9.2 per 100 person-years, total follow-up time:

64.9 person-years) and 0 in the TDF/FTC arm (incidence: 0 per 100 person-years, total follow-up time: 68.9 person years; p = .013). The relative reduction of HIV incidence in the treatment group was 100% (95% CI, 39-100). The study investigators concluded that an event-driven PrEP strategy remains highly effective in MSM even when they have infrequent sex.[11]

Notably, of concern to the NZ PrEP and PEP Guidelines panel were the wide 95% confidence intervals of the relative risk reduction in this group of IPERGAY participants practising infrequent sex.[11] However, the data from the Prévenir study described above are reassuring in terms of the efficacy of less frequent use of event-driven PrEP.[9]

Toxicity and event-driven PrEP

There are few data available to determine whether event-driven PrEP offers less toxicity. In the IPERGAY study, no significant decline in the mean slope of estimated glomerular filtration rate (eGFR) in the TD*/FTC versus placebo arms was observed over a median of 9.4 months follow-up.[12] In the HIV Prevention Trials Network (HPTN) study 067, the Alternative Dosing to Augment PrEP Pill Taking (ADAPT) study, 9% of 178 participants at one study site had creatinine elevation, but this was not significantly different between participants in the daily, time-driven and event-driven PrEP study arms (p = .05).[13] In the Prévenir study,[9] the incidence of serious adverse events was low and similar with both daily and on-demand dosing regimens. The incidence of drug-related adverse events was low overall, but was significantly lower among participants using daily PrEP than in those using on-demand PrEP (5·93 events per 100 person-years *vs* 7·42 events per 100 person-years; incidence rate ratio 0·80, 95% CI 0·65–0·99). This difference was mainly driven by a higher rate of gastrointestinal adverse events in participants using on-demand PrEP than in those using daily PrEP, as most drug-related adverse events were gastrointestinal events. This was thought to be possibly due to the starting and stopping of PrEP with the on-demand regimen. There was no difference in the incidence of grade 1 creatinine plasma concentration increase, or in the proportion of participants with eGFR of less than 70 mL/min or less than 50 mL/min between PrEP dosing regimens.

Preference for event-driven versus daily PrEP

In the Prévenir study, in which MSM were offered the choice of daily or event-driven PrEP, approximately half of the participants opted for each regimen.[9] In a report from the PRELUDE study from New South Wales, Australia, one third of participants enrolling in the study expressed a preference for non-daily PrEP.[14] Similarly, in the AM PrEP implementation study (the Netherlands), 27% of men opted to take event-driven PrEP.[15] In the PrEP in NSW Transition Study,[16] PrEP-experienced gay and bisexual men were asked about interest in and preference for different PrEP modalities. This study found 42.8% of participants had interest in event-driven PrEP and 21.8% indicated it was their preference. Higher interest and preference for non-daily PrEP was associated with being concerned about side-effects and perceived difficulties with daily adherence.

The choice of PrEP schedule: daily versus event-driven PrEP

Daily PrEP is suitable for all people who are at elevated risk of HIV. Event-driven PrEP can be considered as an alternative option for people at elevated risk of HIV, who were assigned male at birth, and who are not taking exogenous oestradiol-based hormones (see Table 6.1). This covers cis men, trans women and non-binary people assigned male at birth *who are not using exogenous oestrogen*, and is regardless of gender of sexual partners. In these individuals, event-driven PrEP can be used in cases where daily PrEP is not acceptable, sex is infrequent and a person feels they

can plan ahead for sex at least 2 hours in advance. Other reasons that people may choose or merit event-driven PrEP include concerns about side-effects from daily PrEP, poor kidney function (however, see toxicity section above) or financial constraints. **Of note, event-driven PrEP is contraindicated in people with chronic hepatitis B infection.**

Table 6.1 Suitability for daily vs event-driven PrEP for sexual exposure, based on gender and use of exogenous oestrogen

People	Daily PrEP	Event-driven PrEP
Cisgender men	Yes	Yes*
Cisgender women	Yes	No
Trans men	Yes	No
Trans women using exogenous oestrogen	Yes	No
Trans women who are NOT using exogenous oestrogen	Yes	Yes*
Non-binary people assigned male at birth, using exogenous oestrogen	Yes	No
Non-binary people assigned male at birth, who are NOT using exogenous oestrogen	Yes	Yes*
Non-binary people assigned female at birth	Yes	No

Notes: * Where a person expresses a preference for event-driven PrEP, sex is infrequent and a person feels they can plan ahead for sex at least 2 hours in advance. Event-driven PrEP is contraindicated in people with chronic hepatitis B infection.

Daily PrEP would be preferential for those people who prefer daily PrEP, who cannot predict when sex will occur, who cannot delay sex for more than 2 hours and for those whose potential exposure to HIV occurs more than twice a week. Daily PrEP is the only suitable regimen for people with chronic hepatitis B infection to maintain virological suppression, prevent drug resistance and hepatitis flares.

The NZ PrEP and PEP Guidelines panel recommends that caution be used in recommending event-driven versus daily PrEP to adolescent MSM because there have been no trials of event-driven PrEP in adolescent MSM and because adherence rates to daily PrEP have been consistently low in studies of adolescent MSM.[17,18]

Evaluation of the need for ongoing PrEP

Along with encouraging safer sex practices and safer injecting techniques, as needed, clinicians should support their patients to decide when to commence PrEP and when to discontinue its use.

The duration of PrEP use will depend on whether the person's risk of HIV continues over time. PrEP should only be prescribed to those patients who are able to adhere to a regimen that has been shown to be efficacious and who express a willingness to do so.

Adherence to PrEP should be assessed at each follow-up visit. PrEP users who disclose that they have had suboptimal adherence, but who are willing and suitable to continue on PrEP, should be offered additional adherence education (see Chapter 10: Improving medication adherence, including offering referral to peer-based support services). If a PrEP user repeatedly reports adherence that is sufficiently suboptimal to compromise both PrEP's efficacy (i.e., fewer than 4 tablets per week when taking a daily regimen) and the patient's safety, the clinician should stop prescribing PrEP. See also *Chapter 9: HIV post-exposure prophylaxis* for the course of action to follow if a patient is not adherent to PrEP and has had a risk of exposure in the last 72 hours.

PrEP script duration including extension of PrEP scripts

The initial and ongoing prescriptions should offer a 90-day medication supply. Reasonable attempts should be made to avoid multiple patient visits when initiating PrEP. A prescription can be provided on the same day as the baseline HIV test is ordered as long as the patient is advised not to fill the script until confirmed to be HIV-negative and the Special Authority is approved. Another option is to send the script to the patient or pharmacy once the Special Authority is approved.

PrEP prescriptions should cover no more than 90 days of TD*/FTC supply at a time. People who use event-driven PrEP should also present for HIV and STI testing on a quarterly basis, even if they do not need a prescription refill at that time.

Laboratory and clinical schedule at baseline and follow-up

The recommended schedule of testing and follow-up of people on PrEP is outlined in Table 7.1 in *Chapter 7: Clinical follow-up and monitoring*.

Indicated medication

The medications proven safe and effective and currently approved by Medsafe for PrEP in healthy adults at elevated risk of acquiring HIV infection are the fixed-dose combination of TD* and FTC in a single daily dose.

Long-acting injectable cabotegravir (CAB-LA) is an additional prevention choice for people at elevated risk of HIV infection, but is not available in NZ and is therefore not covered within these guidelines.

What not to use for PrEP

There have been some overseas reports of HIV seroconversion in MSM taking unprescribed antiretroviral medication for PrEP.[19]

DO NOT use any other HIV antiretroviral medications, either in place of or in addition to TD* or FTC.

Do not provide PrEP as expedited partner therapy (i.e., do not prescribe for a person who is not in your care).

PrEP dosing schedule

A daily PrEP regimen involves the person taking a single daily tablet at approximately the same time each day. Taking the tablet some hours earlier or later than usual will not adversely influence the levels of the drug. If the person forgets to take a tablet for one day, there is no need to take 2 tablets the next day.

The event-driven PrEP regimen involves the person taking a loading dose of PrEP where 2 tablets of PrEP are taken together as early as 24 hours before sex, or as late as 2 hours before sex. After sex, another PrEP tablet is taken 24 hours after the loading dose and then a final PrEP tablet is taken 48 hours after the loading dose. People who have more than one episode of at-risk sex over a period of days should keep taking a single PrEP tablet every day that they are having sex

until the last day that at-risk sex occurs, then they should take a single daily PrEP tablet for 2 days after the last at-risk sex act.

PrEP medication side-effects

Patients taking PrEP should be informed of TD*/FTC side-effects experienced by participants in PrEP trials. These include headache, nausea, flatulence and the potential for renal injury or hepatotoxicity. In these trials, side-effects were uncommon and usually resolved within the first month of taking PrEP (known as 'start-up syndrome'). Clinicians should discuss the use of over-the-counter medications for headache, nausea and flatulence should they occur. Patients should also be counselled about symptoms that indicate a need for urgent evaluation (e.g., those suggesting possible acute renal injury or acute HIV infection). See *Chapter 5: Clinical assessment before starting PrEP* for a review of the signs and symptoms of acute HIV infection.

PrEP medication drug interactions

In addition to the safety data obtained in PrEP clinical trials, data on drug-drug interactions and longer-term toxicities have been obtained by studying the component drugs individually for their use in treatment of people with HIV infection. Studies have also been performed in small numbers of healthy adults without HIV infection.

FTC and TD* are primarily excreted by the kidneys by a combination of glomerular filtration and active tubular secretion. Since both drugs are primarily eliminated by the kidneys, co-administration of TD*/FTC with drugs that reduce renal function or compete for active tubular secretion may increase serum concentrations of TD*, FTC and other renally eliminated drugs,[20] including (but not limited to) cidofovir, aciclovir, valaciclovir, ganciclovir, valganciclovir, aminoglycosides and high-dose or multiple non-steroidal anti-inflammatory drugs.

Cocaine, methamphetamine and alcohol use are not known to influence the concentrations of PrEP drugs, but use of these drugs may have an effect on the person's ability to maintain full adherence to PrEP.

The University of Liverpool has a freely available HIV Drug Interactions Checker https://www.hiv-druginteractions.org which should be used when prescribing PrEP or PEP.

Time to achieving and maintaining protection

The pharmacokinetics of TD* and FTC vary by tissue.[21] Current evidence suggests that for both rectal and vaginal exposure, high protection is achieved after 7 days of daily dosing.[22] People with a vagina need to maintain high adherence to daily dosing of TD*/FTC to maintain adequate drug levels in vaginal and cervical tissues.[22] Very limited data are available about intracellular drug concentrations in penile tissues susceptible to HIV infection to inform considerations of protection for insertive sex partners. Limited data exist for transgender and non-binary people therefore extra attention to daily dosing is recommended.

- WHO[23] recommends that individuals eligible for event-driven PrEP can start PrEP by taking two doses 2–24 hours prior to potential exposure, regardless of whether they intend to use an oral daily or event-driven PrEP dosing regimen, and continue to take one dose per day until two days after the day of the last potential sexual exposure.
- All other individuals should start daily PrEP by taking one dose per day for 7 days prior to potential exposure to HIV and can stop taking daily PrEP 7 days after the last potential

exposure.

PrEP and travel

PrEP can play an important role in preventing HIV infection in people travelling outside of NZ, along with other measures to reduce HIV and STIs.[24] If a patient eligible for event-driven PrEP wants to take daily PrEP while on an overseas trip, they can commence 2 tablets on the day of departure and cease PrEP once it is no longer needed (see section below on ceasing PrEP). Alternatively, the patient can take a double-dose 2-24 hours before sex and then use the event-driven regimen outlined above during the overseas trip. Other populations including those who inject drugs, cisgender women, trans and non-binary people assigned female at birth, and trans and non-binary people using exogenous oestradiol, who want to take PrEP while on an overseas trip should commence PrEP 7 days before their departure.

PEP use and PrEP

If a person is not taking PrEP but presents within 72 hours of a potential HIV exposure, they should be assessed for post-exposure prophylaxis (PEP) as a matter of urgency and should be offered PEP immediately according to current PEP Guidelines (see Chapter 9) if appropriate. If HIV acquisition risk is likely to continue into the future, PrEP should be offered.

Discontinuing PrEP

Clinicians should regularly advise people using PrEP about how to discontinue PrEP. The need for PrEP may end when a partner with HIV achieves sustained HIV viral suppression after at least 6 months of antiretroviral therapy, when a patient enters a mutually monogamous relationship with a seroconcordant partner, or when other social circumstances change.

There is now substantial clinical evidence that cisgender MSM can safely cease event-driven PrEP by taking a dose of PrEP 24 and 48 hours after their last at-risk sexual exposure.[7-9] Recently, WHO recommended that individuals eligible for event-driven PrEP can continue to take one dose per day until two days after the day of the last potential sexual exposure, regardless of whether they are taking daily or event-driven PrEP.[23]

All other individuals can stop taking daily PrEP 7 days after the last potential exposure.[23]

Upon discontinuation for any reason, the following should be documented in the health record:

- HIV status at the time of discontinuation
- Reasons for PrEP discontinuation
- Recent medication adherence and reported sexual risk behaviour.

Recommencing PrEP

Clinicians should advise any patient who has discontinued PrEP on how to safely recommence PrEP if their risk for HIV infection increases again in the future (see Chapter 4: Suitability for PrEP). Clinicians should advise that if and when a patient decides to recommence PrEP, they must first have repeat HIV testing in case they have acquired HIV infection during the time that they were not taking PrEP. All other baseline clinical and laboratory evaluations need to be repeated also when a patient recommences PrEP and quarterly visits for PrEP scripts and ongoing evaluations must follow thereafter.

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7. Clinical follow-up and monitoring

Recommended schedule of testing and follow-up for people on PrEP

Once pre-exposure prophylaxis (PrEP) is initiated, patients should return for follow-up every 3 months. Clinicians may wish to see patients more frequently in the period after PrEP initiation (e.g., 1 month after initiation) to:

- assess and re-confirm HIV-negative test status in patients with a recent pre-PrEP HIV exposure
- assess side-effects
- monitor renal function in patients at particular renal risk
- assess adherence
- answer questions.

Box 7.1 and Table 7.1 set out the recommended schedule of testing and follow-up for people who are prescribed PrEP.

Box 7.1 PrEP follow-up procedures

PrEP follow-up procedures
At least every 3 months:
• Repeat HIV testing and assess for signs or symptoms of acute infection to document that patients are still HIV-negative. Rapid point-of-care tests (PoCTs) are not recommended for monitoring patients receiving PrEP.
• Test for sexually transmitted infections (STIs). This involves NAAT tests for chlamydia and *Neisseria gonorrhoea* as per Aotearoa New Zealand STI Management Guidelines for use in Primary Care (www.sti.guidelines.org.nz), and a blood test for syphilis serology.[1] The patient should also be tested for Hepatitis B unless known to be immune.
• Assess side-effects, PrEP adherence and ongoing PrEP suitability.
• Respond to questions and provide any new information about PrEP use.
• Provide support for medication adherence and risk-reduction behaviours.
In addition:
• Repeat pregnancy testing for people at risk.
• Test for hepatitis C virus (HCV) in people who inject drugs who report continued sharing of injecting equipment and men who have sex with men (MSM) with elevated risk of HCV acquisition (e.g., sexual practices that predispose to anal trauma).
At least every 6 months:
• Monitor estimated glomerular filtration rate (eGFR), creatinine and urine PCR.
• If the patient has risk factors for renal impairment (e.g., hypertension, diabetes, nephrotoxic medications, age >40, eGFR <90), renal function may require more frequent monitoring (see Chapter 5: Clinical assessment before starting PrEP).
At least every 12 months:
• Test for hepatitis C.

Table 7.1 Laboratory evaluation & clinical follow-up of people who are prescribed PrEP, including event-driven PrEP

Test	Baseline (Week 0)	About 30 days after initiating PrEP*	90 days after initiating PrEP	Every subsequent 90 days on PrEP	Other frequency
HIV testing and assessment for signs or symptoms of acute infection	**Y**	**Y** Retest HIV if any doubt about window period for baseline HIV test. Can be done by giving client a lab form to do this and does not require a visit	**Y**	**Y**	**N**
Assess side-effects	**N**	**Y**	**Y**	**Y**	**N**
Hepatitis B serology Vaccinate if non-immune	**Y**	**N**	**Y** (if not immune)	**Y** (if not immune)	**Y** If patient required hep B vaccine at baseline, confirm immune response to vaccination 1 month after last vaccine dose
Hepatitis C serology	**Y**	**N**	**N**	**N**	**Y** Every 12 months, or more frequently if ongoing risk e.g., non-sterile injecting drug use and MSM with sexual practices that predispose to anal trauma
Liver function tests	**Y**	**N**	**N**	**N**	**N**
STI (i.e., syphilis, gonorrhoea, chlamydia) as per www.sti.guidelines.org.nz[1]	**Y**	**N**	**Y**	**Y**	**Y -** Test if presents with symptoms in between PrEP visits
eGFR at 3 months and then every 6 months	**Y**	**N**	**Y**	**N**	**Y -** At least every 6 months or according to risk of chronic kidney disease
Urine protein:creatinine ratio (PCR) baseline	**Y**	**N**	**Y**	**N**	**Y** Every 6 months
Pregnancy test (for people who may become pregnant)	**Y**	**Y**	**Y**	**Y**	**N**

Notes: * 30-day follow-up recommended if recent HIV risk before starting PrEP.

Y: yes, N: no. eGFR: estimated glomerular filtration rate. STI: sexually transmitted infection. MSM: men who have sex with men. Hepatitis A serology/vaccination are not prerequisites for PrEP, and are not funded for this indication in NZ, however could be offered at the baseline visit.

Testing for HIV

HIV testing should be repeated every 3 months using a fourth generation HIV antibody and antigen test via a venous blood draw. Rapid point-of-care tests, including home testing HIV diagnostic kits, should not be used for monitoring patients receiving PrEP.

A patient's ongoing HIV risk and adherence to PrEP should be assessed when the patient presents for their quarterly clinical review (see Chapter 10: Improving medication adherence). Patients should be familiar from their baseline visit with the requirement for quarterly clinical reviews to obtain ongoing PrEP prescriptions.

A positive HIV test result

Any positive HIV test result should be managed urgently by appropriate counselling and referral to an HIV specialist. Assistance can be sought via telephone from a local infectious diseases or sexual health physician. It is very important for the clinician to recognise that HIV acquisition in a person who is using PrEP is a highly significant event and that the initial emphasis should be on supporting the person rather than focusing on how the infection occurred. If a patient is diagnosed with HIV infection while taking PrEP, their current health and wellbeing should be the chief immediate priority as opposed to enquiries about their adherence to PrEP.

Acute HIV infection should be suspected in people at risk for HIV who were not taking PrEP at the time that they were recently exposed to HIV (e.g., no condom, or a condom broke during sex with an HIV-positive partner who was not on antiretroviral treatment, or has a detectable HIV viral load; condomless anal sex with a casual partner; recent injecting drug use with shared injecting equipment with an HIV-positive partner). Also, infection with tenofovir disoproxil* (TD*)- or emtricitabine (FTC)-resistant HIV is possible; however, it is very uncommon while on PrEP, with only a few cases reported internationally.[2] Therefore, in addition to sexual behaviour and injecting drug use, clinicians should elicit a history of any signs and symptoms of viral infection during the preceding month, including the day of PrEP evaluation. See Table 5.1 in *Chapter 5: Clinical assessment before starting PrEP* for clinical symptoms and abnormalities of acute (primary) HIV infection.

Indeterminate HIV test results in the first 3 months on PrEP

There is a potential for PrEP to delay or attenuate seroconversion in people who may have been exposed to HIV just before starting PrEP, or who acquire HIV infection while taking PrEP (e.g., due to poor adherence or transmitted drug-resistant virus).[3-5] There is not a broad international agreement on how to manage these patients. Patients who have an indeterminate HIV test result while on PrEP (particularly those with repeated indeterminate test results) should be closely monitored in conjunction with an HIV specialist and in consultation with a clinical microbiologist who should be informed that the patient is taking PrEP.

The NZ PrEP and PEP Guidelines panel will continue to monitor this issue with a view to providing further guidance.

A recent high-risk exposure (within 72 hours)

A course of post-exposure prophylaxis (PEP) may be required if a patient had a recent high-risk exposure (within 72 hours), and PrEP adherence was suboptimal. PEP may need to consist of a

three-drug regimen, depending on the nature of the exposure. See *Chapter 9: HIV post-exposure prophylaxis* for management of such cases.

Monitoring of renal function

Renal function should be monitored at 3 months and 6-monthly thereafter. More intensive monitoring may be warranted in certain populations (see also 'Assessment of renal function at baseline' in Chapter 5: Clinical assessment before starting PrEP):

- those over the age of 40 years
- those with a baseline eGFR of less than 90 mL/min/1.73 m^2
- those with other comorbidities (e.g., hypertension, diabetes)
- those taking nephrotoxic drugs.

A small decline in eGFR while using PrEP is not uncommon; further investigations and consideration of a referral to a specialist renal service are recommended when there is sustained decrease in eGFR of 25% or more or a sustained decrease in eGFR of 15 mL/ min/1.73 m^2. Exceptional dietary intake (e.g., vegetarian diet, high protein diet), creatinine supplements, and extremes of body size (e.g., high muscle mass) may underestimate eGFR.

PrEP is contraindicated if eGFR <60 mL/min/1.73m^2. The management of people with high and ongoing risk of HIV infection, but whose eGFR has declined below or around 60 mL/min/1.73 m^2 since commencing TD*/FTC, is challenging. This situation typically requires consultation with a physician who is expert in PrEP. Cessation of TD*/FTC for 1 month may restore eGFR to above 60 mL/min/1.73 m^2, following which TD*/FTC may be recommenced with cautious monitoring. In these circumstances, consideration should be given to using event-driven TD*/FTC, although there are no data to show that this will stabilise the eGFR above 60 mL/min/1.73 m^2.

Testing for STIs

As PrEP-users are at increased risk for STIs,[6] clinicians should screen for STIs (specifically gonorrhoea, chlamydia and infectious syphilis) every 3 months using the standard-of-care tests and procedures, and manage any detected STI as recommended by the Aotearoa New Zealand STI Management Guidelines for use in Primary Care.[1] Partner notification should be undertaken using the most appropriate available resources.

It is important to note that for MSM, STI tests must include a first void urine (vaginal swab if relevant), throat swab and anal swab for chlamydia and gonorrhoea.

At each follow-up visit, patients taking PrEP should be reminded about:

- prevention of STI acquisition and transmission
- the need for quarterly STI testing
- the need to present for testing and treatment whenever signs or symptoms of an STI appear.

The presence of an STI at follow-up testing does not prevent the ongoing prescription of PrEP.

Hepatitis B and hepatitis C virus infections

Hepatitis B virus

For people who are hepatitis B virus (HBV) non-immune at baseline, clinicians should provide hepatitis B vaccination and confirm their immune response 1 month after the last vaccine dose.

For people who state that they have been vaccinated for hepatitis B at baseline, clinicians should test for hepatitis B surface antibody; if their hepatitis B surface antibody is below 10 IU/mL, they should be vaccinated with one dose of hepatitis B vaccine and their hepatitis B surface antibody titre should be checked 1 month later. If their titre does not rise above 10 IU/mL, their hepatitis B vaccination should then be completed.

Both TD* and FTC are active against HBV.[7] If people living with chronic HBV infection stop taking these medications, severe hepatic flares can occur.[7] Patients with chronic HBV need to be counselled regarding the risks of poor adherence and the risks of self-ceasing PrEP medication. Advice should be sought from a liver specialist before commencing PrEP, for patients who are known to have chronic HBV. A person taking PrEP who has chronic HBV infection should be assessed by a clinician experienced in the management of hepatitis B before ceasing PrEP. If PrEP is discontinued, close monitoring is strongly advised.

Only daily PrEP should be offered to people with chronic HBV. For additional guidance about the management of PrEP in people with chronic hepatitis B, see *Chapter 8: Special clinical considerations*.

Hepatitis C virus

In contrast to hepatitis B, the risk of sexual transmission of hepatitis C virus (HCV) has been considered low. However, HCV infection thought to be sexually transmitted began to emerge in predominantly HIV-positive MSM in the early 2000s.[8-12] Subsequent studies suggest that sexual transmission of HCV also occurs in HIV-negative MSM eligible for or using PrEP.[13-15] The incidence of HCV infection is lower in countries with widespread uptake of HCV direct-acting antiviral therapy.[14,16] HCV infection is associated with high-risk sexual behaviour, including receptive condomless anal intercourse, unprotected fisting, sharing of toys, chemsex and group sex, as well as an association with recent STIs.[8, 17-18]

All people who inject drugs should be monitored for hepatitis C virus (HCV), as should MSM, trans and non-binary people who engage in sexual contact that may predispose to anal trauma.

In those using PrEP, HCV should be tested at least annually, and more frequently if necessary, following sexual history-taking and review of injecting practices.[19]

Managing side-effects

Patients taking PrEP should be assessed for side-effects associated with TD*/FTC use, most importantly those suggesting possible acute renal injury. A review of symptoms experienced in the iPrEx (Iniciativa Profilaxis Pre-Exposición) study showed that potential PrEP-associated symptoms peaked at 1 month, when 39% of participants reported symptoms, compared with 22% at baseline. Gastrointestinal symptoms occurred in a median of 28% of participants across study sites (range 11–70%) and non-gastrointestinal symptoms occurred in a median of 24% of participants (range 3–59%). The odds of gastrointestinal symptoms were higher in those with evidence of high adherence to PrEP. By 3 months, symptoms had returned to pre-PrEP levels.[20]

Bodybuilding increases muscle mass, which may result in increased creatinine levels in blood. When evaluating and managing PrEP-users with creatinine clearance changes, clinicians should take into consideration the history of steroid, protein, creatine powder use (which also increases blood creatinine levels) and bodybuilding. A wash-out period of 14 days cessation of creatine before renal function assessment may be recommended.

The NZ PrEP and PEP Guidelines panel will monitor evidence in this area and update the guidelines as appropriate.

Optional assessments

Therapeutic drug monitoring

Initial demonstration projects in Australia conducted therapeutic drug monitoring as part of research protocols to evaluate medication adherence and HIV seroconversions among study participants. Their results revealed a high correlation between self-reports of tablet taking and blood concentrations of TD* and FTC, and high adherence to PrEP (over 90%).[21,22] In NZ there are no clinical laboratories that quantify TD*/FTC concentrations in plasma, cells or urine for therapeutic drug monitoring in the setting of PrEP. Therapeutic drug monitoring is likely to be used primarily for research and possibly for evaluations of people who acquire HIV infection while taking PrEP.

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8. Special clinical considerations

This chapter provides information about relevant patient groups in Aotearoa New Zealand, including Māori, people ineligible for publicly funded healthcare, transgender people, those who are pregnant, people who have chronic HBV or renal failure, and adolescent minors.

Māori

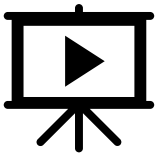
Māori health inequities are extensive and exist across multiple health indicators. These include the social determinants of health, access to health and healthcare, the quality of healthcare provision, and, in turn, the health outcomes Māori experience compared with the rest of the population.[1] Inequities in healthcare are not acceptable, and it is critical that inequities in PrEP and PEP provision are eliminated.

A study of unrecognised HIV in 2011 found Māori MSM had the same HIV prevalence as non-Māori MSM, although proportionately less of that was diagnosed.[2] Additionally, community studies suggest Māori MSM are less likely to have ever tested for HIV,[3] and may engage in more condomless casual sex.[4] MSM of Māori, Pacific, Asian and the combined group of MELAA (Middle Eastern, Latin American and African) ethnicities were more likely to present late, and to have advanced HIV disease (except for MELAA), compared to those of European ethnicity.[5]

There are limited data about pre-exposure prophylaxis (PrEP) use among Māori men who have sex with men (MSM). An Auckland demonstration project of early PrEP adopters found that at enrolment, Māori reported similar rates of condomless receptive anal intercourse and rectal sexually transmitted infections (STIs) as that of Europeans.[6] The 12-month follow-up data from this demonstration project showed proportionately lower study retention and medication adherence among Māori/Pacific participants, compared with non-Māori/Pacific participants.[7] These results are consistent with US findings on minority groups where Black MSM also had poorer engagement with PrEP services.[8] An evaluation of the *Ending HIV* campaign by Burnett Foundation Aotearoa found Māori MSM less likely than non-Māori MSM to self-report PrEP use in the previous 6 months.[9] Overall, the data imply that PrEP is needed by Māori MSM, but they will face proportionately greater barriers accessing PrEP when delivered through existing health services.

The Aotearoa Statement on closing the gap on STIs and blood borne viruses (BBVs) among indigenous peoples of Australasia (www.nzshs.org/events/the-aotearoa-statement) is an important framework to use to plan responses to Māori sexual health needs. This statement recommends that interventions will be most effective when led by or co-designed with Māori. Furthermore, all tangata whenua (people of the land) are entitled to equitable access to the healthcare that meets their needs. To optimise HIV prevention and PrEP use, clinicians need to actively ensure they are providing culturally safe care for their Māori patients. This prerequisite starts with understanding any unconscious biases and acknowledging that different health outcomes for Māori cannot be explained by genetics or behaviour but are in fact the result of structural barriers and socio-cultural factors stemming from colonisation and racism.[10] This understanding should inform a clinician's approach to providing care for Māori patients (see Box 8.1).

Box 8.1 Useful resources



Developing Māori Health Equity Capability among Health Professionals from 'competence' to 'safety'

Professor Papaarangi Reid, Associate Professor Rhys Jones and Associate Professor Elana Curtis

Dealing with Diversity, The Profession and in Practice

Professor Papaarangi Reid

Cultural Safety Training Plan for Vocational Medicine in Aotearoa[11]

A plan for cultural safety training that can be used by medical colleges in the development of their own cultural safety training programmes for registrars and fellows.

Clinicians should initiate conversations with Māori MSM to discuss PrEP, and whether they would benefit from its use. Clinicians should not hesitate, where more convenient for the patient, and with the patient's consent, to refer to a public sexual health clinic that offers free services and comprehensive care.

Clinicians should be sensitive when taking a sexual behaviour history, bearing in mind that Māori MSM, like other MSM, may not feel comfortable discussing sexual history. If Māori MSM request PrEP without disclosing full sexual history, clinicians should acknowledge that the conversation might be uncomfortable for the patient and manage the situation rather than simply declining PrEP. Laboratory evaluations should not delay the provision of a script for PrEP; scripts can be provided on the first visit with laboratory results followed up separately. To maximise retention, services should be designed to be easily accessible and minimise the need for multiple visits.

There are large ethnic disparities in chronic hepatitis B virus (HBV) infection. Recent data suggest that 6% of Māori, 7% of Pasifika and 8-9% of people with Chinese or South Asian ethnicity have chronic HBV compared to less than 1% of those with European or Indian ethnicity.[12] Given the higher rates of chronic HBV infection among Māori, clinicians caring for Māori MSM must carefully follow these PrEP guidelines and screen for HBV and, as required, provide HBV vaccinations. Note that people with chronic HBV should only be offered daily PrEP to maintain sustained virological suppression of HBV.

People ineligible for publicly funded PrEP, including newly arrived migrant MSM

Little is known about PrEP use among migrant MSM newly arrived in NZ. The overall number of MSM reported to have HIV infection in NZ has declined since the peak in 2016. In 2022, 35 (44%) of 80 MSM notified with HIV in NZ had previously been diagnosed overseas. Nine of the 45 MSM first diagnosed in NZ were reported to have acquired HIV overseas, which was similar to the number in the previous 2 years, but a decline from the annual average of 26 over the 5 years from 2015 to 2019. Of the 45 MSM diagnosed in NZ in 2022, 19 (42%) were European, 13 (29%) Asian, six (13%) Māori, four (9%) Latin American or African ethnicity and three (7%) were Pacific Peoples. For three (7%) men, although diagnosed in NZ, their usual place of residence was overseas.[13] Of the 45 MSM diagnosed in NZ in 2022, 34 were NZ citizens or permanent residents, 6 were international students or temporary workers, and the migration status of 5 was unknown.[14]

People who come to NZ to study or work (with a work visa of less than 2 years' duration) are in most cases ineligible for publicly funded healthcare.[15] International students are often required to have overseas student health insurance; however, the coverage for sexual health needs is typically limited. Additionally, some students are reluctant to use their private health cover for sexual health testing, prevention and treatment because of concerns about privacy or a prospective immigration process.

People who are ineligible for publicly funded healthcare can pay the full, unsubsidised amount for a private script for PrEP (around NZ$30 per month depending on pharmacy mark-up, 2023); however, the costs for medical appointments and laboratory testing can be prohibitive. Clinicians should be aware of the most cost-effective options available in their regions, and direct patients to these accordingly.

More information can be found in *Chapter 12: How to access PrEP in Aotearoa New Zealand*.

Transgender women

Globally, transgender women have a high prevalence of HIV infection compared to cisgender men and women.[16] Transgender women have represented less than 1% of study participants in PrEP trials[17] and face additional barriers to accessing PrEP compared with MSM, requiring differentiated PrEP implementation strategies.[18]

There are limited local data on transgender and non-binary people and HIV in Aotearoa New Zealand;[13] however, incidence appears to be low in contrast to many other areas of the world. The most vulnerable parts of the transgender and non-binary community in NZ are likely to be people whose sexual networks include MSM.

The Iniciativa Profilaxis Pre-Exposición (iPrEX) clinical trial enrolled the highest number of transgender women to date and found that, compared to MSM, transgender women were more likely to report transactional sex, condomless anal intercourse and more recent sexual partners.[19] In iPrEX, no HIV infections were observed in transgender women whose blood levels were compatible with taking 4 or more doses of PrEP weekly. However, using stratified analyses, PrEP did not provide a benefit for transgender women in the iPrEX study (hazard ratio 1.1, 95% CI: 0.5 to 2.7) compared to the overall 44% reduced HIV incidence in the active study arm.[19]

A recent retrospective analysis of the iPrEX study sought to determine whether the differential efficacy of PrEP in MSM versus transgender women was a result of different baseline clinical and behavioural factors that could make PrEP less efficacious in transgender women.[20] The authors found that baseline characteristics between MSM and transgender women explained almost 100% of the difference in PrEP's efficacy during the iPrEX study. However, the authors were not able to comment on whether the use of gender-affirming hormone therapy may have contributed to PrEP's being less effective in the transgender women study participants.[20]

Oestrogen, which is used as part of gender-affirming hormone therapy, increases the activity of 5'-nucleotidase enzymes and can decrease the active metabolites of tenofovir and emtricitabine, or increase the nucleotides that compete against the active metabolites of tenofovir and emtricitabine within cells. Therefore, oestrogen could plausibly reduce cellular levels of tenofovir and emtricitabine in transgender women, making PrEP less efficacious. There have been some small studies in transgender women taking gender-affirming hormone therapy and PrEP. One study of 20 Thai transgender women commencing gender-affirming hormone therapy and PrEP

showed a 12% reduction in plasma tenofovir levels in the presence of gender-affirming hormone therapy,[21] although PrEP did not reduce oestrogen levels.

In another study, 32% lower levels of plasma tenofovir were observed in eight transgender women taking gender-affirming hormone therapy compared to eight cisgender men; plasma emtricitabine was also significantly lower in the transgender study participants.[22] These findings are not consistent; a 2022 Brazilian study suggested that PK parameters of tenofovir and emtricitabine for daily oral PrEP are not significantly affected by oestradiol-based feminising hormone therapy.[23] A study of 24 transgender women using oestradiol-based hormone therapy showed that TDF concentrations in dried blood spots after 4 weeks of directly observed daily TD*/FTC PrEP use were comparable to those in cisgender men.[24] A further study compared the rectal tissue levels of the active metabolites of tenofovir and emtricitabine in 4 HIV-positive transgender women taking gender-affirming hormone therapy versus 4 HIV-positive post-menopausal cisgender women. This study reported that there was a significantly lower ratio of the active metabolite of tenofovir diphosphate to its competing nucleotide dATP in the rectal tissue of the transgender versus cisgender participants.[25] However, this study did not find a decrease in the ratio of the active metabolite emtricitabine triphosphate to its competing nucleotide, dCTP.

While PrEP does not appear to impact on gender-affirming hormone levels, lower PrEP levels have been associated with feminising hormone therapy in some studies. This is not thought to impact on the efficacy of daily PrEP; however, raises concerns about the potential efficacy of event-driven PrEP in this population. Event-driven PrEP is therefore not currently recommended for trans women using gender-affirming hormone therapy, as more data are required.

To help support transgender women to optimise their PrEP use and adherence, it is recommended that health practitioners provide gender-affirming care.[24] Such clinical care includes appropriate use of preferred pronouns and names, safe access to bathrooms of choice and access to gender-affirming hormone therapy and surgery.[26]

Transgender men

There are very few data regarding PrEP knowledge, acceptability and use in transgender men. In a 2017 study of 181 transgender youth from the USA, of 42 people identifying as transgender men (23.2%), only 16 had ever used HIV prevention services and none had ever used PrEP.[27] Transgender men were significantly less likely to have ever used PrEP than transgender women.[27]

To optimise HIV prevention and PrEP use, clinicians caring for transgender men need to actively raise PrEP as an HIV prevention option for them and take a sensitive and detailed sexual behaviour history. Gender-affirming care should be provided to transgender men by health practitioners (see Box 8.2).

Box 8.2 Useful resources for gender-affirming care

Useful resources for gender-affirming care

Social stigmatisation and discrimination, including within the healthcare system, is a barrier to accessing health services and contributes to adverse outcomes. Transgender people have the right to respectful health care.[28]

Clinicians should take steps to create a welcoming environment for their trans and gender-diverse patients. This approach includes considering the clinical environment, using the right language, asking the right questions and sensitively recording medical notes. Some helpful resources for clinicians are:

- Professional Association for Transgender Health Aotearoa https://patha.nz
- Pride in Health https://prideinhealth.org.nz
- Trans Hub www.transhub.org.au/clinicians
- Gender Minorities Aotearoa https://genderminorities.com/database/medical-surgical/providers/
- Primary Care Gender Affirming Hormone Therapy Initiation Guidelines https://patha.nz.resources/Documents/Primary-Care-GAHT-Guidelines_Web_29-Mar.pdf.
- Rainbow Mental Health http://rainbowmentalhealth.nz/
- Trans and gender diverse language guide https://www.acon.org.au/wp-content/uploads/2019/07/TGD_Language-Guide.pdf

People taking PrEP during conception, pregnancy and breastfeeding whose partners are not virologically suppressed

Conception in serodiscordant couples

People without HIV infection who have sexual partners with documented HIV infection are at risk of HIV acquisition during natural attempts to conceive (i.e., without a condom) if their HIV-positive partner has a detectable or variably detectable plasma viral load. Providers should discuss with their patients the available information about the potential risks and benefits of PrEP in these circumstances.[29] For people wanting to conceive where their HIV-positive partner is stably virologically suppressed on combination antiretroviral therapy (cART), PrEP can still be offered to the patient if they express concerns about the risk of acquiring HIV in this setting. In this case, the patient may need to self-fund PrEP.

Pregnancy

The risk of acquiring HIV increases by approximately two-fold during pregnancy.[30] In addition, if HIV infection is acquired during pregnancy, there is a higher risk of HIV transmission to the infant than if the pregnancy occurred during chronic HIV infection because the HIV viral load is much higher during acute HIV infection.

The current evidence suggests that PrEP can be used safely during pregnancy and breastfeeding.[31]

The use of TD*-containing regimens by HIV-positive cis-women throughout pregnancy has not been associated with adverse pregnancy outcomes, but lowered bone mineral density (BMD) has been observed in the first month of life in newborns exposed to TD* in utero,[32] as has a lower length and head circumference at 1 year of age.[33]

A systematic review of 26 studies involving TDF and FTC exposure during pregnancy did not identify safety concerns that would limit the use of PrEP in pregnant or lactating women at

continuing risk of HIV acquisition.[34] An additional systematic review in 2020 looked at five completed studies, with data from 1042 TDF/FTC PrEP-exposed pregnancies.[35] One study found that PrEP-exposed infants had slightly lower adjusted mean z-scores for length and head circumference at 1 month of age; however, they were comparable to PrEP-unexposed infants in these measurements 1 year after birth.[36] The remainder of the studies did not observe differences in pregnancy or perinatal outcomes associated with TDF/FTC exposure.

The World Health Organization has included PrEP as an HIV-prevention strategy during pregnancy[37] and a number of other jurisdictions recommend PrEP for safe conception and for use during pregnancy and breastfeeding.[38]

Some people with HIV-positive partners may prefer to continue PrEP while pregnant, due to the increased risk of acquisition of HIV if their partners are not virologically suppressed during pregnancy.[38]

Providers should discuss with their patients available information on potential adverse pregnancy outcomes when beginning or continuing PrEP during pregnancy so that they can make an informed decision. TD*/FTC is classified as category B3 by the NZ Medicines and Medical Devices Safety Authority, Medsafe.[39]

The consensus of the NZ PrEP and PEP Guidelines panel is that PrEP may be continued during pregnancy in people at risk for HIV acquisition.

Breastfeeding

Although experience with PrEP during breastfeeding is lacking, there is substantial experience with the use of TD*/FTC during the breastfeeding period by HIV-positive cis-women taking TD*/FTC-based antiretroviral therapy. TD* and FTC are secreted in breast milk, although at much lower concentrations (0.03% and 2%, respectively) than the levels achieved with the doses recommended for the treatment of infants with HIV infection.[40] In the PrEP setting, a study evaluating antiretroviral excretion in breast milk and infant absorption suggests PrEP can be safely used during breastfeeding with minimal infant drug exposure.[41]

If a person acquires HIV infection while breastfeeding, the risk of transmission to the infant is higher than in an established infection, because of high viral load soon after seroconversion. Therefore, PrEP can be continued during breastfeeding in people at risk of HIV acquisition.

Patients with chronic active HBV infection

Both TD* and FTC are active against HIV and hepatitis B virus (HBV) infections. They may prevent the development of significant liver disease by suppressing HBV replication. Only TD*, however, is currently approved for this use in NZ. Therefore, ongoing treatment with TD*/FTC may be especially indicated in people with active HBV infection who are also at risk of HIV acquisition.

Of note, there are two case reports of patients who were receiving TD* for treatment of hepatitis B and who acquired HIV infection.[42] Plasma levels of tenofovir and prescription refills suggested that the patients' medication adherence was good. It is recommended that people with established hepatitis B infection who require treatment for hepatitis B infection receive combined TD*/FTC and have ongoing monitoring for HIV, PrEP and hepatitis B infection.

All people who test positive for hepatitis B surface antigen (HBsAg) should be evaluated by a clinician experienced in the treatment of HBV infection. For clinicians without this experience, co-management with an infectious diseases or liver specialist is recommended.

People living with chronic HBV infection should be tested for HBV DNA by the use of a quantitative assay to determine the level of HBV replication before PrEP is prescribed, and at regular intervals (e.g., every 3–6 months) while taking PrEP.[43] TD* presents a very high barrier to the development of HBV resistance. However, it is important to reinforce the need for consistent adherence to the daily doses of TD*/FTC to prevent re-activation of HBV infection with the attendant risk of hepatic injury, and to minimise the possible risk of developing TD*-resistant HBV infection.[44] For these reasons, event-driven PrEP is contraindicated in patients with chronic hepatitis B infection.

If PrEP is no longer needed to prevent HIV infection in a patient with chronic hepatitis B, a separate determination should be made about whether the patient requires ongoing treatment for HBV infection. Acute flares resulting from the re-activation of HBV infection have been seen in those with and without HIV infection after stopping TD* and other medications used to treat HBV infection. When people living with chronic hepatitis B elect to discontinue PrEP, they should first be evaluated by a clinician experienced in the management of HBV infection to ascertain their need for ongoing HBV treatment, and to monitor for any hepatic flares that occur if PrEP is ceased.

Patients with chronic renal failure

Patients without HIV infection and with established chronic renal failure, e.g., with estimated glomerular filtration rate (eGFR) that is consistently less than 60 mL/min/1.73 m^2 should not be prescribed PrEP. The only PrEP regimen proven effective to date and available in NZ is TD*/FTC, which is not indicated for those with chronic renal failure.[39] However, if a patient with chronic renal failure is at substantial risk of HIV, their condition should be discussed with specialists in the management of HIV and renal disease.

Adolescent minors

As a part of primary health care, HIV screening should be discussed with all adolescents who are sexually active or have a history of injecting drug use. Parental or guardian involvement in an adolescent's healthcare is often desirable but is sometimes contraindicated for the safety of the adolescent, and can compromise full disclosure.

Clinicians should carefully consider the data discussed below on the safety and efficacy of daily PrEP taken by persons under 18 years of age, including the possibility of bone mineral density loss, and other toxicities among youth who are still growing. Data are also available about the safety of TD*/FTC when used in treatment regimens for young people with HIV infection.[45] The clinician and the patient may conclude that the short-term, proximal risk of acquiring HIV infection greatly outweighs any short-term, or as yet undetermined, long-term risk of PrEP toxicity. Clinicians are encouraged to seek expert advice in complex situations.

Adherence to PrEP in adolescents may be suboptimal: a PrEP demonstration programme involving daily PrEP use for 18- to 22-year-old HIV-negative MSM reported that tenofovir diphosphate intracellular levels, a marker of cumulative TD* adherence, were consistent with good adherence peaking at 56% at 1 month, but declining thereafter.[46] In another open-label, 48-week

study of 78 adolescent MSM commencing PrEP, Project PrEPare, highly protective levels of PrEP were observed in 54% of adolescents at week 4 but declined thereafter.[47] Following this finding that PrEP levels declined markedly in these adolescent participants after the week 4 visit, the authors recommended that adolescents should be offered more frequent clinical monitoring to enhance their PrEP adherence.

The NZ PrEP and PEP Guidelines panel endorses this approach and encourages clinicians to work with adolescents taking PrEP to develop strategies to optimise adherence.

In the Project PrEPare study, there was no observed elevation in serum creatinine levels and significant increases were observed in bone mineral density for the spine, hip and total body between baseline and week 48. However, there was a slight but statistically significant decline in the total body z-score during this time, suggesting that bone growth may have been suboptimal in the study participants.[47] Although not observed in this study, higher levels of PrEP adherence as measured by red blood cells levels of tenofovir diphosphate have been associated with lower hip bone mineral density in adolescents.[48] Further research is needed to determine whether there is a long-term increased risk of bone fractures in young MSM who have had PrEP.

Globally until recently, regulatory approval of Truvada [tenofovir disoproxil fumarate (TDF) and emtricitabine (FTC)] PrEP was limited to adults over 18 years of age. However, on 15 May 2018, the US Food and Drug Administration (FDA), based on data from the Project PrEPare study discussed above, expanded its approval of Truvada as PrEP against HIV to include adolescents at-risk, weighing at least 35kg.

PrEP use for prevention of HIV in adolescents has not been approved by Medsafe.[39] However, clinicians are able to prescribe PrEP off-label for adolescents. In this setting, a decision to prescribe PrEP for a person under 18 years of age should be made at the discretion of the prescriber and on the advice of a specialist. The prescriber is responsible for obtaining and documenting informed consent from their patient. Informed consent should take into account the risks and benefits of that treatment versus other available treatments or no treatment at all, based on the individual circumstances.

Adolescents may obtain publicly funded PrEP with an off-label prescription, provided they meet the PHARMAC criteria.

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9. HIV post-exposure prophylaxis

The criteria for post-exposure prophylaxis (PEP) prescribing were widened in Aotearoa New Zealand in July 2022. PEP can now be prescribed by any relevant prescriber, including general practitioners and nurse practitioners.

This chapter outlines the management of individuals who have been exposed (or suspect they have been exposed) to HIV in non-occupational and occupational settings. It is adapted from the Australian *National Guidelines on post-exposure prophylaxis after non-occupational and occupational exposure to HIV (2nd ed.)*.[1]

There are currently no data from randomised controlled trials on the use of post-exposure prophylaxis (PEP) and evidence for use has been extrapolated from animal data, perinatal transmission, occupational exposure and small prospective studies of PEP regimens in HIV-negative men. Accordingly, assumptions are made about the direction of management.

People not receiving human immunodeficiency virus (HIV) pre-exposure prophylaxis (PrEP) who seek care within 72 hours after an isolated sexual, injection-related or occupational HIV exposure should be evaluated for the need for post-exposure prophylaxis (PEP). PEP may also be considered where a person receiving PrEP reports poor adherence and seeks care within 72 hours after an HIV exposure.

The clinician should take a history to differentiate isolated exposures from ongoing exposure. If potential HIV exposure is likely to be ongoing, the client should be offered transition to PrEP after completion of the 28-day PEP course.

Before you begin

The experience of presenting for PEP can be stressful in itself. Research has documented cases where people stated they did not re-present for PEP due to a previous negative experience and then later seroconverted.[2] Therefore, it is important that clinicians respond to each presentation in a non-judgemental way, using non-stigmatising language, and facilitating whānau support where requested.

To be effective, initiation of PEP needs to occur within 72 hours of the exposure; however, the earlier the better and within 24 hours is recommended. It is therefore important that PEP is easily accessible to those who need it. PEP has traditionally been available from sexual health clinics and emergency departments. With widening of prescribing criteria, PEP can now be prescribed by GPs and other relevant practitioners, increasing the options available for a patient. Training for staff should include the necessity to triage, assess and treat these patients with the appropriate priority.

Assessment of the risk of HIV transmission

The risk of HIV transmission through a single exposure is determined by:

- The nature of the exposure with its estimated risk (Table 9.1)
- The risk that the source is HIV-positive, if their status is unknown (Table 9.2)
- Factors associated with the source and exposed individuals.

Risk of HIV transmission

= *risk per exposure* **x** *risk of source being HIV-positive*

Many factors modify the risk of HIV transmission and should be considered in the risk assessment.

Viral load (VL):

- Higher plasma VL is associated with increased risk of HIV transmission.[3]
- People who take antiretroviral therapy for HIV daily as prescribed, and who have achieved and maintained an undetectable viral load for at least 6 months, cannot sexually transmit the virus to an HIV-negative partner. This is known as U=U (undetectable = untransmissible).[4] An undetectable viral load is likely to significantly reduce the risk of percutaneous transmission; however, the risk of *percutaneous* transmission with an undetectable viral load has not been studied, so U=U only applies for *sexual* exposures.
- Undetectable viral load is defined in these guidelines as less than 200 copies/mL.

Other factors that increase the risk of HIV transmission:

- a sexually transmitted infection (STI) in the source or exposed individual, especially genital ulcer disease and symptomatic gonococcal infections
- source ejaculation during receptive anal or vaginal intercourse
- a breach in genital mucosal integrity (e.g., trauma, genital piercing or genital tract infection)
- a breach in oral mucosal integrity when performing oral sex
- penetrating, percutaneous injuries with a hollow bore needle, direct intravenous or intra-arterial injection with a needle or syringe containing HIV-infected blood
- the uncircumcised status of the HIV-negative exposed individual practising insertive anal intercourse (IAI) or insertive vaginal intercourse (IVI).

PEP is recommended where the risk of transmission can be calculated to be greater than 1/1000. Exposed persons who meet this threshold should be informed of their risk and recommended PEP. Exposed persons who have a risk of between 1/1000 and 1/10,000 may wish to consider PEP, particularly if there are additional circumstances suggesting increased risk or if the risk is close to 1/1000. Most exposed persons who present requesting PEP will fall into this category of risk.

Exposed persons with a risk of transmission less than 1/10,000 should be informed that their risk is low and advised that the harms of PEP outweigh the potential benefits. Hence, PEP is not recommended for them and should not be offered. **Where individuals have multiple exposures within 72 hours a cumulative risk should be considered.**

Immediate management of an individual with known or suspected exposure to HIV

- After oral exposure, spit out blood/body fluids and rinse mouth with water.
- Wash wounds and skin sites that have been in contact with blood or body fluids with soap and water.
- Irrigate mucous membranes and eyes (remove contact lenses) with water or saline.
- Do not inject antiseptics or disinfectants into wounds.
- Do not douche the vagina or rectum after sexual exposure.

Clinical assessment

In making a clinical assessment, health practitioners should consider the gender, culture, language and literacy level of the patient, and their intellectual capacity. The following details should be discussed and documented in the patient's history.

1. Information about the exposure

- Date and time of exposure
- Type of exposure, including blood or body fluids involved, trauma, first aid measures applied and any contributory factors.

Table 9.1 Exposure and transmission risk/exposure with known HIV-positive source who is NOT on antiretroviral treatment

Type of exposure with known HIV-positive source who is NOT on antiretroviral treatment	Estimated risk of HIV transmission/exposure*
Receptive anal intercourse (RAI) – ejaculation	1/70[5]
– withdrawal	1/155[5]
Shared needles and other injecting equipment	1/158[6]
Insertive anal intercourse (IAI) uncircumcised	1/160[5]
Insertive anal intercourse (IAI) circumcised	1/900[5]
Receptive vaginal intercourse (RVI) **	1/1250[7]
Insertive vaginal intercourse (IVI)	1/2500[7]
Receptive or insertive oral intercourse	Unable to estimate risk – extremely low (<1/10,000)[8]
Needlestick injury (NSI) or other sharps exposure	1/440[6]
Mucous membrane and non-intact skin exposure †	< 1/1000

Notes: All sexual risk estimations are for condomless sexual contact. It is assumed that a similar risk is incurred when a condom fails.

* These estimates do not take into account source viral load.

** While not quantifiable, the risk is likely to be higher in trans and non-binary individuals using testosterone, due to atrophic changes of the vaginal epithelium. The risk of HIV transmission for receptive vaginal intercourse in individuals with a neovagina is unknown, and is likely to be affected by surgical construction method.

† Human bites are extremely low risk.

2. Information about the exposed person

- Most recent HIV test and result
- Potential exposures within the last 3 months (or earlier if last HIV test longer than 3 months ago)
- Previous use of PEP or PrEP
- Evaluation of current STIs
- Pregnancy risk, contraception and lactation (consider emergency contraception)
- Medical history, in particular Hepatitis B (HBV) and Hepatitis C (HCV) infection, renal disease, psychiatric history
- Medication history, including drug allergies
- Drug and alcohol history.

If potential HIV exposure is likely to be ongoing, the client should be offered transition to PrEP after completion of the 28-day PEP course.

If a patient is known to be HBV- or HCV-positive, advice from a liver, sexual health or infectious diseases specialist should be sought before PEP is commenced.

3. Information about the source person

- HIV status if known
- Demographics factors, e.g., gender, country of origin

It is useful to contact the source to establish exposure risk. In practice, this is often not possible in cases of non-occupational exposure. **Provision of PEP should not be delayed while attempting to obtain this information.**

If the source cannot be contacted, or chooses not to disclose their HIV status or have an HIV test, the seroprevalence data (see Table 9.2) will assist in determining the need for PEP.

If the source is contactable:

- If the source discloses they are HIV-positive, consent should be gained to seek treatment details from their doctor. It is useful to know if they are on treatment or not, and if their viral load is undetectable, as well as any known drug resistance.
- If the source is taking PrEP (pre-exposure prophylaxis), PEP is generally not required. Decisions to prescribe PEP should still be considered on a case-by-case basis due to potential for non-adherence of the source.
- Check hepatitis B and C status of source, and current STIs.

Table 9.2 HIV prevalence in Aotearoa New Zealand

Source population group*	Prevalence (per 1000)
Heterosexual men **	1.2 (0.12%)[9]
Heterosexual women **	1.4 (0.14%)[9]
Men who have sex with men (MSM)	65 (6.5%)[10]
MSM at sex-on-site venues	105 (10.5%)[10]
Injecting drug users:	
· Needle exchange attendees	~10 (~1%)[11]
· MSM (past/recent injecting drug use)	(14.0/24.2%)[12]

Notes: *Data are for cisgender (not transgender) population groups. There are limited local data on transgender and non-binary people and HIV in Aotearoa New Zealand;[13] however, incidence appears to be low in contrast to many other areas of the world. The most vulnerable parts of the transgender and non-binary community in NZ are likely to be people whose sexual networks include MSM.

** Based on data from sexual health clinic attendees, which is likely to be an over-estimate of the prevalence in the general population. As a comparison, the prevalence of HIV in NZ blood donors is 2.6/100,000 population.[14]

Globally, sex workers are disproportionately affected by HIV; however, rates in NZ are very low. A study of HIV prevalence in sexual health clinics over a 12-month period in 2005-2006 found no HIV cases, diagnosed or undiagnosed, among current sex workers.[10] Among 358 sex workers attending an Auckland Sexual Health Service outreach clinic between 2018-2020, only one person (on treatment and undetectable) was living with HIV.[15]

The majority of people living with HIV in NZ are aware of their diagnosis, and most are using antiretroviral therapy. Most of those using antiretroviral therapy are undetectable.[16] People who take antiretroviral therapy for HIV daily as prescribed, and who have achieved and maintained an undetectable viral load for at least 6 months, cannot sexually transmit the virus to an HIV-negative partner (U=U).[4]

An undetectable viral load is likely to significantly reduce the risk of percutaneous transmission; however, the risk of *percutaneous* transmission with an undetectable viral load has not been studied, so U=U only applies for *sexual* exposures.

HIV seroprevalence in overseas populations: The seroprevalence overseas varies widely, with a High Prevalence Country (HPC) being defined as having a prevalence of >1% in the general population. However, variance is not only between countries but also in different risk groups. The highest global seroprevalence is in Eswatini (26.8%), with a prevalence of 60.8% among sex workers in that country.[17] For seroprevalence for individual countries, go to https://www.cia.gov/the-world-factbook/about/archives/2021/field/hiv-aids-adult-prevalence-rate/country-comparison.

4. PEP recommendations

PEP consists of a 28-day course of antiretroviral therapy, either two-drug or three-drug treatment, as recommended in Table 9.3.

Two-drug regimen:

Co-formulated Tenofovir disoproxil* 245mg with emtricitabine 200mg (One tablet once daily)

Three-drug regimen:

Co-formulated Tenofovir disoproxil* 245mg with emtricitabine 200mg (One tablet once daily)

PLUS

Dolutegravir 50mg (once daily)

There is no direct evidence to support the greater or lesser efficacy of three- over two-drug preventative regimens. The main factor affecting efficacy appears to be starting PEP as early as possible after exposure (ideally within 24 hours). Any possible benefit conferred by the addition of a third drug must also take into account potential side-effects, toxicity, adherence and cost-effectiveness.

Situations where there is uncertainty or complexity, such as known or suspected antiretroviral resistance in the source, pregnancy, renal impairment, drug interactions, breastfeeding or chronic hepatitis B or C, should be discussed with an infectious diseases or sexual health physician.

If potential HIV exposure is likely to be ongoing, the client should be offered transition to PrEP after completion of the 28-day PEP course, assuming that the HIV test remains negative.

Where PEP is recommended, it should be prescribed and started as soon as possible after the exposure *and within 72 hours (ideally within 24 hours)*

Occupational HIV transmission is rare. There has only been one confirmed case of occupational HIV transmission in the United States since 1999[19] and no cases in the UK over the same time period.[20] This may be due to a number of factors, including change in practices to reduce the risk of needlestick injury and a greater proportion of patients on treatment with undetectable viral load.

Table 9.3 PEP recommendations

NB: Decisions to follow these recommendations must be based on the professional judgment of the clinician and consideration of individual patient circumstances.

	Source known HIV-positive		Source of unknown HIV status	
	HIV VL unknown or detectable	HIV VL undetectable	Source known to be MSM or from high-prevalence country[18]	Source from other (low-prevalence) population
Sexual exposure				
Receptive anal sex	3 drug	Not recommended	2 drug	Not recommended
Insertive anal sex uncircumcised	3 drug	Not recommended	Consider 2 drug	Not recommended
Insertive anal sex circumcised	3 drug	Not recommended	Consider 2 drug	Not recommended
Receptive vaginal sex	3 drug	Not recommended	Consider 2 drug[a]	Not recommended
Insertive vaginal sex	3 drug	Not recommended	Not recommended	Not recommended
Fellatio	Not recommended[b]	Not recommended	Not recommended	Not recommended
Cunnilingus	Not recommended	Not recommended	Not recommended	Not recommended
Semen splash into eye	Not recommended	Not recommended	Not recommended	Not recommended
Occupational and other exposures				
Shared injecting equipment	3 drug	3 drug[c]	Consider 3 drug	Not recommended
Occupational needle-stick injury	3 drug	3 drug[c]	Generally not recommended[d]	Not recommended
Mucosal exposure/ splash injury to infectious fluids	3 drug	Generally not recommended[e]	Generally not recommended	Not recommended
Human bite	Not recommended[f]	Not recommended	Not recommended	Not recommended
Needle-stick injury from a discarded needle in community			Not recommended	Not recommended

Notes: PEP is not recommended for any exposure when the source is from a low-prevalence population or where the source is taking HIV pre-exposure prophylaxis (PrEP). Decisions to prescribe PEP when source is using PrEP can still be considered on a case-by-case basis due to potential for non-adherence of the source.

a. Where the source is from a high-risk group and normally resides outside NZ, the risk may be greater. Other factors that may influence decision-making include breaches in the mucosal barrier, multiple exposures within the previous 72 hours, STI in either partner. Where there is doubt, PEP should be given.
b. PEP may be recommended for receptive oral intercourse with ejaculation if the exposed person has a breach in their oral mucous membrane.
c. The risk of transmission is likely to be low, but in the absence of evidence to support U=U in the setting of a percutaneous exposure, the authors support offering PEP in this situation.
d. In the occupational setting, the source is usually able to be identified and tested for HIV, and PEP is usually only prescribed or continued for those who have definitely been exposed to HIV. If the source is unable to be tested immediately, the exposed healthcare worker should be commenced on PEP without waiting for the results if the source is at high risk of being HIV-positive. If the source is unable to be identified or tested, then the risk of the source being HIV-positive must be assessed from any epidemiological or other information available. The use of PEP should be decided on a case-by-case basis, and it is recommended that an expert is always consulted in this situation. It is reasonable to always offer PEP to a healthcare worker who has had a significant exposure to a source who is HIV-positive, even if the source has an undetectable HIV viral load.
e. Very low risk of transmission; however, 2 drug PEP could be considered for an occupational exposure based on the professional judgment of the clinician and consideration of individual patient circumstances.
f. PEP could be considered for patients who fulfil ALL of the three following criteria: a) the biter's saliva was visibly contaminated with blood; b) the biter is known or suspected to have a plasma HIV viral load >1000 copies/ml; and c) the bite has resulted in severe and/or deep tissue injuries.

5. PEP discussion

The currently recommended PEP regimens are well tolerated, with minimal side-effects, drug–drug interactions, dosing requirements and pill burden. Alternative regimens may be recommended following discussion with a specialist, depending on the medical history of the exposed person, or source information concerning antiretroviral treatment history and the results of past HIV resistance testing.

Clinicians must inform patients who are prescribed PEP about the following:

- PEP must be commenced within 72 hours of exposure (ideally within 24 hours)
- PEP provides high levels of protection but does not prevent 100% of infections
- the importance of adherence
- HIV seroconversion signs and symptoms (see Table 9.4)
- the potential adverse effects of treatment and possible drug interactions (see Table 9.5)
- measures for preventing re-exposure to HIV
- baseline and follow-up HIV testing (see Table 9.6).

HIV-related stigma and discrimination unfortunately still exist in many settings. Effective treatment for HIV is available and funded for anyone living with HIV in Aotearoa New Zealand, regardless of residency status. With early treatment and care, people living with HIV can expect a life expectancy similar to a person without HIV. Failure to diagnose HIV can result in serious illness and onward transmission to others.

Table 9.4 Signs and symptoms of HIV seroconversion

Signs and symptoms of HIV seroconversion	
• May be asymptomatic	• Headache
• Fever	• Lymphadenopathy
• Sore throat	• Myalgia
• Fatigue	• Rash

Patients should adopt risk-reduction practices until their seronegative status is confirmed at follow-up. This includes safer sexual and injecting behaviour as well as preventing exposing others to their body fluids through other means such as accidents or body tissue donation. People with child-bearing potential should be counselled about pregnancy, the risk of vertical transmission, contraception, and offered emergency contraception if indicated.

If potential HIV exposure is likely to be ongoing, the client should be offered transition to PrEP immediately after completion of the 28-day PEP course, assuming their HIV serology remains negative.

6. Prescribing PEP

Patients should receive a prescription for the complete course, and should have follow-up arranged with a specialist PEP provider or the patient's GP. Medication packs should be available if delays in accessing PEP from a pharmacy are likely, for example after-hours or in rural locations. It is helpful for services to be aware of pharmacies in the area which stock PEP, particularly those which are open after hours.

Medication interactions should be checked using the Liverpool HIV Drug Interactions Checker https://www.hiv-druginteractions.org/checker

PEP requires a special authority for funding.

Table 9.5 Specific medications and cautions

Medication	Comments and cautions
Tenofovir/emtricitabine	• Once-daily dosing. • Well tolerated. • Mild GI side-effects not uncommon at initiation and are expected to settle within 1-2 weeks. • Tenofovir can impact renal function; however, the risks are very low with a 28-day course, in a person who is otherwise well with no renal risk factors. • Use with caution or avoid in renal disease. Tenofovir should not be used if eGFR <50. • Use zidovudine/lamivudine where tenofovir is directly contraindicated and seek expert advice. Zidovudine/lamivudine requires BD dosing, and has frequent side-effects, so is not recommended as a first line agent.
Dolutegravir	• Once-daily dosing. • Well tolerated when used in PEP with high rates of adherence and regimen completion rates. **Drugs that are contraindicated**: • Dofetilide (not available in Aotearoa New Zealand) **Drugs that should be used with caution**: • Phenytoin, phenobarbital, rifampicin, St John's Wort, carbamazepine - increase dolutegravir dose to 50mg BD or stop St John's Wort. • Antacids containing polyvalent cations e.g., Mg or Al – use at least 2 hours before or 6 hours after the dolutegravir dose. • Products containing calcium or iron – use at least 2 hours before or 6 hours after the dolutegravir dose OR dose concomitantly with food. • Metformin – increase monitoring of glycaemic control, adjustment in metformin dose may be required. Medication interactions should be checked using the Liverpool HIV Drug Interactions Checker - https://www.hiv-druginteractions.org/checker

Non-occupational exposure:
PEP can be prescribed by any relevant prescriber in Aotearoa New Zealand, including general practitioners and nurse prescribers.

The PHARMAC criteria for funded PEP are BOTH:

1. Treatment course to be initiated within 72 hours post exposure; and
2. Any of the following:
    i. Patient has had condomless anal intercourse or receptive vaginal intercourse with a known HIV-positive person with an unknown or detectable viral load greater than 200 copies per ml; or
    ii. Patient has shared intravenous injecting equipment with a known HIV-positive person; or
    iii. Patient had had non-consensual intercourse and the clinician considers that the risk assessment indicates prophylaxis is required; or
    iv. Patient has had condomless anal intercourse with a person from a high HIV prevalence country or risk group whose HIV status is unknown.

Exposed persons with appropriate risk who do not meet the PHARMAC criteria can be offered self-funded PEP, which costs approximately NZ$30 for a course of 2-drug PEP, or approximately NZ$1345 for a course of 3-drug PEP, depending on pharmacy mark-up (2023).

Occupational exposure:
PEP for an occupational exposure must be prescribed by a named HIV prescriber (usually an infectious diseases or sexual health specialist).

The PHARMAC criterion for funded PEP is:

- The patient has percutaneous exposure to blood known to be HIV-positive.

7. Laboratory assessment and follow up

After potential exposure to HIV, individuals should have baseline and follow-up testing for HIV and other infections (depending on mode of exposure).

PEP should be initiated immediately, and must not be delayed while awaiting the results of baseline testing. Where possible, the results should be followed up within 24 hours of the specimen being collected.

Individuals found to be HIV-positive or indeterminate on baseline testing, or during follow-up, require immediate referral to an HIV specialist.

Table 9.6 Laboratory monitoring of individuals who are prescribed PEP

Test	Baseline (Week 0)	Week 4-6	Month 3
HIV serology	x	x	x
Syphilis	x	x	x
Hepatitis B*	x		x
Hepatitis C	x		x
FBC, LFT, Creat, eGFR	x		
STI testing †	x	x	x
Pregnancy test^	x	x	

Notes: * Individuals with evidence of previous immunity to hepatitis B (HBsAb positive) will require no further follow-up. Patients who have already commenced PEP whose baseline serology is consistent with chronic/active hepatitis B should have LFTs +/- viral load monitored. Advice from a specialist in the management of viral hepatitis should be sought.

† As per Aotearoa New Zealand STI Management Guidelines for use in Primary Care.

^ If clinically indicated.

Management of possible exposure to other conditions

Hepatitis B

All individuals presenting for PEP are assessed for the possibility of hepatitis B exposure. Individuals with evidence of previous immunity to hepatitis B (HBsAb positive) will require no further follow-up. Non-immune individuals should be offered immunisation (unfunded indication) and follow-up. Non-immune individuals exposed to a source who is known to have chronic hepatitis B (HBsAg positive) should be managed as per the *Communicable Disease Control Manual* https://www.tewhatuora.govt.nz/publications/communicable-disease-control-manual/

Sexually transmitted infections

Individuals presenting for non-occupational PEP require appropriate targeted screening for chlamydia, gonorrhoea and syphilis. If symptoms of STI are present, further tests, empiric treatment and follow-up are required. For further advice see the Aotearoa New Zealand STI Management Guidelines for use in Primary Care at www.sti.guidelines.org.nz.

Hepatitis C

Individuals who are potentially at risk of hepatitis C infection (e.g., people who have shared needles and other injecting equipment, or who have had a needlestick injury, or men who have sex with men that have engaged in condomless anal sex) require baseline and follow-up testing for hepatitis C. Effective treatment for hepatitis C is available – refer to HealthPathways.

Pregnancy and breastfeeding

All people who have the potential to be pregnant at the time of presentation for PEP should be offered pregnancy testing. Emergency contraception is offered to people presenting for PEP within 72 hours, who are at risk of pregnancy. Follow-up pregnancy tests should be offered at 3-4 weeks post-exposure where indicated. Specialist advice should be sought urgently for people who require PEP and are pregnant or breastfeeding.

Tetanus

Individuals who sustain wounds or abrasions should have their tetanus status assessed and be offered immunisation as indicated.

Additional clinical management issues

1. Individuals at risk of HIV acquisition who decline PEP

Education about risk reduction (including PrEP) and HIV seroconversion should be provided. It is important that the patient remains engaged with a health service to ensure follow-up testing over the following 3 months.

2. Individuals at negligible risk of HIV transmission who request PEP

This response may relate to anxiety and fear about an apparently negligible exposure or to undisclosed more serious risk behaviours.

It is important that the clinician takes a supportive approach and documents all advice given, including if PEP was not recommended. Early follow-up and a low threshold for psychological referral is recommended.

3. Individuals who re-present for PEP

People who present for repeat PEP should be supported, with each presentation assessed on its merits in a non-judgemental manner.

Repeat presentation(s) and extension of PEP courses warrant careful assessment of the context of risk behaviour and should prompt consideration for PrEP, referral to mental health, risk-reduction counselling and/or AOD services. Safer sex information should be an integral part of the consultation.

4. Individuals who are on PrEP

If an individual is presenting to start PrEP and they have had a possible exposure within the last 72 hours, they should be offered PEP and can then be transitioned to PrEP immediately after completion of the 28-day PEP course, assuming their HIV serology remains negative.

See Table 9.7 for guidance on switching from PrEP to PEP. If switching from PrEP to PEP occurs in an emergency department, expert advice should be sought and the individual referred back to their PrEP prescriber as a matter of urgency.

Table 9.7 Switching from PrEP to PEP

Risk event	Adherence to PrEP	Recommendations
Requires 3-drug PEP	At least 4 doses in the week of the risk event	Continue PrEP
Requires 3-drug PEP	PrEP 2-1-1 taken appropriately	Consider risk reduction counselling
Requires 2-drug PEP	< 4 doses in the week of the risk event(s)	Transition to 3-drug PEP if last risk event is within the 72-hour PEP window. Thoroughly assess context of adherence difficulty and intervene.

5. Transitioning from PEP to PrEP

Ideally, HIV status should be confirmed as negative at 12 weeks post-PEP if transitioning from PEP to PrEP. However, individuals at risk may never be out of the serological testing window and PrEP initiation may be a matter of urgency. Individuals should be tested for HIV at the end of their PEP course, and transitioned immediately onto PrEP if their test remains negative.

6. Renal disease

All patients having PEP should be assessed for renal impairment. Tenofovir should not be used if creatinine clearance is less than 50mL/min (60mL/min for PrEP). Zidovudine with lamivudine with both doses adjusted to degree of renal function is recommended as a 2-drug regimen with a third agent as indicated.

7. Gender identity and history

It is important to not make assumptions about an individual's gender identity, sexual orientation, anatomy, the type of sex they may have (e.g., anal, vaginal/'*front hole*') or the level of risk associated with that sex (e.g., a trans man having condomless receptive sex with a cisgender man could be at high risk regardless of whether that sex is anal or vaginal). The need for PEP should be assessed based on the type of exposure determined during the clinical assessment. It may be beneficial to use open-ended questions to allow people to choose what information they disclose about the types of sexual interaction in which they engage.

8. Individuals who have been sexually assaulted

Those who present due to sexual assault should be assessed for their need for PEP as early as possible after the event. This is usually best done in a specialist sexual assault centre (where specialist counselling and forensic testing can also occur). However, PEP, if indicated, should not be delayed pending referral. Cisgender male-to-male or transgender sexual assault clients should always be offered PEP if penile-anal penetration has occurred. There are no data on HIV prevalence for convicted sexual assailants in NZ; however, overall prevalence of HIV in NZ correctional facilities is <0.1%.[21] Given that the risk of exposure is low, PEP is generally not recommended following heterosexual sexual assault; however, the decision to prescribe PEP should be made on a case-by-case basis. Factors such as multiple assailants, penile-anal penetration, trauma or an assailant who is from a high prevalence country may increase the exposure risk. Emergency contraception should always be offered for people at risk of pregnancy in this situation.

9. Children

The management of children requiring PEP is beyond the scope of this guideline. Children at potential risk of HIV exposure should be discussed with relevant paediatric services.

10. Prisoners and detainees

People living in correctional or detention facilities who are potentially exposed to HIV sexually, through injecting drug use or other means require assessment for PEP as soon as possible after exposure. HIV prevalence in NZ correctional facilities is <0.1%.[21] Timely disclosure of exposure is obviously a limiting factor in these circumstances. The provision of assessment and treatment in correctional facilities should be available across all jurisdictions.

11. Individuals who commenced PEP overseas

Those who started PEP while overseas may have been prescribed antiretroviral drugs which are not available or recommended in Aotearoa New Zealand. Frequently, they may not have had all of the recommended baseline tests and STI/BBV evaluations recommended in Table 9.6. These should be completed as soon as possible and the individual should complete the PEP course using a NZ-recommended PEP regimen. This can cause some anxiety to the patient and should be carefully explained and the individual reassured.

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10. Improving medication adherence

Medication adherence is critical to achieving the maximum prevention benefit of pre-exposure prophylaxis (PrEP) and reducing the risk of selecting for a drug-resistant virus in the event of HIV acquisition.[1,2]

In randomised, blinded, placebo-controlled trials of PrEP, adherence varied[2] and was lower among cisgender women in some studies,[3,4] in transgender women[5] and young PrEP users.[6-8] PrEP adherence has generally been higher in more recent trials, open-label extensions and demonstration projects, particularly among men who have sex with men (MSM). These better adherence rates have been due to increasing knowledge about PrEP's efficacy and differing motivations for taking PrEP.[1,9,10]

Common reasons for non-adherence may include a perceived low risk of acquiring HIV,[3,11,12] start-up symptoms[12-15] and concerns regarding long-term side-effects,[11,12,16] factors of daily life such as medication management,[12,17] perceived and enacted stigma due to being eligible for PrEP[12] and lack of social support from partners, family and friends.[12] Common challenges to PrEP adherence, particularly for MSM, are party drug and alcohol use.[17] Party drug use (at the event level) is known to increase the likelihood of missing a dose on the same as well as the next day, thus potentially affecting the efficacy of event-driven PrEP.[18] People with mental health disorders are also more likely to self-discontinue the use of PrEP.[19] Studies of adolescent MSM using PrEP have shown that approximately 55% of participants have evidence of high adherence at week 4, but adherence declines markedly after the first month.[7,8]

Patient education and adherence counselling focused on medication self-management are needed to support ongoing daily PrEP use (Box 10.1).

Box 10.1 Key components of medication-adherence counselling

Improving medication adherence

Provide simple explanations and education on the following issues:

- Relationship of adherence to the efficacy of PrEP
- Medication dosage and schedule
- Management of common side-effects
- Signs and symptoms of acute HIV infection and recommended actions

Support adherence:

- Tailor daily dose taking to patient's daily routine (e.g., with tooth brushing, before bed)
- Identify reminders and devices (e.g., apps, beepers, alarms) to minimise forgotten doses
- Identify and address potential barriers to adherence.

Monitor medication adherence in a non-judgemental manner:

- Normalise occasional missed doses while ensuring patient understands importance of daily dosing for optimal protection
- Reinforce success
- Identify factors interfering with adherence and plan with patient to address these factors
- Assess side-effects and provide advice on how to manage them.

Various approaches can be used to effectively support medication adherence.[20] These include:

- educating patients about the medications
- helping patients anticipate and manage side-effects
- helping patients establish dosing routines that fit with their work and social schedules
- providing reminder systems and tools such as pill boxes and electronic reminders
- addressing substance abuse or mental-health needs that may impede adherence
- arranging more frequent clinic visits for adolescents to enhance their adherence
- facilitating whānau, social and peer support.

When initiating a PrEP regimen, clinicians need to educate patients about medication schedules (for daily or event-driven PrEP, that is, the use of PrEP before and after potential HIV exposures), how to commence taking PrEP and how to cease taking PrEP and what to do if they experience problems such as side-effects or missed doses. See *Chapter 6: Providing PrEP* regarding specific recommendations about dealing with missed doses.

Medication adherence should be discussed at each visit when the PrEP script is provided, to identify barriers to optimal PrEP adherence and develop appropriate management plans.

Evidence that different dosing strategies can be effective provides an opportunity to offer flexibility, choice and convenience to patients who are benefiting from PrEP. Event-driven PrEP is an option for certain populations (see Chapter 6: Providing PrEP), and has been endorsed in guidance from the World Health Organization.[21] Event-driven PrEP could be considered for certain populations when taking daily medication is not acceptable, sex is infrequent and a person feels they can plan their sexual activity. If patients choose to take event-driven PrEP, their behaviour and PrEP pill use patterns should be discussed at each visit, to help determine if they should perhaps switch to daily PrEP.

Side-effects can lead to non-adherence. Clinicians should inform patients about the most common side-effects and should work with patients to develop a specific plan for handling them, including the use of specific over-the-counter medications that can mitigate symptoms.

In the context of discussing PrEP adherence, patients should be reminded about the need to be tested for HIV and sexually transmitted infections (STIs) every 3 months or earlier if required, due to perceived risks or symptoms.

The importance of using condoms to prevent STIs, or to help prevent HIV if PrEP adherence has been suboptimal should be discussed with patients. To improve adherence and effectiveness of PrEP, patients should also be informed about how to stop taking PrEP and re-start it, so that they are prepared for these changes. See chapter 6. Providing PrEP regarding specific recommendations on starting and ceasing PrEP.

Clinicians may wish to explore and address other potential barriers to optimise PrEP use such as misconceptions about PrEP, behavioural factors (e.g., substance use), depression, partner violence and unstable housing. To improve adherence to their PrEP medication, some patients may benefit from referral to mental health or social services, or peer-based support services provided by various organisations (e.g., services provided by Burnett Foundation Aotearoa, Body Positive, Positive Women Inc, New Zealand Sex Workers Collective).

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11. Behavioural strategies to reduce risk

In the era of HIV, PrEP and treatment as prevention, behavioural methods of risk reduction—including condom use, clean injecting equipment, HIV serosorting, strategic positioning, and negotiated safe practices with sexual partners—retain their importance in preventing HIV transmission.

However, some vulnerable people may be unable to effectively negotiate use of these prevention strategies, especially condoms, with their regular or casual partners. The initiation of PrEP is straightforward, but on occasion it may be appropriate to refer some particularly vulnerable people with complex needs to health professionals with expertise in HIV prevention and sexual health.

PrEP's efficacy relates directly to the patient's adherence to PrEP medication not to whether the patient is using condoms in tandem with PrEP.[1,2] People using PrEP should be supported with ongoing information about the role that condoms and other practices play in preventing HIV when PrEP adherence is suboptimal as well as the role that condoms play in sexually transmitted infection (STI) prevention.

Provide feedback on HIV risk factors identified during sexual and substance use history-taking:

- Elicit barriers to, and facilitators of, consistent condom use and other safer sex and substance use practices.
- Elicit barriers to, and facilitators of, reducing injecting drug use.
- Discuss with patients the barriers to, and facilitators of, evidence-based drug treatment where indicated and requested.

Support risk-reduction efforts:

- Help patients identify one or two feasible, acceptable, incremental steps toward risk reduction.
- Identify and address anticipated barriers to accomplishing planned actions to reduce risk.

Monitor medication adherence in a non-judgemental manner:

- Acknowledge the effort required for behavioural change.
- Reinforce success.

If not fully successful, assess factors interfering with completion of planned actions and help patient identify the next steps.

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12. How to access PrEP in Aotearoa New Zealand

There are 3 ways to access HIV pre-exposure prophylaxis (PrEP) in Aotearoa New Zealand.

1. Publicly funded PrEP
For people eligible for publicly funded healthcare, PrEP will be funded for those at elevated risk of HIV acquisition (requires special authority). Any relevant prescriber can write a script for PrEP which can be taken to any pharmacy for dispensing.

2. Private script for supply from pharmacy
Any doctor can write a private script for PrEP. Patients can have this script dispensed at a community pharmacy. Depending on pharmacy mark-up, each bottle of 30 pills will cost approximately NZD$30 (2023). This option is generally used by people who are not eligible for publicly funded healthcare.

3. Through personal importation
There are multiple overseas suppliers who will supply PrEP for import into NZ at a range of costs. Given the current low cost of PrEP available within NZ, it is generally no longer cost-effective to import the drug from overseas. For those where the cost remains prohibitive, Burnett Foundation Aotearoa has partnered with an overseas pharmacy to support a scheme that provides PrEP at no cost to those who have a prescription. See Burnett Foundation Aotearoa website for more information.

Tips for clinicians:

- Personal importation is legal, but not routine. It is recommended that patients are asked to sign a consent form acknowledging that they understand and accept the risks of importing generic PrEP from overseas. New Zealand's Medical Protection society has developed a patient consent form specifically for importing PrEP. You can contact them on 0800 225 5677 to obtain a copy of the form.
- Add "I am aware that this is to be imported from overseas" to the script to help prevent the shipment being delayed at the border.

13. Models of PrEP delivery

Since 1 March 2018, combination tenofovir disoproxil* and emtricitabine (TD*/FTC) for HIV PrEP has been publicly funded by PHARMAC, and can now be initiated by any relevant prescriber, including GPs and nurse practitioners.

Making PrEP easily accessible for all who would benefit requires clinicians to be aware of, and be competent and comfortable with, prescribing PrEP. The role of medical providers in primary care is instrumental to optimising PrEP access and use.

Below is a list of PrEP resources designed for clinicians to upskill their knowledge and skills in the provision of PrEP:

- Burnett Foundation Aotearoa PrEP information for clinicians: https://www.burnettfoundation.org.nz/prep-information-for-clinicians/ - includes free online modules aimed for NZ-based primary care clinicians on PrEP prescribing, and related topics
- Goodfellow Unit
- Burnett Foundation Aotearoa PrEP information for patients: https://www.burnettfoundation.org.nz/learn/staying-safe/prep/

The prescription and provision of PrEP clinical and laboratory monitoring are straightforward for GPs and other clinicians. However, some providers who are less experienced in serving populations at elevated risk of HIV and/or other sexually transmitted infections (e.g., men who have sex with men, transgender and non-binary people who share sexual networks with MSM, Māori and Pasifika, people who have sex overseas in places of high HIV prevalence, people whose partners are at high risk for HIV and STIs, and people who inject drugs) may wish to consider establishing relationships with specialist colleagues experienced in HIV and sexual health medicine. HIV clinics and sexual health clinics can provide information and support if required.

When starting PrEP services, providers should also establish:

1. Appropriate referral pathways to ensure that specific needs of PrEP users are adequately provided for (e.g., regular HIV and STI testing, the management of chronic hepatitis B infection, treatment of hepatitis C and possible abnormal liver and kidney function – see *Chapter 5: Clinical assessment before starting PrEP* for more details.

2. Communication with local pharmacies to ensure uninterrupted refills of PrEP scripts. Some community pharmacies do not keep the medication in reserve and would have to order it in. Same-day order and delivery might not always be possible. Other pharmacies with higher client load requiring HIV medications will have PrEP medication in reserve. Many pharmacies also offer a delivery service. It is ideal for PrEP-users to get their scripts renewed and filled before they completely run out of medication.

An important approach to successful PrEP implementation is to engage representatives from HIV community-based organisations working with relevant populations in the delivery of PrEP. Community-based organisations such as Burnett Foundation Aotearoa and Body Positive can assist with PrEP promotion and education and, depending on their capacity, may also be able to assist with behavioural screening and adherence support. Similarly, support from community-

based Māori and Pasifika rainbow organisations, as well as other organisations working with culturally diverse communities is essential to ensuring equitable PrEP uptake.

When embarking on PrEP prescribing, providers should also consider the capacity of their practices to accommodate new patients and maintain follow-up every 3 months while taking PrEP. Several approaches may be helpful in dealing with these changes to practice:

- Careful planning of clinic appointments to allow sufficient space for PrEP initiation and regular follow-up visits.
- Where resources allow, automating most steps in the patient pathway, to reduce the patient registration-to-PrEP prescription time.
- Task shifting including having clinical nurse specialists, or trained nurses with clinician supervision, in charge of PrEP-related services where possible.
- Developing systems and procedures for recording and monitoring PrEP use.

Clinical practices that are planning to build up their PrEP patient population can consider developing a customised communications plan for PrEP demand creation, including media channels and communication strategies which will be used to drive local PrEP awareness and use, with input from relevant local community-based organisations and sexual health services.

Lastly, if for relevant reasons a medical practitioner or clinic setting is not prescribing PrEP, provision should be made for people seeking PrEP or who are identified as likely to benefit from PrEP, to be efficiently directed to a local PrEP provider.

Glossary

AIDS acquired immunodeficiency syndrome

ART antiretroviral therapy

ASHM Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine

BBV blood borne virus

BMD bone mineral density

Cisgender A term used to describe people whose gender aligns in an expected way with the sex assigned to them at birth, for example a man who was assigned as male at birth.

eCrCl estimated creatinine clearance rate

eGFR estimated glomerular filtration rate

FTC emtricitabine

HBV hepatitis B virus

HCV hepatitis C virus

HIV human immunodeficiency virus

IDU injecting drug use

iPrEx Pre-exposure Prophylaxis Initiative

Medsafe New Zealand Medicines and Medical Devices Safety Authority

MSM men who have sex with men

Non-binary A term some transgender people use to describe that their gender identity does not comfortably fit into a binary category of man/boy or woman/girl.

NZ New Zealand

NSP needle and syringe programme

OST opioid substitution therapy

PCR protein:creatinine ratio

PEP post-exposure prophylaxis

PHARMAC NZ Pharmaceutical Management Agency

PrEP pre-exposure prophylaxis

PoCT point-of-care test

STI sexually transmitted infection

TD* tenofovir disoproxil maleate or fumarate or phosphate

Transgender A term used to describe people whose gender does not align in an expected way with the sex assigned to them at birth. Transgender people can have a binary gender identity (for instance, man or woman) or non-binary gender identity.

UVL undetectable viral load

WHO World Health Organization

NZSHS
THE NEW ZEALAND SEXUAL HEALTH SOCIETY INCORPORATED
SEXUAL HEALTH FOR ALL

Burnett Foundation
Aotearoa

HIV pre- and post-exposure prophylaxis: a guide for primary care

Human immunodeficiency virus (HIV) pre-exposure prophylaxis (PrEP) is an oral combination tablet, taken either daily or around a planned potential HIV exposure event, that can greatly reduce the risk of new HIV infection as part of a prevention strategy. The same medicine can also be used for post-exposure prophylaxis (PEP) to reduce the chances of developing HIV following an unplanned high-risk exposure. Both PrEP and PEP are available fully funded with Special Authority approval for people at high risk of HIV infection.

KEY PRACTICE POINTS:

- Since 2021, there has been an increase each year in the rate of human immunodeficiency virus (HIV) cases in New Zealand; men who have sex with men (MSM) remain at higher risk of infection
- Condom use is an effective strategy to reduce HIV infection (and sexually transmitted infections; STIs). Therefore, if people choose not to use them other preventative measures need to be encouraged.
- In 2023, the New Zealand Sexual Health Society released updated PrEP and PEP guidelines (see update box below)

Pre-exposure prophylaxis (PrEP):

- HIV PrEP (tenofovir disoproxil with emtricitabine) is an oral combination medicine that substantially reduces the risk of HIV transmission, when taken as recommended
- Daily PrEP is the conventional regimen, consisting of one tablet, once daily for as long as a person has an elevated risk of HIV infection
- An alternative protocol is event-driven PrEP, where dosing is based around a planned potential HIV exposure (sexual activity), and stopped after the exposure period has concluded; this protocol is not suitable for everyone (see main text for details)
- PrEP is funded with Special Authority approval for:
  - HIV-negative males, transgender or non-binary people who have sex with males and have multiple risk factors for HIV infection
  - HIV-negative people with partners who have a detectable HIV viral load
  - HIV-negative people who inject drugs and may be at higher risk of HIV due to sharing of equipment
- Prior to initiating PrEP, investigations should include HIV serology, screening for STIs, hepatitis B and C, renal and hepatic function and a pregnancy test, if applicable
- Ongoing monitoring for patients receiving either daily or event-driven PrEP should occur every three months, including assessment of medicine adherence, adverse effects, and testing for HIV, STIs and other investigations as required
- Continuing to promote the consistent and correct use of condoms to prevent HIV and other STIs remains an important aspect of management

Post-exposure prophylaxis (PEP):

- Oral tenofovir disoproxil with emtricitabine, with or without dolutegravir, can also be prescribed as HIV PEP for patients who present within 72 hours of a potential HIV exposure (non-occupational)
  - N.B. Only named specialists (e.g. sexual health or infectious diseases physician) can prescribe PEP for occupational exposures, e.g. needlestick injuries.
- The decision to prescribe PEP should be based on the patient's exposure history and risk factors for HIV transmission, as well as risk factors for the source, if known
- PEP is more effective the earlier it is taken after exposure; ideally within 24 hours, however, it can be initiated up to 72 hours later

PrEP and PEP – supporting and encouraging use:

- A reported barrier to PrEP for patients is not knowing how or where to access it and not feeling comfortable discussing their sexual health with a healthcare professional
- Providing open, safe and non-judgemental care reduces barriers for people who would benefit from HIV PrEP/PEP the most. This can be achieved by displaying/promoting services and resources relating to health issues for MSM, reminding the patient about doctor-patient confidentiality, explaining the purpose of questions before asking them and using inclusive language.

This is a revision of a previously published article: HIV Pre-Exposure Prophylaxis (PrEP): a how-to guide, April, 2019. What's new for this update:

- General article update based on new PrEP and PEP guidelines for Aotearoa New Zealand (2023), available from: **www.nzshs.org/guidelines/**
  - Summary flow charts with key information for prescribing PrEP and PEP are also available from: **www.nzshs.org/guidelines/**
- Updated funding and prescribing information for PrEP, including event-driven dosing
- New major section added on PEP for non-occupational HIV exposures
- Guidance added on promoting a safe and open space for MSM to discuss sexual health

HIV infection disproportionately affects men who have sex with men

Rates of human immunodeficiency virus (HIV) infection have generally been declining in New Zealand, since a peak in 2016.[1] In 2023, there were 97 newly diagnosed cases (see: "HIV in New Zealand: where are we at?").[1] HIV infections predominantly occur in men who have sex with men (MSM), who accounted for two-thirds of infections diagnosed locally in 2023.[1] Factors that contribute to the increased risk in this group include:[2, 3]

- **Type of sexual activity** – receptive anal intercourse has a higher risk of HIV infection than vaginal intercourse because the rectal mucous membrane separating semen from cells susceptible to infection is thinner and more vulnerable to damage
- **Higher rates of HIV** – the rate ratio of MSM in New Zealand who acquire HIV is much higher than the general population: gay and bisexual men have been reported as being up to 348 times more likely to have HIV than people who identify as heterosexual[4]
- **Small MSM population** – the sexual networks of MSM are closer and as they are a minority within the general population, the transmission of STIs between sexual contacts is more likely

Condoms remain an effective method of reducing HIV transmission

When used correctly and consistently, condoms substantially reduce HIV transmission via anal intercourse.[5, 6] Overall condom use by MSM in New Zealand has increased since the HIV epidemic began, but data suggest that rates among casual MSM partners is declining.[3, 7] HIV PrEP provides another strategy to reduce the risk of HIV transmission, particularly for people who are not using condoms consistently.

Part 1: HIV pre-exposure prophylaxis (PrEP)

HIV PrEP is fully funded for key populations

In 2018, New Zealand became one of the first countries in the world to fully fund oral tenofovir disoproxil with emtricitabine for HIV infection prophylaxis (with Special Authority approval).[8] Increased awareness among both prescribers and patients, and relaxing of Special Authority criteria, have since led to improved community uptake, however, some people who may benefit from PrEP are still missing out. The ongoing challenge for primary care is to ensure that the people most at risk of HIV infection can easily and safely access either daily or event-driven PrEP.

PrEP is a combination oral tablet containing 245 mg tenofovir disoproxil with 200 mg emtricitabine.[9] Tenofovir disoproxil and emtricitabine are reverse transcriptase inhibitors that prevent a key step in the HIV replication cycle.[5] It can also be used for post-exposure prophylaxis (unapproved indication) within 72 hours of a potential exposure to HIV (see: "Part 2: HIV post-exposure prophylaxis [PEP]").[10] Furthermore, tenofovir disoproxil with emtricitabine may be prescribed as part of a treatment regimen for people with HIV to reduce viral load but cannot eliminate infection once established.[5, 11]

Best practice tip: When prescribing PrEP or PEP, ensure the correct combination product is specified using the generic name and the correct strength to avoid errors: tenofovir disoproxil 245 mg + emtricitabine 200 mg. N.B. Tenofovir disoproxil is available as a single medicine in New Zealand but evidence supporting its use as PrEP monotherapy is not available. This preparation should not be prescribed for this purpose.[9, 12]

Who should be offered PrEP

People are eligible for funded PrEP if they are considered at higher risk of HIV exposure and are confirmed to be HIV-negative.[10] Suitability criteria have been developed for MSM (or transgender* and non-binary† people who share networks with MSM), heterosexual people and people who inject drugs, to aid prescribers when determining if a person is at higher risk of HIV exposure (Table 1). Given the commitment daily PrEP requires (e.g. adherence, regular monitoring), an early discussion with patients is beneficial in determining if this treatment is right for them (also see event-driven dosing below).

Special Authority initial applications (and renewals) for funded daily and event-driven PrEP can be submitted by any relevant practitioner, including general practitioners and nurse practitioners.[13] Special Authority approval is valid for 24 months and must be renewed every 24 months thereafter.[13] In 2018, it was estimated that 5,800 people in New Zealand were eligible for PrEP, which included 18% of all sexually active

MSM;[14] these numbers have likely increased with the relaxing of Special Authority eligibility criteria in July, 2022.

* A person whose gender identity does not correspond with their sex assigned at birth

† A general term for the gender of a person who does not identify as exclusively male or female

The Special Authority application form for PrEP can be found **here**

People who are at higher risk of HIV exposure but not eligible for publicly funded healthcare in New Zealand, e.g. non-New Zealand residents, overseas travellers, should still be assessed to establish whether PrEP is likely to be beneficial.[10] Self-funding (approximately NZ$30 per month) may be an option if PrEP is determined to be appropriate for the patient, however, additional costs for consultations and required testing also need to be factored in, and together this could be a barrier to use.[10]

Burnett Foundation Aotearoa may be able to offer support to some patients if the cost of PrEP is a barrier to access. Further information is available from: **www.burnettfoundation.org.nz/articles/news/free-prep-for-low-income-nzers-and-international-students/**

Testing before initiating PrEP

Patients should be tested for HIV as part of the initial evaluation for PrEP; a negative result is required for Special Authority approval.[10] A person who has been infected with HIV may not test positive for up to 45 days following transmission, i.e. the window period.[10] Patients who report a recent high-risk exposure within this period, and then initially test negative for HIV should undergo a follow-up HIV blood test approximately one month after initiating PrEP.[10] N.B. PEP may be appropriate in cases where the high-risk exposure occurred within 72 hours (see: "Part 2: HIV post-exposure prophylaxis [PEP] ").[10]

HIV in New Zealand: where are we at?

In 2023, there were 97 people diagnosed with HIV in New Zealand; an increase compared to 2021 (67 people) and 2022 (76 people).[1] This increase is potentially a result of the removal of social and border restrictions relating to the COVID-19 pandemic. Locally diagnosed infections are still less than pre-pandemic levels, but it is uncertain whether HIV infections will continue to increase, stabilise or decline in the next few years. New Zealand data from 2023 show that:[1]

- New HIV infections were predominantly diagnosed in MSM (67%)
  - Of the 65 locally diagnosed MSM with HIV infection, approximately 69% resided in the North Island, with the majority living in the greater Auckland region
  - There was a disproportionate ethnic representation compared to the general population: 29% European, 23% Asian, 20% Māori, 15% Pacific Peoples and 12% Latin American or African
  - The age at diagnosis for MSM who acquired HIV ranged from 19 to 75 years
- There was a significant increase in the number of HIV notifications in people first diagnosed overseas from 55 people in 2022 to 123 in 2023. However, more than 90% of these people had an undetectable viral load (suggesting they were taking antiretroviral medicines), and therefore pose no risk of sexually transmitting HIV.
- The number of locally diagnosed HIV infections in heterosexual people remained consistent with previous years (seven males and ten females)
- It is rare for people who inject drugs to acquire HIV infection (there were two people with locally acquired HIV in whom this was reported as a potential cause). This low rate is likely due to the early and successful implementation of needle exchange programmes in New Zealand.
- The total number of people living with HIV is unknown, however, as of June, 2023, approximately 3,300 people were receiving funded antiretroviral treatment

For further information regarding HIV and AIDS notification data in New Zealand, see: **aidsepidashboard.otago.ac.nz**

AIDS is decreasing in New Zealand

HIV exists on a spectrum that begins with acute infection. If left untreated, chronic HIV infection can progress to acquired immunodeficiency syndrome (AIDS), which has a high mortality rate due to opportunistic infections and HIV-associated cancers.[5] In New Zealand, AIDS-associated deaths peaked at approximately 70 per year in the late 1980s and early 1990s, and have since declined.[1] Data from 2023 show that 14 people were diagnosed with an **AIDS-defining illness** in New Zealand, 11 of whom were identified within three months of their HIV diagnosis, suggesting they had been living with undiagnosed HIV for a substantial period of time and had not received antiretroviral treatment.[1] Increasing the uptake of regular HIV testing is crucial to avoid diagnosis at the stage of AIDS.

Table 1. Suitability criteria for determining people who are at higher risk of HIV exposure. *Adapted from NZSHS PrEP and PEP guidelines (2023).*[10]

HIV risk factors for MSM (or transgender or non-binary people who share networks with MSM)

- ☐ Condomless anal or vaginal intercourse with a regular HIV-positive partner who is either not receiving treatment, or who is receiving treatment but has a detectable HIV viral load > 200 copies/mL
- ☐ Condomless anal or vaginal intercourse with any casual or non-exclusive MSM partner
- ☐ One or more episode of rectal gonorrhoea, rectal chlamydia or infectious syphilis
- ☐ One or more episode of anal intercourse where a condom slipped off or broke, where the HIV serostatus of the partner was not known, or where the partner was HIV-positive and not receiving treatment or had a detectable viral load > 200 copies/mL
- ☐ When a person presents with concerns of deteriorating mental health and there is a possibility of increased HIV acquisition risk behaviour in this setting
- ☐ When a person presents with a history of intermittent binge drinking of alcohol or recreational drug use (especially methamphetamine*) and has concerns about their HIV acquisition behaviour in this setting

* The use of methamphetamine is known to increase the likelihood of high-risk behaviour, e.g. anal intercourse without condoms, group sex, multiple sex partners and injecting drugs

Patients in whom any of these risk factors for HIV exposure apply to either in the previous three months and/or may apply to in the next three months should be offered PrEP.

PrEP could also be considered in situations where a patient is in a relationship with a person with HIV who is receiving antiretroviral treatment (and is virologically supressed) but is experiencing undue suffering and anxiety regarding HIV transmission ***or*** *anxiety regarding HIV infection prevents the patient from regular HIV testing or engaging in any form of anal intercourse.*

HIV risk factors for heterosexual people

- ☐ At least one episode of condomless intercourse (insertive or receptive) with a regular HIV-positive partner who is either not receiving treatment, or who is receiving treatment with a detectable viral load > 200 copies/mL
- ☐ Condomless intercourse with any casual MSM partner of unknown HIV status
- ☐ Overseas travel to a high HIV prevalence country, and condomless intercourse with partners of unknown HIV status

Patients in whom any of these risk factors for HIV exposure apply to either in the previous three months and/or may apply to in the next three months should be offered PrEP.

PrEP could also be considered in situations where a patient is in a relationship with a person with HIV who is receiving antiretroviral treatment (and is virologically supressed) but is experiencing undue suffering and anxiety regarding HIV transmission.

HIV risk factors for people who inject drugs

- ☐ Shared injecting equipment with a HIV-positive person or with MSM of unknown HIV status

Patients in whom this risk factor for HIV exposure applies to either in the previous three months and/or may apply to in the next three months should be offered PrEP. N.B. In some cases, people who inject drugs may also be at elevated risk for HIV infection through sexual behaviour.

Additional recommended tests before initiating PrEP include (Table 2):[10]

- Blood tests for syphilis and hepatitis A*, B and C (unless known immunity to hepatitis A or B†)
- Multi-site nucleic acid amplification test (NAAT) for chlamydia and gonorrhoea (first-pass urine for males, and rectal, urethral, vaginal and pharyngeal swabs as indicated)
- Estimated glomerular filtration rate (eGFR)**, creatinine, protein:creatinine ratio‡
- Liver function tests
- Pregnancy testing in people of childbearing potential

* Testing for hepatitis A is not funded for this indication in New Zealand and is not a requirement when initiating PrEP, however, clinicians should consider offering it to patients at higher risk of infection, e.g. MSM or people who inject drugs[10]

† Patients who do not have immunity to hepatitis A or B should be offered vaccination (however, neither hepatitis A nor B vaccination is funded in this situation)[10]

** Creatinine clearance (CrCl) using the Cockcroft–Gault equation is considered the optimal method for assessing renal function but this may not always be practical in primary care.[10] A creatinine clearance calculator is available from: **nzf.org.nz/nzf/resource/Creatinine%20Clearance%20Calculator.htm**

‡ The use of protein:creatinine ratio is recommended over albumin:creatinine ratio as albuminuria predominantly indicates glomerular dysfunction, however, tenofovir-associated renal impairment generally involves proximal tubular dysfunction (indicated by low molecular weight proteinuria), while the glomerular filtration barrier is often unaffected[15]

Prescribing considerations based on patient history or baseline test results

Do not initiate PrEP in a patient who returns an indeterminate HIV test result during preliminary testing.[10] Assess for symptoms and signs of acute HIV infection and discuss with an infectious diseases or sexual health physician.[10] PrEP should only be commenced once HIV infection has been ruled out.[10]

Chronic hepatitis is not a barrier to taking PrEP, however, it is important to establish hepatitis status and liver function prior to commencing prophylaxis as there may be an increased risk of hepatic adverse effects; discuss with a hepatologist or infectious diseases physician.[10]

Precaution for people with hepatitis B: tenofovir disoproxil and emtricitabine are both active against hepatitis B; withdrawal from PrEP can lead to reactivation of hepatitis B and hepatic injury, and possible development of hepatitis B resistance to tenofovir disoproxil with emtricitabine.[10] Patients with hepatitis B should only be offered daily PrEP (event-dosing is not suitable; see: "Which PrEP regimen is most suitable for my patient ?") and discuss the importance of adherence.[10]

Ongoing testing for hepatitis B is not necessary in patients who are immune unless there is an unexplained elevation in alanine aminotransferase (ALT).

Immunisation against both hepatitis A and B viruses is recommended for MSM and should be offered to patients who have not demonstrated immunity, however, vaccination for this group is not funded.[10] Immunisation against hepatitis B is also recommended for people who inject drugs and immunisation against hepatitis A should also be considered.[10]

People with a bacterial STI, e.g. chlamydia, gonorrhoea or syphilis, can take PrEP and this should not be a reason to delay initiation.[10] Advice should be given about condom use, STI symptoms and signs, along with initial and ongoing testing to detect STIs and prompt treatment if a STI is detected.[10]

PrEP is contraindicated in people with an eGFR < 60 mL/min/1.73 m^2, as clinical studies have not been conducted in this group and treatment with tenofovir disoproxil has occasionally been associated with nephrotoxicity.[10] Following initiation of PrEP, assess serum creatinine, eGFR and protein:creatinine ratio at three months and then at six monthly intervals thereafter.[10] More frequent monitoring of eGFR may be appropriate for patients who are at risk of renal disease, including those who:[10]

- Are aged over 40 years; studies have shown that the use of PrEP in this age group is associated with a more rapid decline in renal function
- Have an eGFR < 90 mL/min/1.73 m^2
- Are taking another nephrotoxic medicine long-term, e.g. NSAIDs
- Have relevant co-morbidities, e.g. hypertension, diabetes

Effective contraception should be provided to all people of child-bearing potential taking PrEP who do not wish to become pregnant.[10]

PrEP can be taken during pregnancy after balancing the risks and benefits; there is an increased risk of HIV infection during pregnancy, but lower neonate bone mineral density is a potential adverse effect of tenofovir disoproxil with emtricitabine.[10] Both tenofovir disoproxil and emtricitabine may be present in breast milk but are not expected to be harmful to the infant; monitor for adverse effects.[9]

PrEP can be prescribed two ways

Daily PrEP is the conventional regimen that involves taking one combination tablet of 245 mg tenofovir disoproxil with 200 mg emtricitabine once daily, without interruption, until the person is no longer considered to be at higher risk of HIV infection, i.e. their circumstances and hence their risk assessment changes (Figure 1). The efficacy of daily PrEP is directly related to adherence; a pooled analysis of 72 studies involving over 17,000 participants taking oral tenofovir disoproxil with emtricitabine between 2011 and 2019 found only 101 new diagnoses of HIV infection in that period.[16] Most of these cases were attributed to low adherence, i.e. taking less than two doses per week.[16]

Guidelines state that tenofovir disoproxil with emtricitabine-based PrEP is most effective at reducing a person's risk of HIV infection after being taken for seven consecutive days. However, it is likely that concentrations of tenofovir disoproxil and emtricitabine reach sufficient levels for protection from HIV earlier in rectal tissues than in vaginal tissues.[10, 17] Therefore, recommendations about when protection is attained differ between patient groups:[10]

- **Cisgender* males and people assigned male at birth who are not taking oestrogen-based gender affirming hormone therapy** can start daily PrEP by taking two combination tablets of 245 mg tenofovir disoproxil with 200 mg emtricitabine between 2 – 24

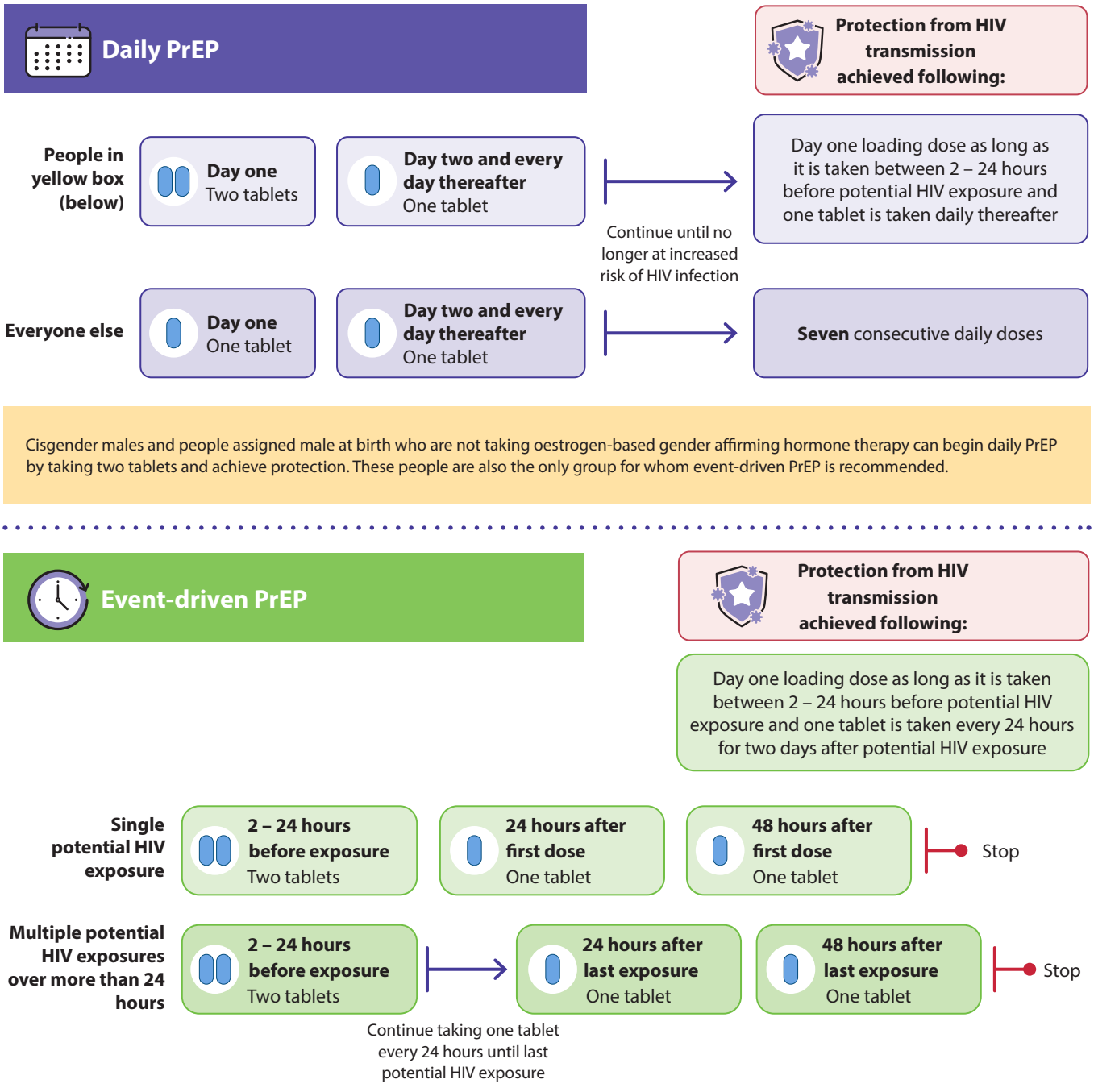

Figure 1. Summary of daily and event-driven PrEP initiation.[10]

hours before a potential HIV exposure, i.e. on the first day, and then take one tablet every day thereafter

- **All other people** starting daily PrEP should take one combination tablet of 245 mg tenofovir disoproxil with 200 mg emtricitabine for at least **seven days** before a potential HIV exposure, and then continue taking one tablet every day thereafter

* Denotes a person whose gender identity matches their sex assigned at birth

Event-driven PrEP, or 2 – 1 – 1 PrEP, is an "as required" dosing regimen in which the patient takes (Figure 1):[10]

- Two combination tablets of 245 mg tenofovir disoproxil with 200 mg emtricitabine 2 – 24 hours before a potential HIV exposure, i.e. sexual activity
- One combination tablet 24 hours after the first dose
- Another combination tablet 48 hours after the first dose to complete the course

People who have multiple exposures over consecutive days should take the two-tablet loading dose 2 – 24 hours before the first exposure, and then one combination tablet every 24 hours until their last exposure. The course is then completed by taking one combination tablet at both 24 and 48 hours after their last HIV exposure.[10]

Which PrEP regimen is most suitable for my patient?

Daily PrEP is the most commonly prescribed regimen and is appropriate and recommended for all patients who are at higher risk of HIV infection (unless contraindicated, e.g. eGFR < 60 mL/min/1.73 m^2).[10] Event-driven PrEP is an alternative regimen for people in whom daily PrEP may not be practical or acceptable, e.g. they have sex infrequently or struggle with adherence, or they do not qualify for funded PrEP and cannot commit to the cost of daily dosing.[10] However, event-driven PrEP is only recommended for cisgender males and people assigned male at birth who are not taking oestrogen-based gender affirming hormone therapy.[10]

While there is limited evidence regarding the toxicity of event-driven PrEP compared to daily PrEP, the available data show no significant difference in serious adverse effects between the two regimens.[10] However, people who take event-driven PrEP may be more likely to experience gastrointestinal adverse effects, possibly due to starting and stopping the medicine often.[10]

N.B. PrEP is funded for use in either regimen if the person meets Special Authority criteria (see: "Who should be offered PrEP").

Event-driven PrEP should not be offered to people assigned female at birth or people taking oestrogen-based gender affirming hormone therapy.[10] There is insufficient evidence supporting event-driven PrEP in these groups and additionally, oestrogen potentially reduces circulating levels of active tenofovir disoproxil and emtricitabine metabolites.[10] Strict adherence to daily PrEP is required to maintain adequate tissue concentrations for protection from vaginal HIV infection, therefore event-driven PrEP may not provide adequate protection in people who engage in receptive vaginal intercourse.[10]

Event-driven PrEP is contraindicated in people with chronic hepatitis B due to the possibility of hepatitis flares after event-driven PrEP stops.[10]

PrEP can be prescribed to younger people "off-label"

Tenofovir disoproxil with emtricitabine is not approved for use in people aged under 18 years as HIV PrEP, however, it can be prescribed "off-label" following discussion with an infectious diseases or sexual health physician (and funded if the patient meets Special Authority criteria).[10] The decision to prescribe PrEP should take into consideration the risks, e.g. potential for impaired bone growth, and benefits, i.e. reduced risk of HIV infection. Informed consent should be obtained and recorded in the patient's notes.[10]

There have not been any studies on the efficacy of event-driven PrEP in adolescent MSM and adherence rates may be lower, therefore caution is advised when prescribing this regimen.[10] Consider more frequent monitoring to assess adherence and adverse effects.[10]

Encourage adherence to ensure ongoing protection

Before PrEP is prescribed, patient discussions should include:[10]

A clear explanation of how PrEP works and the importance of taking it as recommended to ensure protection from HIV transmission

Information about potential adverse effects, e.g. gastrointestinal disturbances, and reassurance that these usually resolve within one month of initiating PrEP (see: "PrEP adverse effects are generally mild and transient")

Advice about adherence such as setting a routine for dosing, e.g. in the morning with toothbrushing for daily dosing or setting alarms for event-driven dosing. Dosing at a consistent time each day is recommended, however, serum concentrations are unlikely to be affected by small variations, e.g. a few hours. Any barriers to adherence should be identified and addressed, e.g. illicit substance use or mental illness.

Table 2. Laboratory testing recommendations for initiation and follow-up of patients taking either daily or event-driven PrEP. *Adapted from NZSHS PrEP and PEP guidelines (2023).*[10]

Investigation	Baseline testing before PrEP	Testing one month following PrEP initiation	Testing three months following PrEP initiation	Ongoing testing every three months	Additional testing frequency
HIV serology	✓	✓ (if high-risk exposure within 45 days of initiating PrEP)	✓	✓	
Full STI screen (blood tests for HIV and syphilis and NAAT for chlamydia and gonorrhoea [first-pass urine, and rectal, urethral, vaginal and pharyngeal swabs as indicated])	✓		✓	✓	
Serum creatinine and eGFR	✓		✓		Every six months More frequent monitoring, e.g. every three months, may be appropriate if age > 40 years, eGFR < 90 mL/min/1.73 m^2, hypertension or diabetes or taking NSAIDs long-term
Urine protein:creatinine ratio	✓		✓		Every six months
Hepatitis A serology*	✓ (should be offered but is not funded)				
Hepatitis B serology†	✓				If vaccinated at baseline, confirm immune response one month after final dose If vaccination declined or not immune, test three months after initiating PrEP and every three months thereafter
Hepatitis C serology	✓				At least every 12 months More frequent monitoring indicated in people who inject drugs or MSM who engage in sexual practices that increase the risk of anal trauma
Liver function tests	✓				Ongoing liver function testing not routinely indicated but may be appropriate in patients with chronic hepatitis or symptoms of hepatic impairment, e.g. abdominal pain, jaundice, weight loss
Pregnancy test for people of child-bearing potential	✓	✓	✓	✓	

* Testing for hepatitis A is not funded for this indication in New Zealand and is not a requirement when initiating PrEP, however, clinicians should consider offering it to patients at higher risk of infection, e.g. MSM or people who inject drugs

† Ongoing testing for hepatitis B is not necessary for immune patients unless there is an unexplained elevation in alanine aminotransferase

What to do if a dose is missed; advise the patient they can start again when they remember and not to take a double dose the next day. Patients on daily dosing are unlikely to be protected if they have taken fewer than four doses within one week.

A caution that PrEP is recommended if the patient consistently reports taking fewer than four doses per week (see: "Withdrawing PrEP")*

* Switching the patient to event-driven PrEP may be appropriate in some situations

Patient information on HIV PrEP is available from: **www.burnettfoundation.org.nz/learn/staying-safe/prep/**

Patients taking PrEP require regular follow-up and monitoring

Initially prescribe a quantity of PrEP sufficient for 90 days for patients starting either daily or event-driven PrEP regimens.[10] All patients taking PrEP require a follow-up appointment after three months and then regular follow-up consultations every three months thereafter to assess for adverse effects and medicine adherence.[10] Recommended laboratory testing should occur within the two weeks prior to prescription renewal (Table 2). Patients prescribed event-driven PrEP should also undergo regular three-monthly follow-up, including clinical review and laboratory evaluation, even if they do not require another prescription.[10]

PrEP adverse effects are generally mild and transient

Gastrointestinal symptoms, e.g. nausea, vomiting, abdominal pain, flatulence, diarrhoea and headache, are the most frequently experienced adverse effects by people who start PrEP.[9, 10] These are most likely to be reported in the first month of treatment and are unlikely to persist past three months.[10]

The principal concerns for patients prescribed PrEP are acute kidney injury and hepatic impairment (there is an increased risk of hepatic adverse effects in patients with chronic hepatitis). Ensure patients know to seek medical attention if they have symptoms of concern outside of their scheduled follow-up appointments. Patients should be advised to seek immediate medical attention if they develop any symptoms of acute kidney injury, such as oliguria (decreased urinary output) or lower limb oedema.[10]

Monitoring for acute HIV infection (due to non-adherence to the regimen or pre-existing infection) is also important. Potential symptoms include fever, sore throat, fatigue, headache, rash, myalgia and lymphadenopathy.[10]

Bone density may be reduced slightly in people taking tenofovir disoproxil with emtricitabine.[10] Older patients or those with multiple risk factors for fractures, e.g. high alcohol consumption, smoking, low body mass index (BMI), should be advised about ways to reduce their risk.[10] Bone health can be maintained via reducing alcohol intake, smoking cessation, adequate dietary calcium intake, adequate exposure to sunlight to maintain vitamin D levels and regular weight-bearing exercises.[10]

Managing declining renal function

PrEP is contraindicated in patients with an eGFR < 60 mL/min/1.73 m^2.[10] However, continuation may be possible if renal function drops below this point, but only following discussion with a sexual health or infectious diseases physician with expertise in PrEP, or a nephrologist.[10] In some situations, event-driven PrEP may be a practical option for eligible patients with an eGFR close to the 60 mL/min/1.73 m^2 threshold.[10] N.B. eGFR can vary for many reasons, e.g. hydration status, muscle mass, recent change in diet, therefore, if testing indicates eGFR is < 60 mL/min/1.73 m^2 consider repeating the test to confirm the result before withdrawing PrEP.[10]

Interactions with other medicines and nephrotoxicity

Tenofovir disoproxil and emtricitabine predominantly undergo renal excretion; concurrent use of medicines that are nephrotoxic or compete for active tubular secretion may cause serum levels to increase, e.g. valaciclovir, aminoglycosides or long-term NSAIDs.[10] Nephrotoxicity is rare in patients taking PrEP, although proximal tubular dysfunction can occur, e.g. Fanconi syndrome, hence monitoring of renal function is recommended (Table 2).[10]

Information about potential interactions between PrEP and other medicines is available on the New Zealand Formulary interactions checker: **www.nzf.org.nz/nzf_1**. An interactions checker specific to HIV medicines is also available from the University of Liverpool: **www.hiv-druginteractions.org/checker**.

Renewing funded PrEP

To renew Special Authority approval for funded PrEP (required every 24 months) the patient must still meet the same initial criteria:[13]

- Confirmed HIV-negative in the past 14 days (no symptoms and signs of acute infection); AND
- Still considered at high risk of HIV exposure and the prescriber believes the use of PrEP is appropriate

Best practice tip: While previous criteria for renewal of Special Authority, including regular STI and renal function testing and patient education, are no longer required to be met, they are still best practice care and should occur regularly as part of ongoing follow-up and monitoring (see: "Patients taking PrEP require regular follow-up and monitoring").

Withdrawing PrEP

Long-term use of PrEP may not be necessary for some patients, e.g. if they start consistently using condoms or enter a mutually monogamous relationship with a partner who is HIV-negative.

The duration that PrEP should be continued following the last potential HIV exposure differs between patients:[10]

- **Cisgender males and people assigned male at birth who are not taking oestrogen-based gender affirming hormone therapy** who are taking daily or event-driven PrEP should continue taking it for **two days** after their last potential HIV exposure, i.e. one dose 24 hours after the last exposure and another dose 48 hours afterwards
- **All other patients** should continue taking PrEP for **seven days** after their last potential HIV exposure

Record the patient's HIV status, reasons for discontinuing PrEP, adherence while being treated and risk-taking behaviour.[10] Funded PrEP can be reinitiated if the patient's risk of HIV infection increases in the future and they continue to meet Special Authority criteria.[10]

Any patient with chronic hepatitis B infection should be discussed with a hepatologist or infectious diseases physician with expertise in managing hepatitis B before withdrawing from PrEP, due to the risk of hepatitis reactivation.[10]

Continue to encourage the consistent use of condoms for all sexual contact

Ensure patients understand that PrEP only protects against infection with HIV, and only if taken as prescribed.[10] Encouraging the consistent and correct use of condoms to prevent HIV, other STIs and unwanted pregnancy is essential.[10] Condom use should be discussed when PrEP is started and at follow-up appointments.[10]

Specific topics to discuss include:[10]

- Any barriers to consistent condom use
- Reducing any illicit substance use; people with substance use disorder are at higher risk of STIs[18]
- Identifying other steps that patients can take to reduce their STI risk, e.g. vaccination against human papillomavirus (HPV), hepatitis A and B
- Acknowledging efforts by the patient to reduce their risk and to reinforce these successes

Part 2: HIV post-exposure prophylaxis (PEP)

HIV PEP can now be prescribed in primary care

Tenofovir disoproxil with emtricitabine is also a first-line emergency treatment for any patient following a potential HIV exposure, e.g. unprotected consensual sex, sexual assault or other high-risk sexual exposure.[10] Post-exposure prophylaxis (PEP) is a 28-day course of daily tenofovir disoproxil with emtricitabine, with or without an additional antiretroviral (dolutegravir). It is recommended to start PEP as soon as possible following the potential exposure, ideally within 24 hours, however, it can be initiated up to 72 hours later (after which it is no longer considered effective).[10] PEP is not currently an approved indication for tenofovir disoproxil with emtricitabine or dolutegravir therefore it must be prescribed "off-label".

PEP is prescribed with Special Authority approval

A 28-day course of daily tenofovir disoproxil with emtricitabine, with or without dolutegravir, may be prescribed fully funded with Special Authority approval for patients who meet the criteria following a non-occupational exposure.[13] Since July, 2022, Special Authority applications for funded PEP in patients with non-occupational exposure to HIV can be submitted by any relevant practitioner, including general practitioners and nurse practitioners.[13]

A list of pharmacies that may stock PrEP and PEP is available from: **www.healthpoint.co.nz/pharmacy/?serviceArea=im%3A1550889** (patients are advised to contact the pharmacy first to confirm stock availability). N.B. Tenofovir disoproxil with emtricitabine and dolutegravir are not available on Practitioner Supply Order (PSO).

Special Authority criteria for PEP requires **both**:[13]

1) Treatment course is initiated within 72 hours of exposure; and
2) Any of the following:
   i. Patient has had condomless anal intercourse or receptive vaginal intercourse with a known HIV-positive person with an unknown or detectable viral load > 200 copies/mL; or
   ii. Patient has shared intravenous injecting equipment with a known HIV-positive person; or
   iii. Patient has had non-consensual intercourse and the clinician considers that the risk assessment indicated prophylaxis is required; or

iv. Patient has had condomless anal intercourse with a person from a high HIV prevalence country or high-risk group whose HIV status is unknown

The Special Authority application form for PEP can be found **here**

PEP following occupational HIV exposure

Patients who have been exposed to HIV in an occupational setting, e.g. a needlestick injury in healthcare, can only be prescribed funded PEP by a named specialist, e.g. a sexual health or infectious diseases physician.[13] Patients should be urgently referred for an acute medical assessment. PEP recommendations following occupational exposure are included in Table 3. N.B. Any sexual activity is considered non-occupational exposure under the current guidelines. Primary care clinicians can prescribe PEP to sex workers following a potential HIV exposure.

Further information regarding evaluation and management of occupational HIV exposures is available in the NZSHS PrEP and PEP guidelines for Aotearoa New Zealand (2023), available from: **www.nzshs.org/guidelines/**

Who should receive PEP?

Patients who present following a potential HIV exposure should have their risk of HIV transmission assessed.[10] This can be calculated by multiplying the estimated risk of the specific exposure event (based on the mode of exposure) by the estimated risk of the source being HIV-positive (if their HIV status is not known), and offering PEP if this risk is > 0.001.[10] Tables containing these risk estimates can be found **here (Tables 9.1 and 9.2 in the NZSHS guideline)**.

In general, risk can be based on the type of sexual exposure and whether the HIV status is known. Advice on situations requiring PEP is available in Table 3, however, multiple patient factors can influence the risk of HIV transmission. Clinical evaluation should include a history of the recent exposure as well as information about the source person, if available.

Following this evaluation, PEP should be prescribed if it is clearly indicated. If the decision to prescribe PEP is uncertain, or the mode of exposure is not covered in Table 3, discussion with an infectious diseases or sexual health physician is recommended.

Clinical evaluation of a patient presenting for PEP should include:[10]

The exposure

- ☐ When the exposure occurred (date and time)
- ☐ Mode of exposure, including any factors that may influence or contribute to risk of transmission, e.g. involvement of blood or body fluids, trauma, any first aid that was carried out

The risk of transmission may also be influenced by other factors including:

- The viral load of the HIV-positive source; risk increases with increasing plasma viral load
- Presence of concurrent STIs
- Any breaches in genital or anal mucosal integrity, e.g. cuts or tears
- If ejaculation occurred during receptive intercourse
- Whether the HIV-negative person is circumcised; the odds of HIV infection via insertive anal intercourse are reduced by 23% in MSM who have undergone circumcision[19]
- Location of injury and type of needle involved (if needlestick injury)

The patient potentially exposed to HIV

- ☐ Date and result of last HIV test
- ☐ Any other potential HIV exposures since the patient's last HIV test
- ☐ Alcohol and drug use (current and previous)
- ☐ History of PrEP or PEP use
- ☐ Current STI status
- ☐ Pregnancy risk, contraception and lactation, if applicable (emergency contraception should be offered depending on circumstances)
- ☐ Medical history, specifically hepatitis B and C, renal function and psychiatric history
- ☐ Current medicines

Patients who are identified as having hepatitis B or C should be discussed with a sexual health or infectious diseases physician, or hepatologist before PEP is prescribed.

The source

- ☐ HIV status, if known
- ☐ General information, e.g. gender, country of origin

Contacting the source is not always possible or practical

PEP is more effective the sooner it is initiated following HIV exposure.[10] Contacting the source may aid in establishing the risk of transmission, however, this is not always possible in a timely manner and **PEP should be prescribed without delay**.[10]

Table 3. PEP recommendations based on mode of exposure. *Adapted from NZSHS PrEP and PEP guidelines (2023).*[10]

	Source known HIV-positive		Source of unknown HIV status	
	Detectable or unknown viral load	**Undetectable viral load**	**Source is MSM or from high-prevalence country**	**Source from a low prevalence population**
Sexual exposure				
Receptive anal sex	Three medicines	Not recommended	Two medicines	Not recommended
Insertive anal sex (circumcised and uncircumcised)	Three medicines	Not recommended	Consider two medicines	Not recommended
Receptive vaginal sex	Three medicines	Not recommended	Consider two medicines[a]	Not recommended
Insertive vaginal sex	Three medicines	Not recommended	Not recommended	Not recommended
Oral sex	Not recommended[b]	Not recommended	Not recommended	Not recommended
Occupational and other exposures PEP for an occupational exposure must be prescribed by a named HIV prescriber. Patients who present in primary care requiring PEP following an occupational HIV exposure should be urgently referred for an acute medical assessment.				
Shared injecting equipment	Three medicines	Three medicines[c]	Consider three medicines	Not recommended
Occupational needlestick injury	Three medicines	Three medicines[c]	Generally not recommended[d]	Not recommended
Mucosal exposure/ splash injury to infectious fluids	Three medicines	Generally not recommended[e]	Generally not recommended	Not recommended
Human bite	Not recommended[f]	Not recommended	Not recommended	Not recommended
Needlestick injury from a discarded needle in the community	Not applicable	Not applicable	Not recommended	Not recommended

a. There should be a lower threshold for PEP if HIV source is from a high-risk group or normally resides in a country with a high HIV prevalence, there is damage to mucosa, there were multiple exposures within the 72-hour window or the presence of STIs

b. PEP should be considered following receptive oral sex if there is damage to their oral mucosa and ejaculation occurred

c. PEP is recommended in this situation, however, the risk of transmission is expected to be low

d. PEP should not be withheld while awaiting results of HIV testing if the source is from a group that has a high prevalence of HIV infection. If the source cannot be tested or identified, PEP should be considered on a case-by-case basis, following discussion with an infectious diseases physician.

e. PEP may be offered in an occupational exposure depending on individual patient circumstances

f. PEP may be appropriate for the victim in situations where the perpetrator is known to be HIV-positive with a viral load > 1,000 copies/mL, blood was visible in the perpetrator's saliva and the bite has resulted in a severe or deep tissue injuries

If the source is contactable, ask for consent to contact their general practitioner (or other relevant health professional) about their HIV status, current viral load, treatment and medical history, e.g. hepatitis B and C status.[10] If the source is prescribed PrEP, ask about adherence; poor or inconsistent adherence may increase the risk of transmission, and therefore the need for PEP.[10]

Best practice tip: PEP may also be appropriate for patients who are currently prescribed PrEP but report poor adherence, if they present within 72 hours of a potential HIV exposure.[10]

Relevant investigations should not delay provision of PEP

Patients who present following a potential HIV exposure should undergo a baseline and follow-up HIV test (Table 4). Other investigations are determined by mode of exposure, e.g. STI testing for sexual contact.

Initiate PEP as soon as possible; do not delay treatment while contacting the potential HIV source or awaiting results of baseline investigations.[10]

Two or three medicine PEP regimens are available

Patients who require PEP should be prescribed a 28-day course of either a two medicine or three medicine regimen, depending on the mode of exposure (Table 3).

Two-medicine regimen:

Tenofovir disoproxil 245 mg with emtricitabine 200 mg (one tablet) once daily, for 28 days (unapproved indication)

Three-medicine regimen:

Tenofovir disoproxil 245 mg with emtricitabine 200 mg (one tablet) once daily **plus** dolutegravir 50 mg once daily, for 28 days (unapproved indication)

There is no clear evidence that one regimen is more beneficial than the other, however, the earlier either regimen is initiated the more effective it is likely to be.[10] A follow-up appointment should be arranged for after completion of the course (four weeks).[10]

Dolutegravir is the third PEP medicine, if required

Dolutegravir is recommended as part of the three-medicine PEP regimen for exposures with a known HIV-positive source (unapproved indication).[10] It is a HIV integrase strand transfer inhibitor and is generally well tolerated with once daily dosing, however, twice daily dosing may be required in patients taking medicines that induce CYP3A4 enzymes, e.g. carbamazepine, phenytoin, phenobarbital, rifampicin.[10, 20] Dolutegravir has also been shown to increase metformin plasma levels when taken concurrently; dose adjustment or more frequent monitoring of glycaemic control may be required.[10, 20] Patients who are prescribed dolutegravir should be advised to take it at least two hours before or six hours after antacids, and calcium or iron supplements.[10, 20]

Information about potential interactions between PEP and other medicines is available on the New Zealand Formulary interactions checker: **www.nzf.org.nz/nzf_1**. An interactions checker specific to HIV medicines is also available from the University of Liverpool: **www.hiv-druginteractions.org/checker**.

Table 4. Laboratory testing recommendations for initiation and follow-up of patients taking PEP. *Adapted from NZSHS PrEP and PEP guidelines (2023).*[10]

Investigation	Baseline	4 – 6 weeks	12 weeks
HIV serology	✓	✓	✓
Full STI screen	✓	✓	✓
Serum creatinine (for eGFR)	✓		✓
Hepatitis B and C	✓		✓
Full blood count	✓		
Liver function tests	✓		
Pregnancy test for people of child-bearing potential	✓	✓	

PEP in patients with impaired renal function

While the risk of decreased renal function is low with a 28-day course, avoid tenofovir disoproxil in patients with a creatinine clearance < 50 mL/min*.[10] Patients who cannot take tenofovir disoproxil due to reduced renal function may be prescribed a PEP regimen containing zidovudine and lamivudine (neither medicine is approved for this indication) following discussion with a sexual health or infectious diseases physician; dose adjustments may be required.[10] A third antiretroviral can be added to this regimen if indicated.[10]

* Tenofovir disoproxil should be avoided in patients with a creatinine clearance < 60 mL/min when used as part of PrEP.[9] Guidelines recommend using creatinine clearance to assess renal function, however, using laboratory reported eGFR may be more practical in primary care.[10]

A creatinine clearance calculator is available from: **nzf.org.nz/nzf/resource/Creatinine%20Clearance%20Calculator.htm**

Patient information when prescribing PEP

Before PEP is prescribed, patient discussions should include:

PEP is not 100% effective. Patients should be informed that while PEP lowers the risk of HIV infection, it is not 100% effective and needs to be taken as recommended to have the best chance of success, e.g. taken within 72 hours of exposure (but ideally 24 hours) and taken every day at the same time.[10] Advise the patient that a follow-up HIV test and in-person assessment is required after completion of PEP to confirm their seronegative status and again, three months after exposure.[10]

Symptoms and signs of HIV infection. Patients should seek medical attention on the rare chance they develop any symptoms or signs of acute HIV infection which include fever, sore throat, fatigue, headache, rash, myalgia and lymphadenopathy; these can occur any time up to six weeks after exposure.[5, 10] Some patients with acute HIV infection may be asymptomatic.[10]

Risk reduction. It is safest to implement strategies that minimise the potential risk of HIV transmission between the patient and others until they receive a negative test result, e.g. wearing condoms or abstaining from sexual activity, not sharing injecting equipment, not donating blood.[10]

PrEP may be appropriate. Patients who are likely to be at risk of ongoing HIV exposure may benefit from PrEP.[10] If required, this can be initiated at the completion of the 28-day PEP course.[10]

Additional resources

- The New Zealand Sexual Health Society (NZSHS) PrEP and PEP guidelines for Aotearoa New Zealand (2023) are available from: **www.nzshs.org/guidelines/**
  - Summary flow charts with key information for prescribing PrEP and PEP are available from: **www.nzshs.org/guidelines/**
- A list of pharmacies that may stock PrEP and PEP is available from: **www.healthpoint.co.nz/pharmacy/?serviceArea=im%3A1550889** (contact the pharmacy first to confirm stock availability)
- Burnett Foundation Aotearoa has produced online learning modules to aid primary care clinicians when engaging with MSM patients, prescribing PrEP and managing STIs. The modules are free (you must set up an account first) and available from: **www.burnettfoundation.org.nz/workforce-development/#More**
  - Patient-focused resources are also available from Burnett Foundation Aotearoa website

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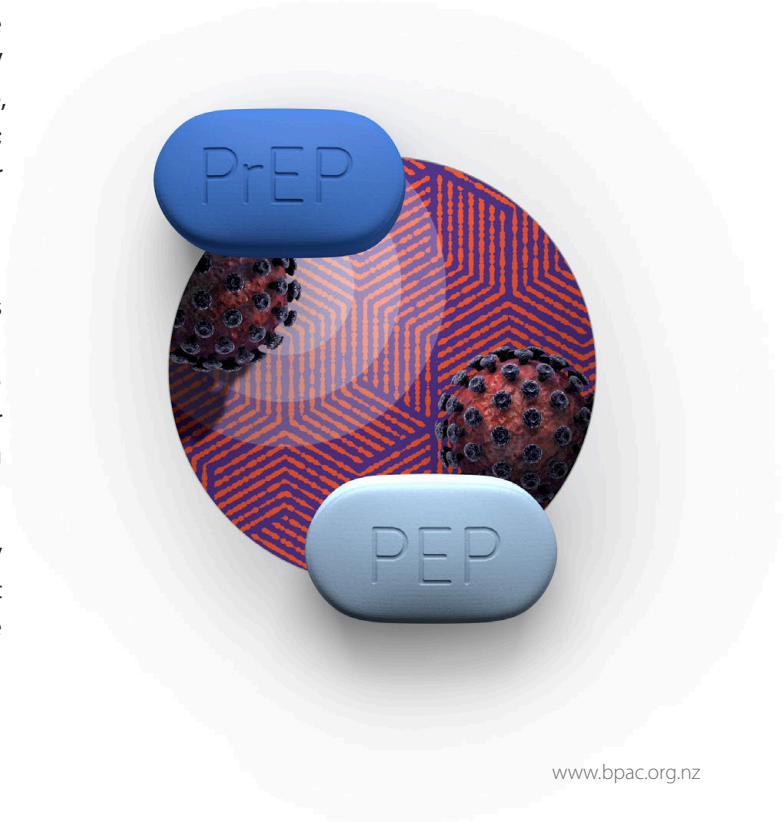
N.B. The views expressed in this publication are those of the author and not necessarily those of Burnett Foundation Aotearoa.



Non-judgemental communication is critical

In the 2020 Burnett Foundation Aotearoa Big Gay Sex Survey, 41% of people not currently taking PrEP indicated that they felt uncomfortable discussing PrEP with a doctor or nurse.[21] Potential reasons for this include previous negative interactions with healthcare professionals, anticipated stigma or discrimination, concerns about confidentiality or an assumption that the person's sexual orientation or behaviour is not relevant to the health service they are requesting.[22] MSM who do not feel comfortable engaging with their primary care provider may miss out on sexual health care and be at higher risk of poor sexual health outcomes, e.g. males who do not disclose their sexual orientation to their healthcare provider are less likely to undergo regular HIV testing.[22]

An open, safe and non-judgemental primary care service is required to disclose, assess and manage MSM sexual health effectively. Steps that primary care providers can take to improve their communication with MSM as well as ensuring their patients feel safe and accepted at the medical clinic include:

- **Asking for consent** – the patient must agree to undergo a sexual health check
- **Normalise sexual health checks** – clinicians should reinforce that these assessments are a routine part of healthcare, e.g. "*We ask all our patients about their sexual health. Would you be okay with me asking you a few questions about…*"
- **Displaying/promoting services and resources relating to MSM health issues** – approximately half of the participants in the Big Gay Sex Survey who were not taking PrEP did not know where they could access it.[21] Practices that openly promote MSM health issues, e.g. posters or leaflets in the waiting room, or advertise MSM services on websites, e.g. PrEP/PEP, may be seen as safer and more accepting and increase a patient's comfort when disclosing information.
- **Initiate PrEP conversations** – if a relevant risk factor for HIV infection is identified during a general or sexual health check-up, consider initiating a discussion about PrEP – it is often easier, and sometimes less anxiety-inducing, for the patient if the clinician brings it up first, e.g. "*… you mentioned your condom use is not as consistent as you'd like when you have been drinking alcohol. Has anyone talked to you about PrEP?*"
- **Reminding the patient about doctor-patient confidentiality** – do not assume that MSM have revealed aspects of their lives to the people around them, e.g. family and friends. If the healthcare provider cares for multiple family members, patients may feel less anxious to reveal certain details of their lives if they are reminded that any information they discuss is confidential.
- **Sign-posting during discussions** – patients may be more inclined to answer questions regarding their sexual health or HIV risk if they understand why the questions are being asked, e.g. "*… certain types of sexual contact are higher risk for HIV transmission than others, and to accurately assess your risk, it would be helpful to know…*"
- **Using inclusive language** – not everyone who is MSM identifies as gay, bisexual or he/him; avoid using labels and assumed pronouns when conducting a sexual health assessment until asking what the patient prefers, e.g. when enquiring about a recent sexual encounter, refer to the partner as "*they*" until you have asked "*What gender was/is that person?*"
- **Asking about sexual violence** – MSM may be at higher risk of sexual violence. Pooled data from the New Zealand Crime and Victims surveys between 2018 and 2022 found the likelihood of people who identified as gay, bisexual and lesbian experiencing sexual violence at some point in their lives (56%) was more than double that of the general population (24%).[23] Remain vigilant for **indicators of intimate partner violence** when conducting sexual health check-ups and ask the patient directly, if safe and appropriate to do so.

The language used by clinicians is known to influence a person's engagement in sexual health measures such as STI testing. The Joint United Nations Programme on HIV/AIDS (UNAIDS) has published guidelines on preferred terminology, available from: **www.unaids.org/en/resources/documents/2015/2015_terminology_guidelines**

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This article is available online at:
www.bpac.org.nz/2024/hiv.aspx

Pre-exposure Prophylaxis for HIV (PrEP)

Background

About pre-exposure prophylaxis for HIV (PrEP)

About pre-exposure prophylaxis for HIV (PrEP)

PrEP is the use of antiretroviral medications (ARVs) by HIV-uninfected people to reduce their risk of acquiring HIV. It should be offered to all individuals at elevated risk of HIV acquisition.

PrEP consists of a fixed-dose combination of two ARVs (tenofovir disoproxil and emtricitabine), taken on an ongoing daily basis or on demand (2-1-1 method).

When taken adherently, PrEP provides almost full protection, reducing the risk of HIV acquisition by 99%. [1]

Assessment

1. Determine whether the patient is at elevated risk of HIV exposure:
   - Assess if the patient is at risk according to risk factor profiles:
     - Men who have sex with men (MSM)

Men who have sex with men (MSM)

A patient is considered high risk if any of the following HIV exposure risks have been present in the previous 3 months and/or there are foreseeable similar risks in the next 3 months:

- Condomless intercourse with any casual male partner(s)
- A diagnosis of rectal gonorrhoea, chlamydia, or infectious syphilis
- Methamphetamine use
- Sexualised drug use
- Condomless intercourse with a regular HIV-positive partner who is not on treatment and/or has detectable viral load (i.e. > 200)

- The patient is travelling to a country with a high prevalence of HIV , and anticipates risk

- Trans and gender-diverse people

Trans and gender-diverse people

A patient is considered high risk if any of the following HIV exposure risks have been present in the previous 3 months and/or there are foreseeable similar risks in the next 3 months:

- Condomless anal intercourse with any casual MSM partner. The risk is lower for condomless vaginal intercourse with a casual MSM partner.
- A diagnosis of rectal or vaginal gonorrhoea, chlamydia, or infectious syphilis
- Methamphetamine use
- Sexualised drug use
- Condomless intercourse with a regular HIV-positive partner who is not on treatment and/or has detectable viral load (i.e. > 200)
- The patient is travelling to a country with a high prevalence of HIV , and anticipates risk

- Heterosexual people

Heterosexual people

A patient is considered high risk if any of the following HIV exposure risks have been present in the previous 3 months and/or there are foreseeable similar risks in the next 3 months:

- Condomless intercourse with any casual MSM partner
- Condomless intercourse with a regular HIV-positive partner who is not on treatment and/or has detectable viral load (i.e. > 200)
- The patient is travelling to a country with a high prevalence of HIV , and anticipates risk

Most heterosexual cisgender people are not considered at elevated risk in New Zealand. If considering PrEP, consider seeking sexual health advice.

- People who inject drugs

People who inject drugs

> A patient is considered high risk if they have shared injecting equipment with an HIV-positive individual or with MSM of unknown HIV status in the previous 3 months, and/or there is a foreseeable risk they will in the next 3 months.

- Be aware that people may be reluctant to disclose their HIV risk, so have a low threshold for prescribing for those from higher risk groups who ask for PrEP.

These lists are not exhaustive. Clinical discretion is encouraged. If uncertain whether the patient may benefit from PrEP, seek sexual health advice.

2. Confirm there are no signs or symptoms of an acute HIV infection .

> **Signs and symptoms of an acute HIV infection**
>
> About 70% of patients will have a primary HIV or seroconversion illness within 1 to 6 weeks of becoming infected. The illness resembles glandular fever but it can also be very non-specific. Symptoms include:
>
> - fever.
> - night sweats.
> - fatigue.
> - myalgia.
> - arthralgia.
> - rash.
> - headache.
> - pharyngitis.
> - generalised lymphadenopathy.
> - diarrhoea.

3. Check whether the patient is eligible for funded PrEP .

> **Eligible for funded PrEP**
>
> Both criteria must be met:
>
> - The patient has tested negative for HIV, does not have signs or symptoms of acute HIV infection, and has been assessed for HIV seroconversion, and
> - The practitioner considers the patient is at elevated risk of HIV exposure and that using PrEP is clinically appropriate.

4. Check for other cautions and contraindications to starting PrEP, and consider drug interactions. Seek sexual health advice if needed:

- Contraindications

Contraindications

- Acute or chronic HIV infection
- Significant renal impairment (eGFR less than 60 mL/min/1.73 m^2)

- Cautions

Cautions

- Mild renal impairment (eGFR 60 to 90 mL/min/1.73 m^2)
- Nephrotoxic medications

Nephrotoxic medications

Commonly prescribed or over-the-counter (OTC) medications and alternative products include:

- liquorice.
- lithium.
- methotrexate.
- nonsteroidal anti-inflammatory drugs (NSAIDS) (including analgesic doses of aspirin and COX-2 inhibitors).
- zoledronic acid.

In the majority of cases, medication can be continued with close monitoring of renal function.

- Chronic or acute hepatitis B – severe liver inflammation may occur after stopping treatment, and treatment may need to be lifelong. Seek sexual health or infectious diseases advice before starting or stopping PrEP.
- Confirmed pregnancy, planning pregnancy, or breastfeeding – current evidence suggests that PrEP can be used safely during pregnancy and breastfeeding. [2]
- Protein powders and supplements – may affect renal function tests, and should be stopped in the 1 to 2 weeks before testing.

- Potential drug interactions

Potential drug interactions

- Consider:
  - exogenous estrogen – can affect the efficacy of 2-1-1 (on demand) PrEP.
  - medications that increase tenofovir levels – valaciclovir, tacrolimus.
  - medications that increase fracture or osteoporosis risk – sodium-glucose co-transporter 2 (SGLT2) inhibitors (dapagliflozin and empagliflozin).
- Check the University of Liverpool – HIV Drug Interactions: Interaction Checker .

5. Examination:
   - Measure:
     - blood pressure.
     - weight and body mass index (BMI).
   - Perform sexual health check. Patients can self-collect oral and rectal swabs when they do their urine test if they are asymptomatic. If the patient is symptomatic, they should have an examination and clinician-collected swabs.
6. Arrange investigations:
   - Sexually transmitted infection (STI) screen as per Sexual Health Check pathway, if not done as part of examination.
   - Blood tests – HIV serology, syphilis serology, hepatitis serology A, B (HBsAg, anti-HBs, anti-HBc), and C (note that hepatitis A serology is not funded for this indication), FBC, creatinine and eGFR, and LFT
   - Urine protein:creatinine ratio
   - Pregnancy test if the patient is at risk of pregnancy

Management

1. If possible exposure to HIV within the last 72 hours, follow the Post-exposure Prophylaxis for HIV (PEP) pathway.
2. Review investigation results and manage accordingly:
   - Confirm the patient is HIV negative. If baseline HIV test is negative but the patient has been at risk within 4 weeks of testing, offer a repeat HIV test one month after starting PrEP.
   - Treat any STIs.
   - Offer vaccinations .

Vaccinations

- HBV if eligible and not immune, or the patient wishes to self-fund.
- HPV if eligible or the patient wishes to self-fund.

> - HAV if MSM (unfunded).

3. Before starting treatment, if the patient:
   - is HBsAg positive, seek sexual health or infectious diseases advice.
   - is pregnant, planning pregnancy, breastfeeding, or aged < 18 years, seek sexual health advice.
   - has an eGFR < 60 mL/min/1.73 m^2, seek nephrology advice or consider requesting non-acute nephrology assessment.
   - needs to continue medication with potential drug interactions to PrEP, consult with the patient's specialist or seek sexual health advice.
4. If eligible for funded PrEP, prescribe tenofovir disoproxil + emtricitabine.
   - If you do not feel competent prescribing PrEP, seek sexual health advice or refer the patient to a suitable general practitioner. See Burnett Foundation Aotearoa – Find a PrEP Friendly Provider.
   - Many pharmacies carry stock or otherwise can usually order it in within 24 hours. See HealthPoint for pharmacies that carry PrEP.
5. Discuss how to take PrEP and its time to efficacy.

> **How to take PrEP and its time to efficacy**
>
> - Daily PrEP:
>   - Suitable for all people who are at elevated risk of HIV.
>   - Take a single tablet daily at approximately the same time.
>   - Effectiveness is achieved after 7 days of daily dosing.
>   - MSM can take 2 tablets 2 to 24 hours before first sexual contact, followed by one tablet daily thereafter, for PrEP to be effective immediately.
> - On-demand PrEP, also known as 2-1-1:
>   - Contraindicated if chronic hepatitis B infection.
>   - Suitable for cisgender men, transwomen, and non-binary people assigned male at birth who have less frequent intercourse, and who are able to plan when they are having intercourse.
>   - Not suitable for transwomen or non-binary people who are using exogenous estrogen.
>   - Take two tablets 2 to 24 hours before sexual contact, then continue one tablet daily until 48 hours (and at least 2 doses) after last sexual contact.
>
> For more information, see Daily PrEP or PrEP 2-1-1? and PrEP information for patients. Printed copies can be ordered from the Burnett Foundation Aotearoa by emailing contact@burnettfoundation.org.nz.

6. Advise the patient about:

- importance of adherence to medication .

  Importance of adherence to medication

  - Missed pills will increase HIV acquisition risk.
  - Patients may require post-exposure prophylaxis (PEP) if exposure occurs when doses are missed.
  - Non-adherence can result in HIV acquisition and drug resistance.

- possible side-effects .

  Possible side-effects

  - Initiation side-effects that commonly subside after 2 to 3 weeks.

    Initiation side-effects

    - Nausea, vomiting
    - Diarrhoea, flatulence
    - Weakness
    - Headache
    - Dizziness

  - Reduced bone mineral density, but this is generally minor.
  - Rarely, may cause severe kidney, liver, or pancreatic complications.
  - Rarely, may cause rash.

- missed pills .

  Missed pills

  - If the patient misses a dose, they should take the missed dose as soon as they remember.
  - If using daily dosing, and it is less than 12 hours until the next scheduled dose, skip the missed dose and continue with regular dosing schedule.
  - Patients may require post-exposure prophylaxis (PEP) if exposure occurs when doses are missed.

7. Manage the patient if they are not eligible for funded PrEP .

Not eligible for funded PrEP

- Some patients from high-risk populations who are themselves at low risk may obtain psychological benefits from PrEP use (e.g., they struggle to find partners due to fear of HIV exposure). Consider prescribing PrEP on a case-by-base basis. Seek sexual health advice if uncertain.

  Be aware that not all risk is always disclosed to prescribing clinicians.

- Discuss prescription options , including costs.

  Prescription options

  - The patient can purchase generic emtricitabine with tenofovir off-label with a prescription from a New Zealand pharmacy at a cost of approximately $30 per month, depending on the pharmacy mark-up.
  - Burnett Foundation Aotearoa has a partnership with Green Cross Pharmacy, offering free PrEP for students, patients with community service cards, or low income earners. Green Cross requires a New Zealand prescription for ordering, and a copy of this is put in the packing slip to avoid problems at customs.

8. Discuss behavioural risk-reducing strategies .

Behavioural risk-reducing strategies

Advise the patient to:

- use condoms.
- use clean injecting equipment, and to never share injecting equipment. Provide information about safer injecting and needle exchange if required.
- test regularly for HIV, and to know the HIV status of partners.
- test regularly for sexually transmitted infections (STIs), and to seek treatment if required.

9. Provide follow-up visits at one month after initiation and at least every 3 months thereafter, to provide ongoing monitoring and investigations .

Ongoing monitoring and investigations

- One month after initiation and at least every 3 months, provide:

- side-effects assessment.

  Potential side-effects

  - Early side-effects (e.g., headache, nausea, diarrhoea) are usually mild and settle after the first few weeks.
  - Longer-term side-effects include renal toxicity and lowered bone density.

- HIV testing and assessment for signs and symptoms of acute HIV infection .
- full STI screening, including testing for syphilis, gonorrhoea, chlamydia, and hepatitis B if not immune.
- pregnancy testing, if the patient is at risk of pregnancy.
- medication adherence assessment.
- advice about behavioural risk-reducing strategies for HIV and STIs.

- 3 months after initiation and then every 6 months, arrange:
  - renal function.
  - urine protein:creatinine ratio.

  Check renal function every 3 months if:

  - mild renal impairment (eGFR 60 to 90 mL/min/1.73 m^2 at baseline).
  - aged > 40 years.
  - renal risk factors.

  Note that a mild dip in eGFR is common after starting PrEP. Seek nephrology advice if > 25% reduction or a sustained decrease of 15% or more.

- Annually, arrange hepatitis C serology (or more frequently if ongoing risk).

See New Zealand Sexual Health Society (NZSHS) – Decision Making in PrEP Tool .

10. If the patient is taking daily PrEP and wishes to stop treatment, and:
    - has chronic hepatitis B, seek sexual health or infectious diseases advice before withdrawing PrEP, due to the risk of HBV reactivation.
    - is a cisgender male, recommend that they continue taking PrEP for 48 hours (i.e., 2 consecutive daily doses) after the last potential exposure. Transgender people and cisgender women should continue for 7 days after the last potential exposure.

Request

- If you do not feel competent prescribing PrEP, seek sexual health advice or refer the patient to a suitable general practitioner. See Burnett Foundation Aotearoa – Find a PrEP Friendly Provider .
- Seek sexual health advice if:
  - concern regarding possible drug interactions.
  - uncertain if patient is eligible for, or would receive benefit from, PrEP, in particular cisgender heterosexual people.
  - patient is pregnant, planning pregnancy, breastfeeding, or aged < 18 years.
- Seek nephrology advice or consider requesting non-acute nephrology assessment if:
  - patient has an eGFR < 60 mL/min/1.73 m^2.
  - after starting PrEP has a 25% reduction in eGFR or a sustained 15% reduction.
- If patient has chronic hepatitis B, seek sexual health or infectious diseases advice before starting or withdrawing PrEP.

Information

For health professionals

Education

- Burnett Foundation Aotearoa – Workforce Development [online learning modules for primary care]:
  - MSM Culture
  - PrEP Basics
- HealthPathways Education – Simplifying HIV Prevention: Practical Prescribing of PrEP and PEP

Further information

- bpacnz – HIV Pre-Exposure Prophylaxis (PrEP): A How-to Guide
- HealthPoint – Pharmacies that Stock PEP/PrEP
- New Zealand Sexual Health Society (NZSHS) – PrEP and PEP Guidelines for Aotearoa New Zealand

For patients

- Burnett Foundation Aotearoa:

- All You Need to Know About PrEP
- Daily PrEP or PrEP 2-1-1?
- Find a PrEP Friendly Provider
- PrEP Information for Patients

- Healthify He Puna Waiora – Pre-exposure Prophylaxis (PrEP)

SEND FEEDBACK

KEY LINKS

NZSHS Decision Making in PrEP Tool

SOURCES

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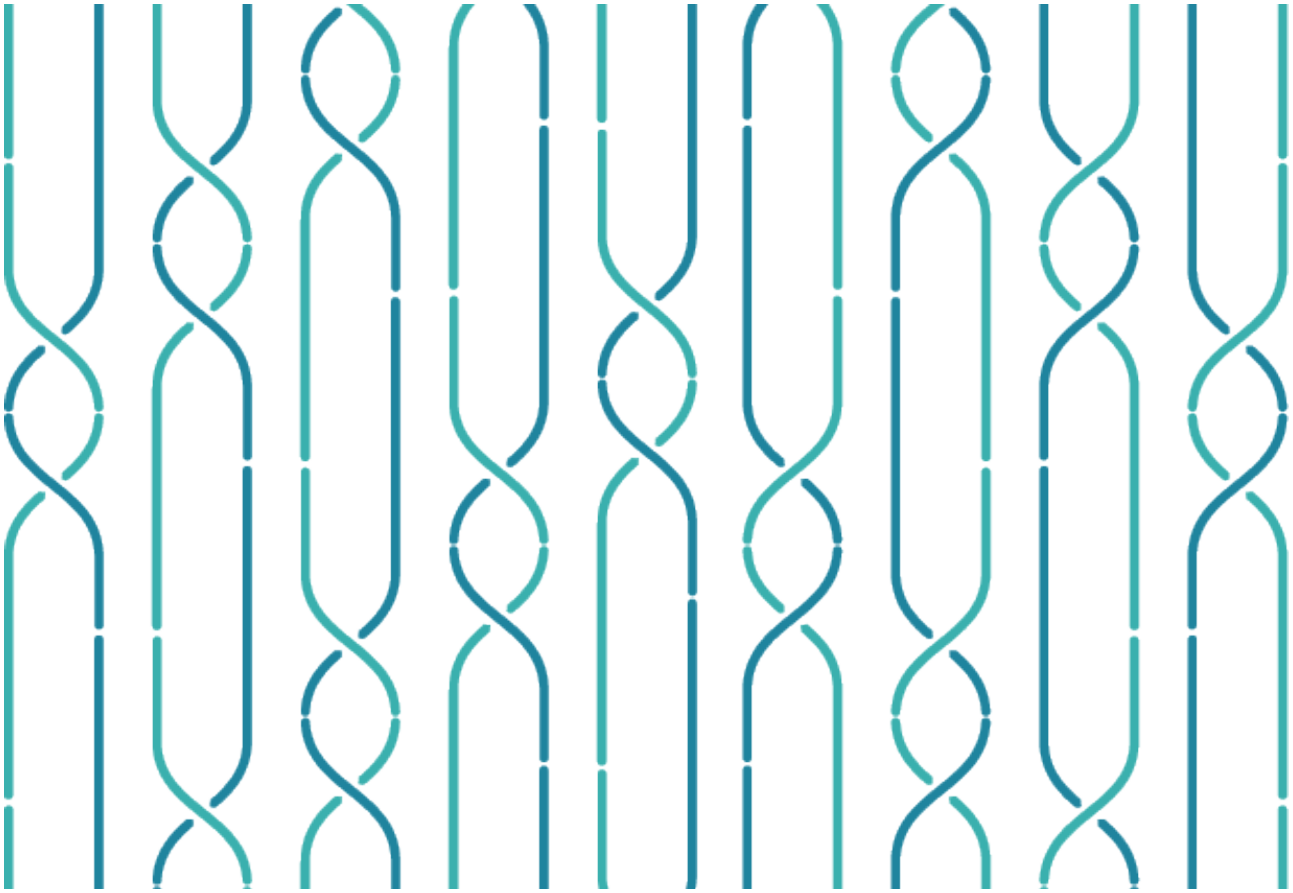
Te Kāwanatanga o Aotearoa
New Zealand Government

MANATŪ HAUORA
MINISTRY OF HEALTH

NATIONAL HIV ACTION PLAN FOR AOTEAROA NEW ZEALAND 2023–2030

An Aotearoa New Zealand where HIV transmission is eliminated and all people living with HIV have healthy lives free from stigma and discrimination

2023



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MANATŪ HAUORA
MINISTRY OF HEALTH

Mihi

Rārangi maunga, tū te ao, tū te pō, rārangi tangata, ka ngaro noa, ka ngaro noa. Ka whai whakaaro ake rā ki a rātou mā ngā mate tāruru nui o te wā, rātou katoa kua riro i te au o oti atu, i tēnei wiki, i tēnei marama, i te tau kua hori. Me te kī atu ki a rātou mā, haere atu koutou ki te Pūtahitanga o Rēhua, ki te whare whakamoe ariki, ki reira koutou, moe ai, oki oki e. Ko rātou ki a rātou, ko tātou kua whakarērea iho mai, ko tātou te pito ora ki a tātou.

Kei ngā kahu pītongatonga o te motu, koutou e korowai ana i te hapori ki te aroha, ki te manaaki, ki te tiaki, tēnei te reo o te Manatū Hauora me te Kāwanatanga e rere atu rā ki a koutou katoa. Ko koutou ngā pou e tū ai te whare hauora o Aotearoa, me mihi ka tika.

Ka mihi hoki ki ō mātou hoa haere, nā koutou tēnei rautaki i oti ai, nā koutou tēnei rautaki i mana ai, ko koutou te whakatinanatanga o te whakataukī, ko tā tātou toa he toa takitini.

Tēnei te tāpae ake rā i te rautaki nei i runga i te ngākau whakaiti. Koo te wawata ia nei, ka tutuki pai katoa ngā mahi kei mua i te aroaro, katoa ngā mahi kua whakaurua mai ki roto i tēnei rautaki. Ki te mahi takitahi, e kore e pahawa, engari ki te mahi ngātahi tātou katoa, ka ea, ka oti. Nō reira, huri noa i te motu, tēnā koutou, tēnā koutou, tēnā rā tātou katoa.

Foreword from Minister of Health

Human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) is an ongoing global epidemic that, to date, has resulted in the deaths of 757 people in Aotearoa New Zealand. When HIV emerged in the early 1980s, those living with it faced intense discrimination, were ostracised from society and were excluded from health care services. Gay and bisexual men were particularly affected by HIV, and this amplified the existing stigma and discrimination this community already faced. As an infectious disease physician who has cared for people living with HIV, I have seen the impact of this stigma first-hand. I have had patients who couldn't engage in care and felt unable to accept their diagnoses primarily because of the stigma that surrounds HIV.

Progress in our understanding and attitudes towards HIV has been achieved through the consistent and brave efforts of people living with or affected by HIV, community organisations and dedicated clinicians. At the same time, advances in prevention and treatment now mean that HIV is a manageable chronic condition rather than an acute fatal disease. In Aotearoa New Zealand, medications to treat HIV are publicly funded, allowing people living with HIV to supress their viral load and prevent HIV transmission even to sexual partners. Highly effective preventative medication is also publicly funded for people at risk of HIV transmission. All these factors mean we now have a low and decreasing HIV incidence, have eliminated mother-to-child transmission of HIV and have minimal transmission of HIV amongst people who inject drugs and sex workers.

It is now time to mobilise around another ambitious goal: to see local HIV transmission eliminated and people living with HIV leading healthy lives free from stigma and discrimination.

This HIV action plan provides a roadmap of how we can work together to eliminate transmission and support people living with HIV. The action plan has a strong focus on eliminating inequities and stigma, meeting our Tiriti o Waitangi obligations, ensuring access to care and placing the needs and desires of communities at risk of or living with HIV at the heart of our efforts. Communities have paved the way in our HIV response and will continue to propel us forward and help us to reach those not currently reached by our health system. I am confident that, by working hand in hand with communities, we can achieve our goals for the HIV response in Aotearoa New Zealand. We can look towards the future with hope.

Hon Dr Ayesha Verrall
Minister of Health

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Introduction

In 2023, we have the knowledge and tools to prevent every human immunodeficiency virus (HIV) infection and acquired immune deficiency syndrome (AIDS) related death. This is a significant milestone in the global response to this epidemic which has resulted in over 36 million deaths. However, prevention and treatment tools have not been equally or fully accessed and we need new approaches that ensure equitable access to testing, treatment and care.

In response to this challenge, the Joint United Nations Programme on HIV and AIDS (UNAIDS) launched the 2021 Political Declaration on HIV and AIDS to set ambitious targets to guide global efforts in eliminating HIV transmission and ending AIDS as a public health threat. Aotearoa New Zealand is a signatory to this declaration.

In Aotearoa New Zealand, we are in a strong position to achieve these targets and eliminate HIV transmission. Compared with many other countries, we already have a low incidence of HIV, well-established harm reduction programmes (such as the needle exchange programme) and publicly funded HIV combination prevention and treatment. This includes pre-exposure prophylaxis (PrEP), which lowers the risk of a person acquiring HIV by 99% and highly effective antiretroviral treatment, which prevents HIV from being sexually transmitted.

This plan outlines the actions we need to take to meet the UNAIDS targets, eliminate HIV transmission and ensure that people living with HIV have healthy lives free from stigma and discrimination. This includes reducing HIV incidence; improving outcomes for Māori; reducing stigma and discrimination; reducing the morbidity and mortality of HIV and achieving equitable outcomes across all population groups. To get there, we will need to improve our surveillance systems and understanding of HIV, increase support for people living with HIV and address equity barriers to combination prevention, testing and treatment.

The action plan is informed by Te Tiriti o Waitangi (Te Tiriti), the overarching Sexually Transmitted and Blood-borne Infection (STBBI) strategy, the Aotearoa New Zealand Consensus Statement on Comprehensive HIV Prevention[1] and the Aotearoa Statement on Closing the Gap on Sexually Transmitted Infections and Blood Borne Viruses among Indigenous Peoples of Australasia.[2] The plan also aligns with global strategies for HIV and the UNAIDS 2021 political declaration as mentioned above.

The next section summarises the epidemiology and experiences of people living with HIV and AIDS in Aotearoa New Zealand. This is followed by a section that outlines the plan's relationship to Te Tiriti. After that, there is a section on the values guiding the plan and another section on the framework for the action plan, including priority groups and settings. From there, the next section describes four

[1] https://hivconsensus.org.nz/

[2] https://www.nzshs.org/events/the-aotearoa-statement

areas we will need to focus on in our HIV response, accompanied by a comprehensive list of actions, and the final section provides guidance for implementing the plan.

HIV and AIDS in Aotearoa New Zealand

For any public health action to be targeted and effective, we need to understand the epidemiology, sexual practices and lived experiences of people living with and affected by HIV. It helps us identify priority populations, behavioural patterns that increase vulnerability to HIV transmission, delayed diagnosis or poor clinical outcomes, as well as factors impacting on the lives of people living with HIV.

HIV transmission in Aotearoa New Zealand[3]

In 2016, Aotearoa New Zealand had the highest number of HIV notifications ever recorded in a single year. Since then, the number of people diagnosed with HIV has been steadily dropping, driven primarily by reductions in locally acquired infections among gay, bisexual, and other men who have sex with men.

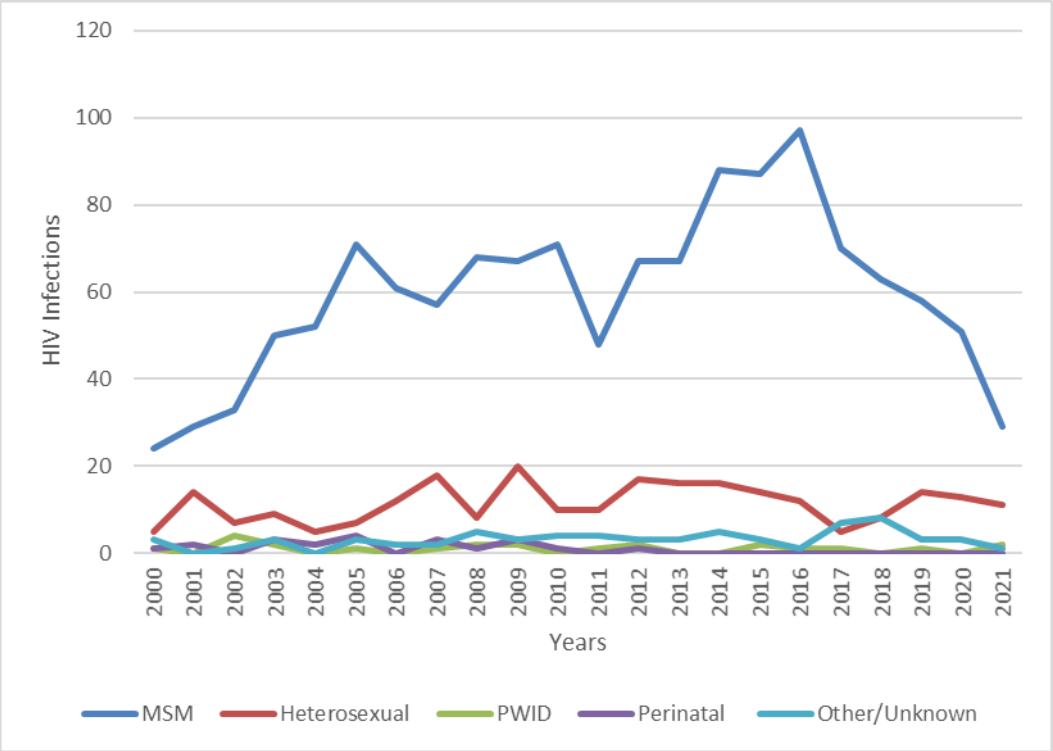
In 2021, 112 people (93 men, 19 women) were notified with HIV in New Zealand, 67 of whom were first diagnosed in New Zealand. Of all infections thought to have been acquired locally with a known route of infection, 67% were gay, bisexual, and other men who have sex with men. An analysis by Saxton et al. (2021b) found that gay, bisexual and other men who have sex with men were 348 times more likely to be diagnosed with HIV than heterosexuals. Among gay, bisexual and other men who have sex with men diagnosed in Aotearoa New Zealand between 2017-2021 (which includes those acquiring HIV locally and overseas), 47% were European, 22% Asian, 14% Māori, 8% Pacific peoples and 9% were of other ethnicities or not reported. The age range at diagnosis was 16–75 years.

Despite the uncertainties surrounding HIV testing provision and access during the COVID-19 epidemic, the number and proportion of men who have sex with men diagnosed with high CD4 cell count[4] in 2021 (suggesting early diagnosis of HIV) were lower than in the preceding five-year average, indicating declining incidence.

[3] The AIDS Epidemiology Group at the University of Otago is responsible for national surveillance of HIV infection and AIDS. Data has been extracted from annual reports. For more information, see the group's AIDS – New Zealand newsletters at: **www.otago.ac.nz/aidsepigroup/newsletters/index.html**

[4] CD4 cells are a type of white blood cell. They help the body fight infection. They are also known as CD4+T cells.

Figure 1: Locally acquired HIV infections 2000-2021



Since the beginning of the epidemic, the numbers of HIV notifications among those who acquired HIV through heterosexual contact have been lower than among gay, bisexual and other men who have sex with men. Most HIV infections recorded among heterosexuals are thought to have been acquired overseas. In 2021, there were 29 HIV notifications among heterosexuals, with 11 (6 women and 5 men) of those acquired locally. However, between 2017 and 2021, 51% of heterosexuals who acquired HIV locally were diagnosed with CD4 cell counts lower than 350, compared with 39% of gay, bisexual and other men who have sex with men. Low CD4 cell counts indicate a delay between infection and diagnosis, which may result in poor health outcomes and advanced disease at diagnosis, but also ongoing HIV transmissions. The low numbers of HIV infection among heterosexual men and women may result in clinicians not offering appropriate testing, even in cases where people present with clinical symptoms of HIV, leading to underdiagnoses (Dickson et al 2012; Hopkins et al 2019).

In the last five years of available data (2017-2021), three women were diagnosed with HIV as part of antenatal testing[5]. One individual was notified to be living with HIV acquired through mother-to-child transmission overseas. Since 2007, there have been no local mother-to-child transmission of HIV in Aotearoa New Zealand.

Groups internationally reported to be disproportionately affected by HIV who may also be vulnerable to the rapid spread of HIV include people who inject drugs (Larney et al 2017) and sex workers (Shannon et al 2015). This is not the case in Aotearoa New Zealand due to the early introduction of needle exchange programmes and the decriminalisation of sex work (Healy 2006). In the last five years (2017-2021), there were a total of 16 local transmissions among people who inject drugs. In an audit of 358 sex workers (predominantly female) presenting to an Auckland community

[5] In Aotearoa New Zealand, testing for HIV is available as part of routine antenatal screening.

outreach clinic for sexually transmitted infections (STIs) and HIV screening, there was only one person with HIV who was known to be living with, and being treated for, HIV.[6]

HIV prevalence in Aotearoa New Zealand

While we don't know the current total number of people living with HIV in Aotearoa New Zealand, community dispensing data indicates 2,839 people (2,381 men, 447 women and 11 children) were receiving subsidised antiretroviral therapy as at the end of June 2020.[7]

Between 1985 and 2021, a total of 5,475 people were notified as having HIV in Aotearoa New Zealand. The majority (57.7%) were among gay, bisexual, and other men who have sex with men, followed by those thought to have acquired HIV through heterosexual contacts (24.6%). In all, 15.4% of recorded HIV notifications were among women. Māori represented 7.9% of all HIV notifications between 1996 and 2021. During the same period, the African community, despite constituting a relatively small ethnic group in Aotearoa New Zealand (less than 0.4%), represented 13.2% of all HIV notifications and over 40% of the women found to be living with HIV in Aotearoa New Zealand.

AIDS and associated mortality in Aotearoa New Zealand

Early HIV diagnosis, prompt links to care, treatment initiation and retention in care are crucial to preventing poor clinical outcomes from HIV infection. In most cases, when HIV is diagnosed early, the clinical outcome of AIDS can be prevented with effective antiretroviral therapy, and the life expectancy remains similar to that of the general population (Marcus et al 2020).

The numbers of AIDS diagnoses and AIDS-related deaths have reduced significantly compared with in the late 1980s and early 1990s, before the introduction of effective antiretroviral treatment. For several years in that former period, there were over 60 AIDS diagnoses and 50 AIDS deaths per year in Aotearoa New Zealand. In 2021, 16 people were diagnosed with AIDS. Of these, seven were gay, bisexual and other men who have sex with men, seven were heterosexual and in the remaining cases, the route of transmission was unknown. Notably, 69% of these cases were diagnosed with AIDS within three months of HIV diagnosis, when the initiation of treatment would be unlikely to prevent progression of HIV infection. One person died of AIDS in 2021.

Living with HIV in Aotearoa New Zealand

Despite great advances in treatment and clinical outcomes for people living with HIV, a significant proportion of people living with HIV in Aotearoa New Zealand report not having a high quality of life and experiencing stigma and discrimination (The Aotearoa

[6] Sunita Azariah, personal communication, November 2021.

[7] Data current to the end of June 2020, provided by the Pharmaceutical Management Agency (PHARMAC), July 2021.

New Zealand PLHIV Stigma Index 2020). Within the health care system, there are reports of testing for HIV without consent or under pressure and staff avoiding physical contact with people living with HIV. In many cases, people living with HIV do not disclose their HIV status because of the fear of discrimination. This adversely impacts on the quality of care such people receive and becomes a barrier to seeking testing and treatment.

We also know that stigma and discrimination are often compounded by experiences of negative attitudes associated with practices that increase vulnerability to HIV, such as same-sex sexual practices between gay, bisexual and other men who have sex with men, injecting drug use and sex work. The experience of stigma can also be amplified because of intersecting forms of discrimination, such as racism that exists within and outside the health care system (Talamaivao et al 2020).

Stigma and discrimination experienced by women living with HIV is often compounded by societal perceptions and double standards around female sexuality (Bennett 2007). Women living with HIV also report issues in accessing appropriate sexual health, reproductive and antenatal services, including receiving inappropriate guidance about their reproductive rights and breastfeeding.

Comorbidity

International evidence shows that the comorbidity burden among people living with HIV remains high, with increased rates of cardiovascular disease, liver diseases, mental health disorders, substance use, dyslipidaemia and cancers (Collins and Armstrong 2020; Lorenc et al 2014). Little data is available on the comorbidity burden among people living with HIV in Aotearoa New Zealand. In the ageing population of people living with HIV, the impacts of comorbidity will likely increase. Māori and Pacific peoples living with HIV may also have an increased risk of comorbidity given that Māori and Pacific peoples are generally more likely to experience health inequities (Hobbs et al 2019).

We also know that gay, bisexual and other men who have sex with men living with HIV experience an increased burden of other STIs, including syphilis. Surveillance data shows that among gay, bisexual and other men who have sex with men diagnosed with syphilis in 2019, almost 15% were living with HIV.[8]

[8] Institute of Environmental Science and Research (ESR) data presented at the HIV forum in March 2020.

Te Tiriti o Waitangi

This action plan gives effect to the obligations Manatū Hauora has under Te Tiriti o Waitangi (Te Tiriti) as responsible Tiriti partners and stewards of the health and disability system. As outlined in the document Whakamaua: Māori Health Action Plan 2020–2025 (Ministry of Health 2020b), our country's health and disability system is committed to giving effect to Te Tiriti in the relationship between Māori and the Crown.

The principles of Te Tiriti, as articulated by the courts and the Waitangi Tribunal,[9] underpin the Ministry's commitment to Te Tiriti and related responsibility to ensure the HIV sector and the wider primary health sector give effect to the principles as outlined in Whakamaua: Māori Health Action Plan. The Waitangi Tribunal concluded in Hauora: Stage One Report on the Health Service and Outcomes Inquiry that persistent health inequities experienced by Māori across almost every disease state were the consequence of the failure to apply the principles of Te Tiriti at the structural, organisational and health practitioner levels of the health and disability system (Waitangi Tribunal 2019, pages 30–33).

Meeting our Tiriti obligations will require taking action to ensure inequities and gaps for Māori at risk of HIV (Māori gay and bisexual men and other men who have sex with men, Māori people who inject drugs, Māori sex workers and Māori transgender and non-binary people) and Māori living with HIV are addressed. Giving effect to Te Tiriti is required in order to achieve, at a minimum, equitable health outcomes for Māori people at risk of or living with HIV.

The HIV action plan implements the following principles of Te Tiriti as they apply to Māori.

Tino rangatiratanga

The principle of tino rangatiratanga guarantees Māori the right to collectively exercise tino rangatiratanga (self-determination) and to live according to Māori philosophies, values and tikanga Māori (Māori customs). This principle encompasses effective and appropriate kaitiakitanga (stewardship) over the health and disability system. This includes decision making over the design, delivery, monitoring and implementation of high-quality, culturally safe services for Māori at risk of transmission of HIV or living with HIV.

[9] For example, New Zealand Maori Council v Attorney-General [1987] 1 NZLR 641; New Zealand Maori Council v Attorney-General [1989] 2 NZLR 142; New Zealand Maori Council v Attorney-General [1991] WL 12012744; New Zealand Maori Council v Attorney-General [1992] 2 NZLR 576; New Zealand Maori Council v Attorney-General [2013] NZSC 6; The Ngai Tahu report 1991 (Waitangi Tribunal 1991); Report of the Waitangi Tribunal on the Orakei claim (Waitangi Tribunal 1987); Report of the Waitangi Tribunal on the Muriwhenua fishing claim (Waitangi Tribunal 1988).

Partnership

Māori at risk of HIV or living with and affected by HIV will work with the Crown to initiate and develop the relationship through the process of initiating, developing, implementing and monitoring the action plan. The partnership principle requires HIV and related health services to genuinely partner with Māori to design, deliver and prioritise actions where inequities in health outcomes for Māori are known or likely to exist. Working in partnership with Māori in the governance, design, delivery and monitoring of services is essential to ensure prevention and treatment services are effective and achieve positive health outcomes for Māori.

Active protection

Manatū Hauora has a responsibility to actively protect the tino rangatiratanga and mana motuhake (autonomy) of Māori to manage their health in accordance with tikanga Māori and mātauranga Māori (Māori knowledge). Until known and likely inequities are resolved, HIV-related health services have a Tiriti obligation to prioritise Māori health outcomes and set goals to achieve those outcomes (Waitangi Tribunal 2019, pages 30–33).

Equity

Te Tiriti confirms that Māori, as citizens of Aotearoa New Zealand, have all the rights and privileges of other New Zealanders, including freedom from HIV-related stigma and discrimination and intersecting stigma and discrimination, including racism, homophobia, transphobia and misogyny. The principle of equity recognises that Māori require different approaches and resources to achieve equitable health outcomes. This includes identifying barriers that lead to inequities for Māori people at risk of HIV transmission or living with HIV, including service-level stigma and discrimination and, where barriers exist or are likely to exist, addressing these barriers as a priority. All systems and services used by Māori people at risk of transmission of or living with HIV must be equitably accessible and funded (Waitangi Tribunal 2019, pages 33–35).

Options

Māori are guaranteed the right to live as Māori and in accordance with their practices and knowledges whilst retaining the right to live as citizens of wider Aotearoa New Zealand. Accordingly, kaupapa Māori (Māori initiatives) health services and networks for Māori at risk of or living with and affected by HIV must be fostered and protected. All other (that is, mainstream) HIV and related health services must also provide high-quality and culturally safe models of hauora (health) and services so that Māori at risk of or living with and affected by HIV are not disadvantaged by their choice of service (Waitangi Tribunal 2019, pages 35–36).

Strategic approaches to meet Te Tiriti o Waitangi obligations

The action plan has an explicit goal of giving effect to Te Tiriti obligations, including increasing equity for Māori across all outcomes for HIV. This will require specific actions for Māori in the action plan. We will also partner with Māori, particularly Māori at risk of and living with HIV, in implementing and monitoring the action plan.

Guiding values

The values set out in this section support the development of this action plan and will guide us to achieve our vision of ensuring HIV transmission is prevented and all people living with or affected by HIV have healthy lives free from stigma and discrimination. The values intersect with Te Tiriti principles and support meeting Te Tiriti obligations, for example, through being accountable for achieving equitable outcomes and meaningful involvement of priority groups.

The values have been informed by the overarching STBBI strategy, but there are two values specific to the HIV action plan: courage and innovation, and a focus on communities. The action plan is grounded in our commitment to equity and the meaningful involvement of people living with and affected by HIV. These are outlined in further detail in standalone sections to follow.

Values	
Equity	In Aotearoa New Zealand, people experience differences in health that are not only avoidable but unfair and unjust. Equity recognises that different people with different levels of advantage require different approaches and resources to achieve optimal health outcomes.[10] This action plan is committed to achieving health equity for those at risk of HIV transmission and improving the health and wellbeing of people who are living with HIV.
Meaningful involvement of people living with or affected by HIV	We recognise the rights of people living with HIV and communities affected by HIV, including their right to self-determination and participation in decision-making processes around the issues that affect their lives. We will promote meaningful involvement of people living with HIV and affected communities.
Manaakitanga	We show care, inclusion, respect, support, trust and kindness to each other. This includes addressing stigma and discrimination and preserving the mana of people accessing prevention tools and services, such as PrEP, and testing and care for people living with HIV.
Evidence	We are committed to developing evidence-based policy and programmes recognising different forms of knowledge, including mātauranga Māori and knowledge of the communities affected.
Courage and innovation	We will set bold and ambitious targets that will require us to be courageous and innovative in our response to HIV. This includes taking advantage of new and innovative approaches, treatments and system level changes.
Accountability	We take accountability for developing the action plan, implementing it and achieving the stated outcomes. This will require governance and further leadership around HIV prevention and care. It is also important there is enough resourcing for the HIV response so that the health sector can deliver on priority areas to achieve the desired outcomes. Designing measurable key performance indicators and monitoring progress as a part of the implementation plan is crucial for accountability.

[10] This is from the Ministry's official working definition of equity. For more information, see the Achieving equity webpage on the Ministry's website at: **http://www.health.govt.New-Zealand/about-ministry/what-we-do/work-programme-2019-20/achieving-equity**

Values	
Community focused	We recognise that community organisations are critical to achieving effective and equitable outcomes because they have a strong understanding of the needs and aspirations of their communities. We will promote meaningful involvement of community organisations and develop actions that strengthen their ability to best serve their communities.

Equity

In 2020, UNAIDS identified inequities between and within countries as a key reason why the world had failed to meet the global 90-90-90 HIV and AIDS targets (UNAIDS 2021). In the latest UNAIDS strategy and the 2021 political declaration, addressing inequities is made central to any HIV and AIDS response as both a human rights imperative and a public health necessity.

In Aotearoa New Zealand, some inequities have been clearly identified. Gay, bisexual and other men who have sex with men are the community most disproportionately affected by HIV and are 348 times more likely to be diagnosed with HIV than the heterosexual population (Saxton et al 2021b). There are, however, further and intersecting inequities within this population group. For example, while Māori and Pacific gay, bisexual and other men who have sex with men are no more likely to be living with HIV than non-Māori gay, bisexual and other men who have sex with men, they are more than twice as likely to be diagnosed late and present with advanced HIV (Dickson et al 2012).

International and local research shows that the drivers of HIV and AIDS inequities are complex and include an inequitable distribution of the determinants of health, such as income and housing (Hamlet 2019; ASHM 2021). The drivers may impact people's access to and uptake of prevention, testing, treatment and support (Hamlet 2019). These inequities are also intersecting and experienced differently depending on which communities a person belongs to (Hamlet 2019; AFAO 2021). For example, a person who identifies as a gay man from an ethnic community may have a different experience with the health care system compared with a European gay man. This means that our approach to reducing inequities should seek to influence not only the health care system but also determinants of health, such as stigma and discrimination. This approach is emphasised across the key public health frameworks, including the Ottawa Charter for Health Promotion (the Ottawa Charter).[11]

There are also gaps in our ability to identify inequities in certain population groups. For example, transgender and non-binary people and people in prisons are key groups identified as vulnerable to HIV in the UNAIDS strategy and international HIV action plans, but we do not currently have accurate data on HIV prevalence and prevention practices among these communities in Aotearoa New Zealand.

[11] For information on the Ottawa Charter for Health Promotion, see the Ottawa charter for health promotion webpage on the World Health Organization website at: www.who.int/publications/i/item/ottawa-charter-for-health-promotion

We can address these inequities if our response is grounded in, and driven by, Te Tiriti and an equity-first approach. We can commit to this by:

1. ensuring meaningful involvement of people living with and affected by HIV and priority groups when developing and implementing our action plan
2. designing and prioritising actions based on Te Tiriti[12] and an equity-first prioritisation process that will influence the determinants of health, including stigma and discrimination
3. monitoring the success of the action plan, including specific equity indicators.

Meaningful involvement of people living with or affected by HIV

Promoting the ongoing and meaningful involvement of people living with HIV in accordance with the Meaningful Involvement of People with HIV and AIDS/Greater Involvement of People with HIV and AIDS (MIPA/GIPA) Principle[13] and communities affected by HIV is important to achieving our vision of eliminating HIV transmission and ensuring all people living with HIV can lead healthy lives free from stigma and discrimination. This includes meaningfully involving whānau/families, if desired by people living with or affected by HIV.

This approach realises the communities' right to self-determination and participation in decision-making processes that affect their lives and helps improve the quality, effectiveness and acceptability of our response to HIV.

Recognising MIPA/GIPA in our HIV response also honours our commitment to the UNAIDS 2021 Political Declaration on HIV and AIDS, which calls for the greater involvement of people living with, at risk of and affected by HIV in leading the response. This approach aligns with key public health frameworks and underlines the commitment of Aotearoa New Zealand to the values embedded in the Ottawa Charter, which recognises the need to involve communities in setting priorities, making decisions, planning and implementing strategies that have an impact on their lives.

[12] It is important to remember that Te Tiriti does not equate to equity, but rather it includes equity and Māori aspirations.

[13] The importance of the lived experience of people with HIV in shaping the HIV response was first noted in the Denver Principles in 1983. The MIPA/GIPA Principle was first internationally recognised in the Paris AIDS Summit Declaration in 1994 and was later adopted by UNAIDS in 2001. More information is available here: **https://data.unaids.org/pub/briefingnote/2007/jc1299_policy_brief_gipa.pdf**

The framework of the HIV action plan

Vision

An Aotearoa New Zealand where HIV transmission is eliminated
and all people living with HIV have healthy lives
free from stigma and discrimination

To realise this vision, we have set clear goals and objectives in our action plan. These goals have been informed by the UNAIDS Global AIDS Strategy 2021–2026,[14] the 2021 Political Declaration on HIV and AIDS and our country's STBBI Strategy. We have also set targets for 2030 that are informed by the UNAIDS fast-track targets.

Goal 1: Reduced number of new locally acquired HIV infections

Our targets for 2030 are to:

- meet the UNAIDS target of a 90% reduction in locally acquired infections compared with a 2010 baseline[15]
- sustain the low incidence of HIV among sex workers and people who inject drugs
- maintain zero cases of mother-to-child transmission.

To achieve this goal, we need to focus on increasing our knowledge and understanding of new infections and behaviours that are driving HIV transmission and increasing the uptake of combination prevention. This includes meeting the UNAIDS target of 95% of people who are at risk of HIV using combination prevention.

[14] For more details, see the Global AIDS Strategy 2021–2026 webpage on the UNAIDS website at: **https://unaids.org.ua/en/about-unaids/global-aids-strategy-2021-2026**

[15] The 2010 baseline for locally acquired HIV infectious was 149 cases

Goal 2: Improved Māori health and wellbeing in relation to HIV by delivering on our Tiriti o Waitangi obligations

To achieve this goal, we need to have specific actions that focus on increasing equity for Māori across outcomes for HIV. This includes ensuring we have the necessary information and surveillance to identify, understand and monitor progress on inequities and have specific actions for Māori that improve their access to combination prevention, testing, treatment, support for Māori living with HIV and reduce stigma and discrimination.

Goal 3: Decreased mortality and the negative consequences of HIV on health and wellbeing

Our targets for 2030 are to have:

- 95% of people living with HIV know their status
- 95% of people who are diagnosed with HIV on treatment
- 95% of people who are on HIV treatment have viral suppression
- no AIDS-related deaths.

To be able to achieve this, we need to focus our efforts on ensuring that people living with HIV are diagnosed early, have timely access to treatment and are able to access suitable support services. This includes ensuring we have the information necessary to continually improve HIV services and programmes.

Goal 4: Decreased experiences of stigma and discrimination for people living with HIV

The target we aim to achieve for 2030 is the UNAIDS target of no people living with HIV experiencing stigma and discrimination.

To achieve this goal, we need to ensure that people have a better understanding of HIV and that we have better regulatory frameworks and practices that help reduce stigma and discrimination experienced by people living with HIV. We also need to address the intersecting types of stigma and discrimination experienced by different communities living with HIV, for example, racism and homophobia.

Goal 5: Increased equity in relation to all HIV goals and objectives

To achieve this goal, we need to increase our ability to identify inequities and focus our efforts on populations that are more likely to experience HIV transmission, delayed diagnosis, poor clinical outcomes and complex and layered stigma and discrimination.

While most of our actions will focus on these key population groups, we will also develop actions for others affected by HIV.

Priority groups

To reach our goals, we must prioritise actions for people living with HIV and communities most affected by HIV based on local epidemiology and international evidence (where local epidemiological data is limited) and our Te Tiriti obligations.

Priority groups are not fixed over time and may change according to emerging epidemiological trends. We will review the evidence for these priority groups over time and make any changes based on local and global evidence.

Actions implemented under this plan can also be targeted for groups that are not listed as a priority group, where relevant. The priority groups, in no particular order, are:

- people living with HIV
- gay, bisexual and other men who have sex with men
- Māori at risk of and living with HIV
- sex workers[16]
- people who inject drugs
- people who have migrated from high HIV prevalence countries[17]
- transgender and non-binary people.

People living with HIV

A key component of our vision for Aotearoa New Zealand is for people living with HIV across all populations, including different demographics and geographical areas, to live healthy lives free from stigma and discrimination. While we have made sound progress with increasing access to effective antiretroviral treatment, we know there is much more we can do.

People living with HIV experience complex and layered stigma and discrimination which varies depending on their characteristics, such as gender and sexuality, and living conditions, such as living in rural or urban settings. Experiences of stigma and discrimination can have profound impacts on wellbeing. This includes feelings of isolation and an increased risk of developing mental health conditions such as depression and anxiety. It is important that people living with HIV can access appropriate mental health and support services when required.

There are diverse people living with HIV in Aotearoa New Zealand, and that brings a diverse range of needs. For example, women living with HIV have additional health needs, including reproductive health care, such as cervical screening and advice on

[16] Including migrant sex workers.

[17] Including people who may be ineligible for funded health care.

breastfeeding. Likewise, older people living with HIV may require additional supports to prevent and treat comorbidities. It is important that our response to HIV recognises the broad range of health care needs of people living with HIV.

People who inject drugs

In Aotearoa New Zealand, we have a low incidence of HIV transmission among people who inject drugs compared with other countries. We need to maintain this trend. People who inject drugs are a priority group because of the potential risks associated with needle and syringe sharing, the increased challenges surrounding accessing adequate health care for people who inject drugs and the risk of rapid spread if HIV were to enter these networks.

Gay, bisexual and other men who have sex with men

Gay, bisexual and other men who have sex with men constitute the largest population at risk of HIV transmission among those living with HIV in Aotearoa New Zealand. Targeted action is needed to reduce the number of new infections among this group. Among gay, bisexual and other men who have sex with men, there are subgroups whose vulnerability to HIV impacts is amplified by other factors. Even though we have started to see decreases in local HIV incidence among gay, bisexual and other men who have sex with men, not all are equitably accessing and benefitting from combination prevention. Sub-communities who may require a tailored response to fully benefit from HIV prevention and care include Māori, Asian and Pacific peoples; recent migrants and international students; people who are ineligible for publicly funded health care; those engaging in transactional sex and those who do not identify as gay or bisexual but have sexual contacts with other men.

Māori at risk of and living with HIV

Māori at risk of HIV include Māori gay, bisexual and other men who have sex with men, Māori who inject drugs, Māori sex workers and Māori transgender and non-binary people. Prioritising Māori communities at risk of HIV, along with Māori living with HIV, is an integral part of honouring our commitment to the principles of Te Tiriti: tino rangatiranga, partnership, active protection and equity. This includes taking action to address the stigma and discrimination experienced by Māori people living with HIV and reducing the inequitable outcomes of Māori gay, bisexual and other men who have sex with men presenting late to health care services with advanced HIV.

Sex workers

The prevalence of HIV among sex workers is low in Aotearoa New Zealand compared with other countries. However, sex workers (including those who only engage in sex work occasionally) remain a key priority group because they face additional barriers to health care, such as stigma and discrimination, and the risk of rapid spread could be increased if HIV were to enter this network.

People who have migrated from high HIV prevalence countries

Refugees and migrants from countries with high HIV prevalence may have experienced substantially higher levels of HIV risk throughout their lives. This is particularly relevant for ethnic communities living in Aotearoa New Zealand. For example, despite the African community only accounting for less than 0.4% of our country's population, 13.4% of people who ever reported to be living with HIV in Aotearoa New Zealand have been African. Most of the infections among African people have been acquired overseas before moving to Aotearoa New Zealand.

In Aotearoa New Zealand, we need to ensure that we have a high-quality surveillance, information and knowledge system that can identify populations most affected by HIV in a timely manner[18], especially if there are changing global epidemiological patterns that results in shifts in HIV prevalence among migrants and refugees.

Even as local transmission of HIV decreases over time, the number of people living with HIV who require support may increase (for example from people diagnosed with HIV overseas and who migrate or return to Aotearoa New Zealand[19]). Therefore, it is important that we continue to sustain and improve access to culturally appropriate HIV testing and prevention services for migrants and refugees (including people who are ineligible for funded health care, such as seasonal workers and international students) to ensure that people receive appropriate support and linkage to care.

Transgender and non-binary people[20]

Internationally, transgender and non-binary people are more likely to be affected by HIV than the general population (Kirwan et al 2021). In Aotearoa New Zealand, we may have a low incidence of HIV in the transgender and non-binary communities. Overseas, the high HIV incidence among transgender communities may be driven by increased risk associated with sex work or injecting drug use. These practices may be more common among some transgender and non-binary populations globally (Poteat et al 2017), however, they carry relatively lower risk for HIV acquisition in Aotearoa New Zealand compared with many other countries. The most vulnerable parts of the transgender and non-binary community in Aotearoa New Zealand are likely to be people whose sexual networks including gay, bisexual and other men who have sex with men.

There is limited local data on transgender and non-binary people and HIV, and this knowledge gap needs to be addressed.

[18] In Aotearoa New Zealand, HIV testing is a mandatory requirement for quota refugees and migrants applying for long-term visas. Other refugees may have an HIV test on arrival as part of a resettlement health check.

[19] In October 2021, Immigration New Zealand removed HIV from their list of medical conditions considered to create significant cost to the health system and would classify an individual as not meeting an acceptable standard of health for residence applications.

[20] In Aotearoa New Zealand, people with transgender and non-binary identities and diverse sex characteristics may express themselves using cultural identity terms such as Takatāpui, Fa' afafine, Fakaleiti, Akava'ine, Vaka sa lewa lewa and other culturally specific terms.

Priority settings

Priority settings are places where key activities such as prevention and health promotion, testing, treatment and support for people living with HIV can take place.

For this action plan, the priority settings, in no particular order, are:

- primary health care
- community-led HIV health promotion, services and outreach
- prisons
- kaupapa Māori services
- specialised health care.

Most of our actions will take place in priority settings. However, we acknowledge there are other settings, such as antenatal care and inpatient settings; mental health, aged care and substance and harm reduction services; and educational settings that are also important. The HIV action plan will also contain specific actions for these other settings.

Primary health care

Primary health care is professional health care provided in the community, usually from a general practitioner (GP), practice nurse, nurse practitioner, pharmacist or other health professional working within a general practice.[21] This includes non-governmental organisations that provide health services.

Primary health care is usually the first point of contact within the health care system and reaches a large proportion of our priority populations. Only half of gay, bisexual and other men who have sex with men in Aotearoa New Zealand believe their GPs are aware of their sexual orientation (Ludlam et al 2015), and we know that only 29% of HIV-negative gay, bisexual and other men who have sex with men reported having a comprehensive sexual health screening in the previous year (Kolodziej and Saxton 2021). Actions are needed to improve responsiveness to priority populations.

Community-led HIV health promotion, services and outreach

The UNAIDS 2021 Political Declaration on HIV and AIDS places a strong focus on building the capacity and capability of community-led health promotion, services and outreach. Community organisations have a strong understanding of the needs and desires of the communities they serve and have easier access to provide services and messaging to these communities. The community settings are wide ranging and may include sex-on-site venues, online spaces (for example, dating applications) and peer

[21] You can find out more about the Ministry's official definition of primary care from the Primary health care webpage at: **www.health.govt.nz/our-work/primary-health-care**

support in non-clinical settings. A range of activities can take place here, such as prevention, testing, links to care options and support for people living with HIV.

Prisons

There are currently gaps in knowledge on HIV prevalence, transmission, treatment and support within prisons in Aotearoa New Zealand. We need up-to-date and accurate data to ensure people living with HIV in custodial settings can access the care they need, and prison populations have access to adequate HIV prevention and testing.

Specialised health care

For this action plan, specialised health care specifically relates to specialised sexual health and infectious disease care.

It is important that people living with HIV and our other priority populations have good access to culturally competent specialist sexual health prevention, treatment and care. We know that significant barriers to accessing specialised sexual health care persist and include limited geographic coverage and appointment times, as well as cultural barriers (Miller 2010).

We recognise that sexual health clinics may continue to be the first point of contact for many people from priority populations for whom there are barriers to accessing basic sexual health care through primary health care services. This requires capacity building and support to continue providing these services and better integrate specialist expertise with primary health care to best serve people in their communities. Innovative ways of working that engage with community organisations and people in their environments will also be encouraged and supported.

Kaupapa Māori services

Focusing on kaupapa Māori health services is a part of honouring our obligations under Te Tiriti. Kaupapa Māori health services include those provided by Māori health organisations, mainstream organisations providing kaupapa Māori services and Māori health providers that sit outside an organisation, such as rongoā practitioners. Supporting kaupapa Māori health organisations will be critical in reducing inequities for Māori at risk of and living with HIV as such organisations have a strong understanding of the needs and aspirations of Māori communities.

We must ensure that that mainstream health services are also able to provide culturally safe and effective health programmes and interventions so that Māori are not disadvantaged by their choice of services.

Focus areas

The actions outlined in this plan are grouped into four focus areas that will contribute to our vision over the next 10 years. These focus areas are:

1. surveillance, information and knowledge systems
2. combination prevention and health promotion
3. testing and linkage to care
4. support for people living with HIV, including addressing stigma and discrimination.

Each focus area outlines objectives and the actions that we need to take to address the gaps and challenges in each area. The actions have also been identified based on our obligations to Te Tiriti, equity and meaningful involvement of people living with or affected by HIV.

Figure 2: Summary of overarching framework of the strategy

International and Aotearoa New Zealand strategic context	Te Tiriti o Waitangi					
	UNAIDS Global AIDS Strategy 2021–2026	UNAIDS 2021 Political Declaration on HIV and AIDS	Global Health Sector Strategy on HIV 2016–2021 (WHO 2016)			
	New Zealand Health Strategy: Future directions (Ministry of Health 2016)	Sexually Transmitted and Blood Borne Infection Strategy	He Korowai Oranga: Māori Health Strategy (Ministry of Health 2002)			
	Whakamaua: Māori Health Action Plan 2020–2025 (Ministry of Health 2020b)	Ola Manuia: Pacific Health and Wellbeing Action Plan 2020–2025 (Ministry of Health 2020a)				
	Consensus Statement on Comprehensive HIV Prevention	Aotearoa Statement on Closing the Gap on STIs and BBVs among Indigenous Peoples of Australasia				
Vision	An Aotearoa New Zealand where HIV transmission is eliminated and all people living with HIV have healthy lives free from stigma and discrimination					
Goals	Reduced number of new locally acquired HIV infections (UNAIDS target: 90% reduction) (Sustain the low incidence of HIV among sex workers, people who inject drugs, and zero cases of mother-to-child transmission of HIV)	Improved Māori health and wellbeing in relation to HIV by delivering on our Tiriti o Waitangi obligations	Decreased mortality and the negative consequences of HIV on health and wellbeing (No AIDS-related deaths)	Decreased experiences of stigma and discrimination for people living with HIV (UNAIDS target: No people living with HIV experiencing stigma and discrimination)	Increased equity in relation to all HIV goals and objectives	
Objectives	Increased ability to identify inequities in HIV outcomes and monitor progress towards our goals	Increased information to improve HIV prevention and care programmes	Increased uptake of combination prevention (UNAIDS target: 95% of people who are at risk of HIV use combination prevention)	Increased timely testing, diagnosis, and treatment (UNAIDS target: 95% of people living with HIV know their status) (UNAIDS target: 95% of people diagnosed with HIV are on treatment and 95% of people on HIV treatment have viral suppression)	Increased access to culturally appropriate support services for people living with HIV	Improved regulatory frameworks and practices to reduce stigma and discrimination against people living with HIV
Focus areas	Surveillance, information and knowledge systems	Combination prevention and health promotion	Testing and linkage to care	Support for people living with HIV, including addressing stigma and discrimination		
Priority groups	People living with HIV	People who inject drugs	Gay, bisexual and other men who have sex with men	Māori at risk of and living with HIV	Sex workers	People who have migrated from high HIV prevalence countries Transgender and non-binary people
Priority settings	Primary health care	Community-led HIV health promotion, services and outreach	Prisons			
	Kaupapa Māori services	Specialised health care				

Evaluation and monitoring

Surveillance, information and knowledge systems

Surveillance, information and knowledge systems are essential for targeted and effective public health actions. These systems provide the information we need to identify gaps in our HIV response, including inequitable HIV outcomes, and what actions we can take and prioritise to make our HIV response better.

What are the current opportunities and challenges?

The World Health Organization (WHO) recommends that in countries with concentrated epidemics, such as Aotearoa New Zealand, where incident infections are concentrated among gay, bisexual and other men who have sex with men, surveillance should focus on groups with high HIV prevalence and on behaviours that may lead to rapid spread of HIV (WHO 2013). We currently have inconsistent surveillance of these behaviours, and this limits our understanding of what action is needed in our HIV response.

We do not conduct seroprevalence studies and behavioural surveillance at regular intervals or systematically collect data on the use of combination prevention, including PrEP, testing rates and quality of care. This makes it difficult to prioritise actions and limits our ability to evaluate our response and monitor progress towards our goals and targets.

We also have gaps in our understanding of the experiences of communities at risk of and living with HIV, including identifying and addressing inequities. At a national level, we need to improve our surveillance systems to better capture the experiences of transgender and non-binary people and ensure that we have accessible data disaggregated by ethnicity and sexuality, and we need to promote meaningful inclusion of communities affected by or living with HIV in our data collection. At a local level, we need to support the HIV workforce to be able to do appropriate evaluations and to support community-led monitoring of the HIV response.

We also have research gaps for people living with or at increased risk of HIV. This includes understanding the factors that may lead to increased risk of late diagnosis, identifying opportunities for earlier linkage to care and understanding ageing-related co-morbidity, mortality, and quality of life among people living with HIV. We also need to better understand the experiences of people living with HIV who are not part of a support organisation, older people, transgender and non-binary people, and Māori living with HIV.

What can we do?

We need to have a better understanding of recent HIV infections (including undiagnosed infections) across geographical areas and demographics to ensure we can be more targeted in our HIV response. We also need to have a better understanding of modifiable behaviours that are driving HIV transmission to inform prevention efforts.

Achieving this will require improved data collection, analysis and application. At the national level, we can improve systematic collection of data on the use of combination prevention, including PrEP eligibility and uptake, testing rates, quality of care and seroprevalence and behavioural studies for populations most affected by HIV. At a local level, we can support clinical services and community organisations to undertake research and data analysis through clinical audits, programme evaluations and community-led monitoring. We also need to foster innovation and research to help us understand transmission clusters and emerging trends and bring together national and local HIV actors to encourage data-sharing and using data to drive action. The specific actions we need to undertake are outlined below.

Focus area 1: Surveillance, information and knowledge system actions

Improving national surveillance

1a) Conduct regular behavioural surveillance among gay, bisexual and other men who have sex with men (at least every two to three years) to track modifiable behaviours driving HIV transmission, including combination prevention knowledge, uptake, access and acceptability, for example, through PrEP cascade. Data should be carefully disaggregated to enable equity to be monitored as well.

1b) Conduct regular seroprevalence surveillance to identify: the prevalence of HIV among relevant priority populations at risk of local acquisition of HIV, the proportion of people living with HIV who are undiagnosed and the factors that may lead to living with undiagnosed HIV. Opportunities to collect seroprevalence data on co-infections should also be maximised.

1c) Undertake scoping of options to monitor progress towards the 95/95/95 UNAIDS targets (outlined under Goal 3) and to improve linkage to care.

1d) Work with Ara Poutama Aotearoa, the Department of Corrections, to improve HIV monitoring for people in prisons.

1e) Ensure HIV surveillance captures the experiences and needs of transgender and non-binary people.

1f) Increase Māori data sovereignty in HIV-related surveillance and ensure that Māori at risk of or living with HIV are meaningfully involved in the process.[22]

Increasing regular and consistent monitoring and evaluation at a national and local level

1g) Ensure regular monitoring of HIV testing rates (including antenatal screening), disaggregated by key demographics and sexual behaviour where possible. This should involve reviewing HIV testing data collection and anonymised data sharing with relevant agencies tasked with HIV and AIDS surveillance, including community-led testing.

[22] An approach to data sovereignty from whakamaua is being developed by the Ministry of Health.

1h) Develop a framework to enable consistent monitoring of issues affecting people living with HIV, such as stigma and discrimination, ageing-related co-morbidity and quality of life measures (for example, through patient-reported outcomes).

1i) Develop a monitoring plan and undertake regular reporting on progress towards the goals and targets outlined in this action plan.

1j) Strengthen the ability of the HIV workforce and community organisations to undertake research and data analysis, for example, by undertaking clinical audits, community-led monitoring and programme evaluations. The focus should be on identifying and addressing inequities.

Increasing innovation and research

1k) Use novel technologies and methodologies[23] to improve our understanding of transmission clusters and emerging trends in incident infections. This process must involve people living with HIV in a meaningful way to ensure we develop an ethical process for data collection and analysis.

1l) Encourage future HIV research to address knowledge gaps for people living with HIV. This includes understanding the factors that may lead to an increased risk of late diagnosis, identifying opportunities for earlier links to care and understanding the experiences of people who are not part of a support organisation, older people, women, transgender and non-binary people, and Māori living with HIV.

1m) Encourage future HIV research on experiences of HIV-related stigma and monitor changes over time. The insights gathered should inform anti-stigma initiatives.

Increasing national and local leadership and collaboration

1n) Establish an expert advisory group to guide the implementation and monitoring of the action plan. This group must include people living with and affected by HIV, Māori and the health sector.

1o) Continue funding and supporting the six-monthly HIV forum to support collaboration and sharing innovative and successful approaches. This includes improving mainstream services' responsiveness to the needs of people living with and affected by HIV, Māori health development and supporting kaupapa Māori approaches.

[23] Such as recency testing and mathematical modelling based on CD4 counts.

Combination prevention and health promotion

The HIV action plan supports the combination prevention approach as defined by UNAIDS. UNAIDS defines combination HIV prevention as being rights-, evidence-, and community-based programmes that promote a combination of biomedical, behavioural and structural interventions designed to meet the HIV prevention needs of specific people and communities (UNAIDS 2010). This includes supporting a range of prevention tools, programmes and strategies, such as the use of condoms, in conjunction with lubricants, PrEP, post-exposure prophylaxis (PEP), harm reduction among people who inject drugs (such as needle exchange programmes), STI vaccination, screening and treatment and early HIV diagnosis followed by prompt initiation of antiretroviral therapy (ART) with appropriate support to remain in care and achieve and maintain viral suppression. The purpose of having a sustained and specific focus on combination prevention is to reduce new HIV infections. This will be particularly important because making gains in prevention may become more challenging as we move closer to the goal of eliminating HIV transmission.

What are the current opportunities and challenges?

In Aotearoa New Zealand, the current uptake of combination prevention falls short of the 95% target outlined in the action plan. Recent research (Saxton et al 2021a) showed that, among a cohort of Aotearoa New Zealand gay, bisexual and other men who have sex with men reporting casual sex, only 27.4% consistently used condoms for anal sex, 22.7% used PrEP, 6.2% reported living with HIV and relying on undetectable viral load as a method of HIV prevention and 31.8% of the study participants reported condomless anal sex and no PrEP use.

Condoms continue to be an important component of the combination prevention toolbox. They are inexpensive and are not only effective in preventing HIV transmission but can also reduce the risk of transmitting other STIs and prevent unwanted pregnancies. Condom use has likely been decreasing in Aotearoa New Zealand for several years. We need to ensure there is sustained action to support condom use among the general population, but with a particular focus on those at increased risk of acquiring HIV.

There are also access barriers and inequities in PrEP uptake that need to be addressed. In Aotearoa New Zealand, it is estimated that 5,847 individuals meet the criteria for PrEP. However, according to community dispensing data, only 1,648 individuals (one-quarter of those eligible) had their PrEP prescriptions initiated or renewed in the previous three months, indicating continuous PrEP use.[24] Moreover, PrEP uptake may be lower among Māori and Pacific gay, bisexual and other men who have sex with men than among those of European ethnicity, suggesting additional barriers to accessing culturally appropriate health care. Other barriers include insufficient knowledge about PrEP and PEP among communities at risk of HIV, only a small number of prescribers

[24] Requested from PHARMAC as of February 2021

willing to offer PrEP (especially in rural areas), the need to disclose sensitive information to the prescriber and inconsistent criteria to access PrEP and PEP.

What can we do?

To increase uptake of combination prevention, we need improve access to and awareness of prevention tools. We can achieve this through social marketing and education programmes as well as by improving clinical services' ability to provide culturally appropriate care. We also need to explore opportunities for community-led outreach, removing barriers to accessing PrEP and PEP and ensuring access to new and innovative technologies, such as injectable PrEP.

The specific actions we need to take are outlined in further detail below.

Focus area 2: Combination prevention and health promotion actions

Social marketing and programmes for communities at risk of HIV

2a) Support community-led social marketing and education programmes for gay, bisexual and other men who have sex with men to increase demand and uptake of combination prevention, particularly amongst groups with low uptake such as Pacific gay, bisexual and other men who have sex with men. This includes destigmatising PrEP and PEP use, increasing awareness about 'undetectable equals untransmissible' (U=U, ASHM 2020), increasing knowledge of dosing regimens, appropriate maintenance testing and ways to access combination prevention.

2b) Support Māori health organisations to delivery community-led social marketing for Māori at risk of HIV to increase the uptake of HIV combination prevention. Māori at risk of HIV should be meaningfully involved in the developing and implementing the campaign.

2c) Support the delivery of programmes that increase knowledge and access to combination and HIV prevention for communities that have migrated from high HIV prevalence countries.

2d) Sustain investment in prevention initiatives for priority groups that currently have a low incidence of HIV, such as sex workers and people who inject drugs. This includes initiatives to increase access to combination prevention and harm reduction initiatives, such as access to sterile injecting equipment.

2e) Deliver programmes that address emerging practices that may increase the risk of HIV acquisition, such as sexualised drug use and chemsex[25] amongst gay, bisexual and other men who have sex with men.

New and innovative technologies and service delivery methods

2f) Investigate piloting new combination prevention technologies, such as injectable PrEP or other emerging methods of combination prevention.

[25] Engaging in sexual acts while under the influence of stimulant drugs, such as methamphetamines.

2g) Investigate removing special authority criteria for PrEP and aligning PrEP and PEP prescribing to increase access.

2h) Explore options to increase access to combination prevention in rural areas including telehealth services. Expand and promote telehealth services in rural areas to increase access to combination prevention.

2i) Investigate new models to increase access to PrEP and PEP delivery. This could include establishing models for nurse-led PrEP and PEP delivery (including nurse prescribers in primary health care services) and piloting new models for delivery, such as telehealth, community-led and delivered initiatives, and provision in pharmacies. Representatives from priority groups should be involved in the process .

2j) Investigate new sustainable models to increase access to PrEP and PEP for migrants at risk of HIV who are unable to access funded health care, for example, seasonal workers and international students.

Workforce training, guidelines and resources

2k) Work with Māori and community health organisations to develop and deliver culturally appropriate health promotion resources on combination prevention for health care providers to use and distribute to patients at risk of HIV. A single repository should be created for these resources.

2l) Promote and regularly review clinical guidance for appropriate PrEP and PEP prescribing in primary health care services. This includes reviewing guidance for partners of people living with HIV.

2m) Work with community organisations to develop and promote continuing medical education accredited national training and education for primary health care[26] services, including in rural areas. This includes training and education to:

- increase knowledge and awareness of HIV and combination prevention
- increase the number and availability of PrEP and PEP prescribers
- encourage HIV prevention methods to be delivered in combination with education on STI prevention and regular testing.

Cross-government actions on HIV combination prevention

2n) Work with Ara Poutama Aotearoa, the Department of Corrections, to ensure people in prisons have access to up-to-date and effective health education and combination prevention, such as condoms, PrEP, PEP and treatment as prevention (TasP).

2o) Work with the Ministry of Education and schools on the inclusion of information on HIV in relationships and sexuality education in English and Māori-medium settings. This includes information on combination prevention, testing, access to confidential care, and HIV stigma and discrimination.

2p) Encourage regulatory environments to support harm reduction measures that reduces the risk of HIV and STI transmission.

[26] This includes primary care delivered by a general practitioner (GP), practice nurse, nurse practitioner, pharmacist or other health professional working within a general practice.

2q) Sustain the current delivery of combination prevention tools, such as condoms and lubricants, to populations at risk of HIV and explore opportunities to fund and promote non-latex and internal condoms and lubricants.

Testing and linkage to care

Early detection of HIV and prompt linkage to appropriate care is critical to ensure people living with HIV can enjoy healthy lives and no secondary HIV transmission occurs. Those who have tested negative can also be linked to prevention programmes.

What are the current opportunities and challenges?

In Aotearoa New Zealand, we know there are barriers to accessing testing. For example, research suggests one-fifth of people living with HIV may be unaware of their HIV status (Saxton et al 2012). Preliminary data from the AIDS Epidemiology Group at the University of Otago shows that, between 2016 and 2020, 38.3% of newly diagnosed gay, bisexual and other men who have sex with men, and 52.2% of newly diagnosed heterosexual men and women had CD4 cell counts of less than 350 cells/mm^3 or an AIDS diagnosis within three months of their HIV diagnosis, suggesting late diagnosis.

We also know that barriers to testing are particularly worse for certain communities, such as rural communities, recent migrants including international students and seasonal workers, and people who experience stigma and discrimination related to their identities or practices. For example, accessing testing is expensive for migrants who are not eligible for publicly funded health care. Additional barriers exist for those at increased risk of HIV acquisition, including a lack of Rainbow-friendly services[27] for gay, bisexual and other men who have sex with men especially in rural areas and for Māori.

There are also specific challenges in treating HIV in Aotearoa New Zealand for different communities. For example, there may be an unmet health need for those with chronic hepatitis B co-infection and other significant co-morbidities and a need for improved and holistic health management for ageing people living with HIV. There are also reports that women living with HIV do not always receive appropriate access to reproductive services and advice.

Timely and comprehensive contact tracing for HIV is important when a person is recently diagnosed with HIV. Currently, there is limited capacity to conduct contact tracing and there is a need to ensure that people recently diagnosed with HIV are well supported through the contact tracing process.

What can we do?

We need to ensure there is access to culturally appropriate HIV testing for people concerned about HIV acquisition, especially priority populations. For people who are diagnosed with HIV, initiating rapid access to treatment and support services is crucial

[27] 'Rainbow' is the umbrella term commonly used to encompass the community of people who identify as lesbian, gay, bisexual, transgender, queer and/or questioning, intersex, asexual and/or ally.

alongside timely and sensitive contact tracing. To achieve this, we need to increase awareness about the importance of HIV testing and treatment and improve the capacity and quality of clinical services. This includes exploring new service delivery methods that reach into communities, improving the capability of primary health care services to provide HIV treatments and investigating new testing technologies, such as dried blood-spot testing.

The specific actions that we need to take are outlined in further detail below.

Focus area 3: Testing and linkage to care actions

Workforce training and guidance

3a) Regularly review and promote guidelines for STI and HIV testing for primary health care services.

3b) Develop guidance on anal cancer screening for gay, bisexual and other men who have sex with men living with HIV.

3c) Develop and promote continuing medical education (CME) accredited national training and education for the primary health care sector on testing, screening and linkage to care to ensure:

- provision of comprehensive HIV and STI screening for gay, bisexual and other men who have sex with men, especially if they are accessing PrEP
- HIV testing is offered to people with clinical presentation suggestive of HIV infection or with indicator conditions, including to people who are not identified as being at higher risk of HIV
- appropriate links to treatment and support for people newly diagnosed with HIV, including education about U=U and the rights of people living with HIV.

3d) Develop and promote workforce training and guidance to primary health care services and sexual health clinics to improve contact tracing and partner notification for people who are newly diagnosed with HIV and those who do not have viral suppression. Community organisations and people living with HIV must be meaningfully involved in the process of developing training and guidance.

3e) Work with community organisations to develop and promote workforce guidance and training to improve the Rainbow friendliness of health care services, including for gay, bisexual and other men who have sex with men and transgender and non-binary people.

3f) Work with Māori health organisations to develop and promote workforce training and guidance to improve the cultural competency of primary health care services and increase access to testing for Māori at risk of acquiring HIV.

3g) Work with local providers to support regular clinical audits to identify and understand the experiences of people living with HIV who have poor treatment outcomes and identify opportunities for improvement.

3h) Work with the New Zealand College of Midwives to develop national guidance and training for Lead Maternity Carers (LMCs) and midwives to maximise HIV screening and maintain elimination of mother-to-child transmission.

New and innovative technologies and service delivery methods

3i) Pilot dried blood-spot testing and investigate opportunities for scaling up.

3j) Explore expanding and promoting innovative testing and outreach delivery models for people at risk of HIV, including telehealth, self-testing, community-based testing and rapid point-of-care testing and in a variety of settings, such as pharmacies or needle and syringe programmes.

3k) Explore piloting new and innovative ways to improve the capacity of the clinical workforce to contact trace, such as developing contacting tracing apps or peer-led models of contact tracing.

3l) Investigate the feasibility and cost effectiveness of increasing opportunistic testing in primary health care and hospital settings to ensure early detection of HIV. This includes investigating opt-out models for testing in collaboration with community organisations.

3m) Investigate pathways to increase access to affordable testing for migrants at risk of acquiring HIV who are not eligible for funded health care, such as international students and seasonal workers.

Collaboration and integration between health services and community organisations

3n) Strengthen links between primary health care services and community organisations to increase access to peer support services for people newly diagnosed with HIV.

3o) Increase the capacity and capability of the peer workforce to conduct contact tracing for people newly diagnosed with HIV in collaboration with primary and sexual health care services.

3p) Work with community organisations to support rapid point-of-care testing in primary health care settings where appropriate.

Social marketing programmes and services for communities at risk of or living with HIV

3q) Support Māori health organisations to develop initiatives to increase HIV testing among Māori at risk of acquiring HIV.

3r) Pilot community-led targeted interventions to increase HIV and STI screening among gay, bisexual and other men who have sex with men who are engaging in sexualised drug use and chemsex.

3s) Develop and deliver targeted education and promotion of regular HIV and STI screening for gay, bisexual and other men who have sex with men, including promoting the importance of regular asymptomatic screening.

3t) Work with community organisations and people living with HIV to develop social marketing that promotes the benefits of rapid HIV treatment initiation and adherence for people living with HIV. For example, this could include messaging on U=U.

3u) Investigate scaling up peer education and support services to encourage rapid HIV treatment initiation and improving adherence to treatment for people living with HIV.

Broader population screening services

3v) Sustain antenatal screening for HIV and ensure highest possible uptake.

Support for people living with HIV, including addressing stigma and discrimination

HIV-related stigma and discrimination are common in Aotearoa New Zealand. One-third of people living with HIV who participated in the New Zealand Stigma Index Project reported experiencing stigma and discrimination in 2020. HIV-related stigma and discrimination can also be amplified by intersecting it with the stigma associated with a person's sexuality, gender, ethnicity, drug use or sex work. These experiences of stigma and discrimination have a significant impact on the wellbeing of people living with HIV and health behaviours such as adherence to HIV treatment and retention in care. In 2020, the Stigma Index report showed that one-third of people living with HIV surveyed reported internalised stigma, for example, feeling 'dirty' and 'worthless' and nearly half had a mental health condition, such as depression and anxiety.

What are the current opportunities and challenges?

People living with HIV experience stigma and discrimination at both a policy and health care delivery level. At the policy level, there are reports of the police and courts disproportionately applying criminal justice approaches to HIV exposures rather than taking a public health approach. In terms of immigration policy, recent migrants at risk of or diagnosed with HIV may be discouraged from timely testing because of a fear of experiencing problems when applying for visas in the future.

At a health care service level, people living with HIV report experiences of stigma and discrimination, particularly in non-HIV-specific health care and in rural areas. This includes experiences of their HIV status being disclosed without their consent. It is particularly concerning in contexts where people living with HIV are unaware of their rights (including their rights to privacy and confidentiality), find the process of reporting discrimination complicated and are either fearful of retaliation or have low trust in the system.

More needs to be done to support Māori people living with HIV. The Stigma Index Māori participant report noted that Māori takatāpui, gay, bisexual and other men who have sex with men living with HIV experienced a poorer sense of belonging within mainstream gay networks and lacked access to culturally appropriate support services. This included services grounded in a kaupapa Māori approach to wellbeing that considered whānau/family, friends and communities, and wider environments (Te Whāriki Takapou 2021).

What can we do?

We need to challenge stigma experienced by people living with HIV and ensure they have access to appropriate support services. We can achieve this by increasing access to counselling services and focusing on connecting and empowering people living with HIV through community or peer-led support groups, programmes and resources. We

also need to drive anti-stigma and anti-discrimination initiatives within and outside the health sector. This includes social marketing initiatives for the wider public and resources and training that can be implemented in the health sector and wider workplaces.

Focus area 4: Support for people living with HIV, including stigma and discrimination actions

Initiatives that empower and connect people living with HIV

4a) Investigate scaling up face-to-face and online counselling services to support people living with HIV who are experiencing issues such as anxiety and depression, particularly people living outside the main centres, where stigma and discrimination are reportedly higher.

4b) Work with community organisations, including peer-led organisations, to develop and promote national resources for people living with HIV, with a specific focus on their rights to privacy and confidentiality. This should include information on support seeking, disclosure, how medical records are stored and current complaints processes if they are discriminated against. Resources must also be tailored for Māori and culturally diverse groups.

4c) Work with the Human Rights Commission, Health and Disability Commissioner and Privacy Commissioner to promote existing complaints reporting mechanisms to ensure people living with HIV can report discriminatory practices.

4d) Investigate scaling up peer- and community-led programmes and resources that focus on connecting and empowering people living with HIV, for example, programmes that provide peer support, build life skills, improve health literacy or provide information about the rights and responsibilities of people living with HIV. Programmes and resources must also be tailored for culturally diverse groups.

4e) Support the development of a Māori peer-led organisation that focuses on connecting and empowering Māori people living with HIV.

4f) Support initiatives that increase the ability of people living with HIV to advocate for their rights and health care needs in health services, programmes and policies.

Cross-government action to reduce stigma and discrimination

4g) Work with government organisations to address legislation, policies and approaches that perpetuate stigma and discrimination against people living with HIV or negatively influence health-seeking behaviours. This includes working with the Ministry of Justice to ensure a public health approach is taken when responding to any concerns about HIV exposure.

Anti-stigma and discrimination initiatives for the health sector and wider workplaces

4h) Work with community organisations, including peer-led organisations, to develop and promote national resources on HIV for workplaces. This should

include focusing on the importance of non-discrimination in the workplace, the consequences of breaching privacy and confidentiality, and how to support colleagues who recently disclose that they are living with HIV.

4i) Develop and deliver workforce education and training to primary health care services to reduce stigma and discrimination against people living with HIV. This includes education and training for:

- clinical staff on how to support people living with HIV
- clinical and non-clinical staff, such as managers and reception staff, on the privacy and confidentiality rights of people living with HIV.

Anti-stigma and discrimination initiatives for the wider public

4j*)* Develop a social marketing campaign to challenge stigma and discrimination experienced by people living with HIV. There must be meaningful involvement of Māori and other ethnic groups living with HIV in the development of the campaign.

4k) Support the development of a social marketing campaign that is by and for Māori people living with HIV and their whānau/families.

Implementation

The HIV action plan will be delivered in phases, with each phase outlined in an implementation plan. The implementation plan is a shorter-term plan that prioritises work for up to four years based on the funding and resources available. The implementation plan includes information on how to best develop activities so they are more likely to meet our Tiriti o Waitangi obligations and reduce inequities. It assigns timeframes, milestones and lead agencies responsible for delivering each action in the plan. The lead agency will be responsible for coordinating and supporting the activity and monitoring and reporting against measures of success.

An implementation plan for 2022 to 2025 will be developed to guide the first phase of work. A Tiriti approach will be taken to implement the action plan, including partnerships between relevant entities, such as Te Aka Whai Ora - the Māori Health Authority, and meaningful involvement of people living with or affected by HIV. Actions that are included in this first phase of work will be determined by using a Tiriti and equity-first prioritisation approach as well as engagement with the sector.

Before developing the implementation plan for the second phase of work, we will update the action plan with the latest UNAIDS targets as well as review the epidemiology to ensure we are prioritising the right populations.

As part of the implementation, we will also develop a monitoring plan. This will monitor the progress and success of our actions as well as whether we are meeting targets. The monitoring plan will specify a small number of indicators selected because they are:

- central to showing the success of the action plan
- cost effective to measure
- SMART (specific, measurable, attributable, realistic and time bound).

There will also be specific indicators to ensure that we are addressing Māori health and enhancing equity.

The monitoring plan will include details of who is responsible for collecting, collating and analysing the data and the mechanisms for reporting back.

We will also use the commissioning cycle and contract management (including monitoring service delivery and outcomes) to ensure we are appropriately commissioning and designing services and programmes, implementing activities in a quality manner and achieving the best outcomes for priority groups and communities.

Abbreviations

AIDS	Acquired immunodeficiency syndrome
ART	Antiretroviral therapy
CME	Continuing medical education
ESR	Institute of Environmental Science and Research
GP	General practitioner
HIV	Human immunodeficiency virus
LMC	Lead Maternity Carer
MIPA/GIPA	Meaningful Involvement of People with HIV and AIDS / Greater Involvement of People with HIV and AIDS
PHARMAC	Pharmaceutical Management Agency
PrEP	Pre-exposure prophylaxis
PEP	Post-exposure prophylaxis
STI	Sexually transmitted infection
STBBI	Sexually transmitted and blood-borne infections
TasP	Treatment as prevention
UNAIDS	The Joint United Nations Programme on HIV and AIDS
U=U	Undetectable equals untransmissible

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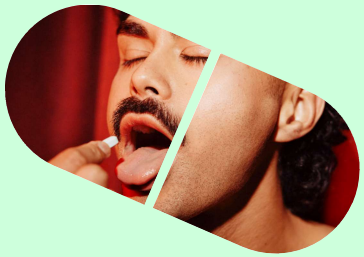
Burnett Foundation
Aotearoa

PrEP

A pill that reduces the risk of acquiring HIV by up to 99% and empowers your sexual freedom.

How do I get PrEP?



People who are at risk of HIV and could benefit from PrEP include:

- Gay, bisexual, and other men who have sex with men (MSM: Cis or trans).
- Trans women and non-binary people who have sex with MSM.
- Some people who have a partner living with HIV who do not have an undetectable viral load.

PrEP is a funded medicine that can generally be accessed by citizens, residents, and anyone here on a visa for 2 years or more. Others may be eligible — find out if you're eligible at **burnettfoundation.org.nz/prep**.

If you are not eligible you can talk to your doctor about self-funding your PrEP.

PrEP prescriber

There are many ways to get PrEP, including from your doctor. Our map at **burnettfoundation.org.nz/prepmap** shows experienced doctors who would be happy to talk to you.

If you need help asking for PrEP, we have letters you can take with you at **burnettfoundation.org.nz/prepletter**

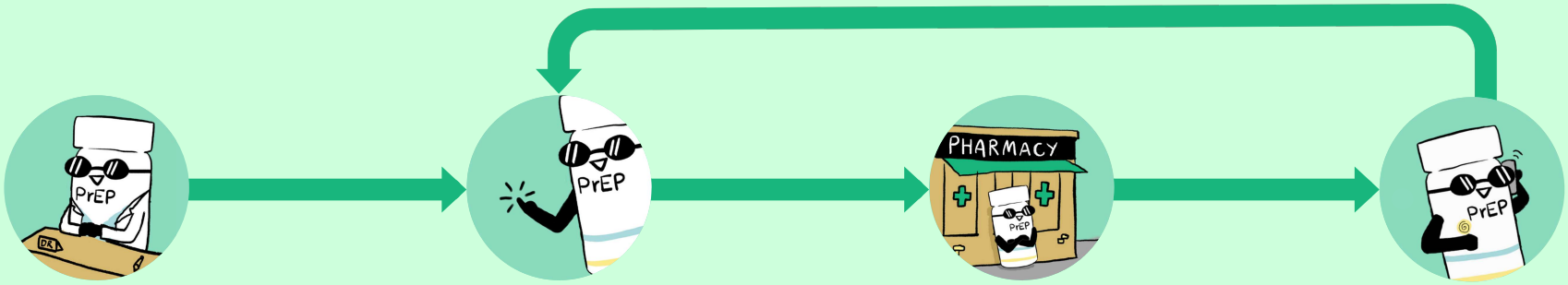
Online

If you're not on PrEP, and finding a local prescriber is difficult, we provide subsidised online PrEP appointments.
Visit **burnettfoundation.org.nz/onlineprep** to book.

Sexual Health Clinic

You can visit your local Sexual Health Clinic for free.
Find a list of clinics at **nzshs.org/clinics**

The Process



Get informed and talk to a prescriber
After deciding that PrEP may be right for you, talk with a prescriber, and they will answer any of your questions.

Tests
Your prescriber will book you HIV, syphilis, chlamydia, gonorrhoea, and other health tests.

Prescription
The prescriber will give you a prescription that you can take to any pharmacy or get delivered. For most people, your PrEP pills will be funded.

3-monthly tests
After 3 months, contact your prescriber, even if you have spare pills left over. You'll repeat your HIV, STI, and other health tests, and get more PrEP.

Ways to take PrEP

Daily

Take PrEP once a day whenever is convenient for you e.g.
with breakfast or after lunch. If you miss a dose, resume taking PrEP as soon as you remember. It is not recommended to take a double dose of PrEP when you miss one.

M	T	W	T	F	S	S
		Sex		Sex	Sex	

How soon does it start working?

It takes time for PrEP to build up in your body. This varies depending on your biology, whether you have anal or vaginal sex, and how you're taking it.

For everyone having anal intercourse, maximum protective levels are reached after taking one pill a day for a week. However, **cisgender men** are protected after just two hours if they take two pills together when starting daily PrEP.

Should I keep using condoms?

PrEP is great protection from HIV when condoms aren't used, but using both is a great option as condoms also protect you from other STIs like syphilis or gonorrhoea. Regardless, it is important to test regularly and treat STIs if you acquire them.

What if I'm not eligible for publicly funded healthcare (i.e. people on student visas or working holiday visas) or don't meet the PHARMAC criteria?

If you have been given a prescription for PrEP, but are not eligible for funded healthcare, you have the option to purchase PrEP from a pharmacy "off-label" (it may cost about $30 per month) or import it (it may cost around $85 per three-month supply). There may also be the cost of the appointment with the clinician and tests at the lab.

You can legally import generic PrEP from overseas for your personal use. This involves arranging from within Aotearoa New Zealand for it to be sent to you from an overseas supplier. It is another option for people not eligible for funded PrEP.

The cost of importing or buying PrEP can be prohibitive. That is why we developed a free coupon system. If you earn below the living wage, have a valid Community Services Card, or are an international student and have a PrEP prescription, you may be eligible to receive a free order of PrEP. Visit **burnettfoundation.org.nz/prepcoupon** to find out more.

Side effects

PrEP is generally very well tolerated and most potential side effects are mild. Some people may experience mild symptoms such as nausea, headaches and diarrhoea. These symptoms mostly disappear after the first 2-4 weeks. A small minority of people have experienced more severe side effects. If at any stage you are concerned that you may be experiencing side effects from taking PrEP, contact your prescriber or pharmacist to discuss your options.

If you are undertaking hormone treatments, have existing kidney, liver or bone problems such as osteoporosis, or are taking any other medications, speak to your doctor about whether PrEP is the right choice for you.

Find out more, or contact us, at burnettfoundation.org.nz/PrEP

PRESCRIBING HIV PRE-EXPOSURE PROPHYLAXIS (PrEP) IN AOTEAROA NEW ZEALAND

Burnett Foundation Aotearoa

NZSHS THE NEW ZEALAND SEXUAL HEALTH SOCIETY INCORPORATED SEXUAL HEALTH FOR ALL

1 BEHAVIOURAL ELIGIBILITY

Patient requests PrEP
or
Patient unsure whether to start PrEP
or
HIV risk identified during consultation

Refer to HIV risks listed overleaf (table 1)

Elevated HIV risk

Proceed to Step 2

Low or no HIV risk

Discuss condoms & other risk reduction methods

Consider PrEP if likely future risk

2 CLINICAL ELIGIBILITY

Confirm HIV status and review medical history including renal function

HIV Negative
(tested within last 14 days)

Assess clinically for acute HIV infection (e.g. fever, night sweats, fatigue, myalgia, arthralgia, rash, headache, pharyngitis, generalised lymphadenopathy, diarrhoea)

Confirm normal renal function (eGFR > 60 mL/min)

Exclude use of nephrotoxic medication (e.g. high-dose NSAIDS) or medications that interact with PrEP

www.hiv-druginteractions.org

Proceed to Step 3

HIV Negative
But recent HIV exposure (within 72 hours)

Offer PEP (refer to full guidelines). If 2-drug PEP is recommended, prescribe PrEP **with advice for immediate start.**

Plan to commence PrEP upon completion of PEP course.

Repeat Step 2

HIV Positive

Not for PrEP

Refer to a local ID or sexual health service

Making an HIV diagnosis

Refer patient to local infectious diseases or sexual health service.
Peer support and counselling available from community organisations:
www.bodypositive.org.nz, www.burnettfoundation.org.nz, www.positivewomen.org.nz and www.toituteao.org
See www.sti.guidelines.org.nz for further information

3 OTHER TESTING

Assess for STIs and viral hepatitis (see table 3 overleaf)

STI testing as per the Aotearoa New Zealand STI Management Guidelines
www.sti.guidelines.org.nz

Hepatitis B serology (HBsAg, Anti-HBs)
Vaccinate if not immune
If HBsAg+ve, manage as per local Health Pathways

Hepatitis C serology (anti-HCV; followed by HCV RNA if anti-HCV +ve)
If HCV RNA+ve, then treat.
www.hepatitisfoundation.org.nz

Proceed to Step 4

Table 2: Suitability for daily vs event-driven PrEP for sexual exposure

People	Daily PrEP	Event-driven PrEP
Cisgender men	Yes	Yes*
Cisgender women	Yes	No
Trans men	Yes	No
Trans women using exogenous oestrogen	Yes	No
Trans women who are NOT using exogenous oestrogen	Yes	Yes*
Non-binary people assigned male at birth, using exogenous oestrogen	Yes	No
Non-binary people assigned male at birth, who are NOT using exogenous oestrogen	Yes	Yes*
Non-binary people assigned female at birth	Yes	No

* Where a person expresses a preference for event-driven PrEP, sex is infrequent and a person feels they can plan ahead for sex at least 2 hours in advance.

4 PRESCRIBING PrEP

Daily continuous PrEP

1 pill daily of tenofovir/emtricitabine. Protection is conferred after 7 days of daily dosing.

Populations eligible for event-driven PrEP can start 2 pills 2–24 hours before sex, then daily thereafter (see table 2).

Proceed to Step 5

OR

Event-driven PrEP (2-1-1 method)

Suitable **only** for certain populations (see table 2). Contraindicated if chronic hepatitis B infection.

tenofovir/emtricitabine:

- 2 pills at least 2h before sex (up to 24h before sex)
- 1 pill 24h later
- 1 pill 48h after first dose

If repeated sexual activity, then continue with 1 pill daily until 48h after last sexual contact.

Proceed to Step 5

5 EDUCATION & MONITORING

Patient education

- Discuss the role of condoms to prevent HIV and STIs, and emphasise role of regular STI testing.
- Discuss safer injecting practices, if applicable.
- Discuss potential side effects, early (eg headache, nausea) and longer term (eg renal toxicity, lowered bone density).

STOPPING PrEP:

- Populations eligible for event-driven PrEP can stop 48 hours after last exposure.
- All other patients on daily PrEP should continue PrEP for 7 days after last exposure.
- Patients who stop PrEP need a plan to re-start PrEP if their HIV risk increases again.

&

Ongoing monitoring

- Ongoing monitoring is required every 3 months, also for event-driven PrEP (see table 3 overleaf)
- Discuss PrEP adherence at every visit.
- Ask about nephrotoxic medications, eg NSAIDs.

This guidance is based on the NZSHS PrEP & PEP Guidelines for Aotearoa New Zealand (2023)

TABLE 1: ELEVATED HIV RISK

Men (cis or trans) who have sex with men	Transwomen and non-binary people who share sexual networks with MSM	Heterosexual people	People who inject drugs
• Condomless intercourse (CLI) with a regular HIV+ partner who is not on treatment and/or has a detectable viral load > 200 copies/mL • CLI with any casual or non-exclusive MSM partner • Rectal gonorrhoea, rectal chlamydia or infectious syphilis • Methamphetamine use		• CLI with a regular HIV+ partner who is not on treatment and/or has a detectable viral load > 200 copies/mL • CLI with any casual MSM partner of unknown HIV status • Overseas travel to a high HIV prevalence country, and condomless sex with partners of unknown HIV status	• Shared injecting equipment with an HIV+ individual or with MSM of unknown HIV status

Notes on prescribing PrEP:

- Apply for special authority SA2138
- Prescribe: Tenofovir disoproxil 245 mg* + Emtricitabine 200mg (coformulated); 1 tablet daily for 90 days.

  *Tenofovir disoproxil fumarate 300 mg, tenofovir disoproxil maleate 300 mg, and tenofovir disoproxil succinate 300 mg are all equivalent to tenofovir disoproxil 245 mg
- Patient to be advised to commence PrEP within 14 days of negative HIV test.
- Patients not eligible for publicly funded healthcare can self-fund from a NZ pharmacy (approx NZ$30/month, depending on pharmacy mark-up)

- If a partner is known to be living with HIV, on antiretroviral treatment and has an undetectable viral load, then there is no risk of HIV transmission from this partner.
- The risks listed above confer an **elevated risk of HIV**, and hence should prompt a clinician to recommend that a patient start PrEP.
  However, this list is not exhaustive, and patients who do not report these circumstances may still benefit from PrEP. See full guidelines for more information.
- A person is considered to be at elevated risk if they had these risks in the previous 3 months, and/or if they foresee these risks in the upcoming 3 months.

CLI: Condomless intercourse; **MSM:** Men who have sex with men.

TABLE 3: LABORATORY EVALUATION AND CLINICAL FOLLOW-UP OF INDIVIDUALS WHO ARE PRESCRIBED PrEP, INCLUDING EVENT-DRIVEN PrEP

Test	Baseline (Week 0)	About day 30 after initiating PrEP (recommended if recent HIV risk before starting PrEP)	90 days after initiating PrEP	Every subsequent 90 days on PrEP	Other frequency
HIV testing and assessment for signs or symptoms of acute infection	Y	Y	Y	Y	
Assess side effects	N	Y	Y	Y	
Hepatitis B serology. Vaccinate if non-immune.	Y	N	N	N	If patient required hepatitis B vaccine at baseline, confirm immune response to vaccination 1 month after last vaccine dose
Hepatitis C serology	Y	N	N	N	12 monthly but, more frequently if ongoing risk e.g. non-sterile injection drug use
STI (i.e. syphilis, gonorrhoea, chlamydia) as per www.sti.guidelines.org.nz	Y	N	Y	Y	
eGFR at 3 months and then every 6 months	Y	N	Y	N	At least every 6 months or according to risk of CKD
Urine protein creatinine ratio (PCR)	Y	N	Y	N	Every 6 months
Pregnancy test (if risk)	Y	Y	Y	Y	
Liver function (LFT)	Y	N	N	N	

CKD: chronic kidney disease; **eGFR:** estimated glomerular filtration rate; **PrEP:** pre-exposure prophylaxis; **STI:** sexually transmitted infection

This guidance is based on the NZSHS PrEP & PEP Guidelines for Aotearoa New Zealand (2023)

SCIENCE AND PRACTICE

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RESEARCH

An observational survey assessing the extent of PrEP and PEP furnishing in San Francisco Bay Area pharmacies

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ABSTRACT

Background: Human immunodeficiency virus (HIV) remains prevalent in the United States despite medications that reduce the risk of infection, primarily pre-exposure prophylaxis (PrEP) and postexposure prophylaxis (PEP). In 2019, California authorized pharmacists to furnish PrEP and PEP under Senate Bill 159 (SB-159).

Objective: Assess implementation of SB159 in San Francisco Bay Area community and mail-order pharmacies.

Methods: We conducted an observational, cross-sectional survey of independent community and mail-order pharmacies in the 9-county San Francisco Bay Area to identify those that were in the process of furnishing, actively furnished, or furnished under a collaborative practice agreement (CPA). We conducted interviews with furnishing pharmacies in April 2021, focusing on the barriers to and successes of implementation, as well as the impact of coronavirus disease 2019 (COVID-19), and qualitatively analyzed them.

Results: Of the 209 pharmacies contacted, 6 furnished under SB-159 (2.9%), 2 were in the process of furnishing under SB-159, and 1 furnished under a CPA. Six pharmacies and 7 pharmacists were interviewed. Barriers to implementation and furnishing included COVID-19, laboratory tests, lack of time and staff, cost to pharmacy, refill limitation, lack of patient awareness, difficulty arranging follow-up care, and vague wording of the policy. Facilitators to implementation included collaborations with clinics and health centers, privacy, increased accessibility, increased need in the patient population, and the pharmacy culture.

Conclusion: Barriers and facilitators to PrEP and PEP furnishing were consistent across pharmacies, suggesting strategies that could be replicated and potential improvements to SB-159.

Background

Human immunodeficiency virus (HIV) remains prevalent in the United States. As of 2018, an estimated 1.2 million people over age 13 years had been diagnosed with HIV, and an estimated 15,820 people died from acquired immunodeficiency syndrome.[1] In California, HIV incidence is increasing among young men who have sex with men, especially those of color. Black and Latinx men, who make up 13.4% and 18.5% of the

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Availability of Data and Materials: Pharmacy active license data are available through the Department of Consumer Affairs (DCA), https://www.dca.ca.gov/consumers/public_info/index.shtml. De-identified interview transcripts are available upon request.

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Key Points

Background:

- There are disparities related to pre-exposure prophylaxis (PrEP) and postexposure prophylaxis (PEP) access in the United States.
- California's Senate Bill 159 (SB-159) allows pharmacists to furnish PrEP and PEP, a service that could address disparities in access.
- Pharmacists are easily accessible to communities and already provide important services, such as vaccinations, tobacco cessation counseling, and furnishing of naloxone and hormonal contraception.

Findings:

- Only 2.9% of pharmacies contacted in the San Francisco Bay Area furnished PrEP and PEP under SB-159.
- Several barriers, including obtaining laboratory tests, competing demands related to coronavirus disease 2019, and lack of time, have made it challenging for pharmacies to successfully implement PrEP and PEP furnishing.
- We identified key factors that facilitate the implementation of furnishing, including partnerships with clinics and health centers, the ability to address patient privacy, and pharmacists' motivation to address an unmet need in patient population.

United States population, accounted for 42% and 27% of new HIV diagnoses, respectively.[1] People who inject drugs are also at a high risk for HIV, accounting for about 1 in 15 HIV diagnoses in the United States.[2]

Medications can reduce the risk of HIV infection. When prescribed and taken daily, pre-exposure therapy prophylaxis (PrEP; e.g., Truvada, Descovy) reduces the risk of HIV transmission by 99% from sex and by 74% from injection drug use.[3] Although PrEP has been proven to be effective, barriers relating to access and cost lead to underutilization. The Centers of Disease Control and Prevention estimated in 2019 that out of the 1.2 million people living with HIV in the United States, only 23% of people who were eligible were prescribed PrEP; of these, only 8% and 14% of prescriptions for PrEP were by black and Latinx persons, respectively, compared with 63% by whites.[4,5] PrEP is also underutilized in the cisgender women population, with cisgender women making up 19% of HIV diagnoses in 2018 and only accounting for 7% of PrEP users.[6] Underuse may be attributable to the cost of PrEP, which is approximately $10,000 per year, and is even greater after factoring in clinic visits and laboratory charges.[7] Insured people are 4 times more likely to access PrEP and its related services than those who are uninsured.[8] In response to these concerns about costs, programs such as Ready, Set, PrEP funded by the U.S. Department of Health and Human Services and Gilead's copay assistance program sought to make PrEP more accessible by offering it at no cost to qualified individuals,[9] and as of June 2021, insurance companies and Medicaid were required to cover PrEP medication, lab tests, and clinic visits.[10]

Like PrEP, postexposure prophylaxis (PEP; e.g., Truvada+ Isentress or Tivicay) is also underused in men who have sex with men, reflecting a lack of awareness and access.[11] A 2016 survey of men in Boston, MA, Pittsburgh, PA, and San Juan, PR, found that approximately half of study participants were unaware that PEP was a postexposure treatment.[12] PEP must be taken within 72 hours of exposure and requires a positive HIV laboratory result, which can be challenging for patients who do not have regular access to health care.[13]

As some of the most accessible health professionals, pharmacists are in a unique position to enhance PrEP and PEP accessibility and improve the preventive care of HIV.[14] In a qualitative case study assessing the attitudes of key pharmacy stakeholders toward PrEP and PEP furnishing, most agreed that community pharmacists are widely accessible providers, that PrEP and PEP furnishing protocols are similar to those for other preventive medications, and that policies that allow pharmacists to furnish could increase access.[15] Similarly, in a study assessing patient perspectives of PrEP furnishing, 100% of patients agreed or strongly agreed that having pharmacist-prescribed PrEP would benefit their community, and 93.3% of patients agreed or strongly agreed they would feel comfortable seeking PrEP information or HIV testing from a pharmacist.[16] Previous research has found that pharmacist furnishing can increase access to other therapies, including hormonal contraception, naloxone, smoking cessation medications, vaccines, and syringes.[17-21]

Before 2019, pharmacists in California could furnish PrEP and PEP under a formal collaborative practice agreement (CPA) in which a medical provider and a pharmacist form a partnership.[15] Although this method is difficult to implement, it led community pharmacies to provide and expand access to PrEP/PEP.[22] As of 2020, PrEP and PEP services had been implemented in some community pharmacies and ambulatory care clinics. At these clinics, 59% of patients referred and 97% of those evaluated initiated PrEP, with high adherence rates.[23,24] These findings suggest the potential benefits of pharmacy settings as alternative models to increase access to PrEP and PEP.[17-21]

In October 2019, California passed Senate Bill 159 (SB-159), which authorized all California pharmacists to furnish PrEP and PEP. Colorado enacted a similar policy in July 2020 (House Bill 20-1061, effective November 2020), and Oregon in June 2021 (House Bill 2958, effective September 2021).[25-27] "Furnish" is a California-specific term, meaning "to supply by any means, by sale or otherwise" and is used as a separate term to distinguish from prescribing, as it is more restrictive and reflects the limitations pharmacists have on how they can fill prescriptions.[28] One requirement for furnishing is that pharmacists complete a training program approved by the California Board of Pharmacy.[29] To our knowledge, there has been no study of how California community and mail-order pharmacies may have changed their practices after the passage of SB-159.

Objective

This study assessed the degree to which SB-159 led pharmacists within California to furnish PrEP and PEP and identified barriers to implementation of furnishing under SB-159.

Methods

Design and setting

We conducted an observational, cross-sectional survey of independent community and mail-order pharmacies in the San Francisco Bay Area. The study was approved as exempt by the University of California San Francisco Institutional Review Board (#20-32968 on December 9, 2020).

Sample

Pharmacies were identified by downloading active license pharmacy data from California Department of Consumer Affairs (DCA). We included only retail community pharmacies within the 9-county San Francisco Bay Area. We excluded retail chain pharmacies (companies with $\geq$ 4 locations: Walgreens, CVS, Raley's Pharmacy, Walmart, Costco, Rite-Aid, Safeway, Lucky's), given that previous research suggests that chain locations are likely to delay implementation at individual locations in favor of a system-wide protocol.[30-32] We also excluded medical system pharmacies, as well as those where the nature of the pharmacy or patient population excluded provision of PrEP and PEP: veterinary pharmacies, infusion center pharmacies, pediatric pharmacies, long-term care pharmacies, nuclear pharmacies, and compounding-only pharmacies. Four of the authors (N.N., J.P., R.B., S.M.) called each location in April 2021 to see whether it furnished PrEP and PEP, either under SB-159 or a CPA.

Pharmacies that did not furnish PrEP and PEP were excluded from our study, as well as those that did not respond after 3 contact attempts. Once pharmacies that furnished or intended to furnish PrEP and PEP, either under SB-159 or a CPA, had been identified, the authors contacted those stores again and inquired whether they would be willing to participate and provided relevant study information, including the study objectives, interview topics, risk and benefits of participation, and a consent form (via E-mail) to potential respondents. Investigators also inquired whether other staff at the pharmacy would be willing to participate and established how the interview would be conducted.

Data collection

Semistructured interviews were conducted through Zoom during April 2021. The interview guide was based on a validated instrument from previous studies, modified to address PrEP and PEP.[30,31] It included 39 possible open-ended questions organized into general categories identified in previous studies, with options for choosing from additional questions and to address follow-up questions from respondents (see Appendix 1). Interviews ranged from 15-60 minutes in length and were recorded and transcribed. All names and personal information were de-identified, and data were stored on a secure institutional shared drive.

Measures and analysis

As measures, we classified the components of successful PrEP and PEP furnishing programs, the process of implementing the program, and the pharmacists' perceptions of the program. Specific topics covered included, but were not limited to,

(1) PrEP and PEP furnishing process and logistics;
(2) pharmacists and pharmacy staff perception of the successes, disadvantages, barriers to implementation, and overall attitudes toward PrEP and PEP furnishing; and
(3) impacts of coronavirus disease 2019 (COVID-19).

We also collected descriptive data on costs, advertising, respondent level of education, administrative support, location, patient population, pharmacy setting, and number of furnishings.

Transcribed interviews were uploaded to Atlas.ti 8 (ATLAS.ti Scientific Software Development GmbH) for qualitative analysis. We used thematic analysis, based on grounded theory, to code the data.[33] Initially, we categorized words and phrases found in the interview transcripts to identify common themes. The themes were then matched with corresponding quotations. Each transcript was coded and analyzed by 4 investigators (N.N., J.P., R.B., S.M.) and then reviewed by all authors until consensus was reached.

Results

Extent of PrEP and PEP furnishing

The DCA reported that there were 7107 community pharmacies with active licenses in California as of January 2021; of those, 1080 (15%) were located in the 9-county San Francisco Bay Area. Of these, 785 were chain or medical system pharmacies, resulting in a list of 295 independent or mail-order pharmacies. After additional exclusions (e.g., the pharmacy name included the word "veterinary"), 209 pharmacies remained. We made 3 attempts to call each of these 209 pharmacies and were able to reach 179 (86%). Of those, 170 reported that they did not furnish (81.3%) PrEP and PEP, 6 furnished through SB-159 (2.9%), 2 were in the process of furnishing (0.96%), and 1 furnished through a CPA (0.48%). Of the 9 that furnished, we secured interviews with 7 respondents from 6 pharmacy locations: three that were actively furnishing, 2 in the process of furnishing, and 1 furnishing through a CPA. Of the furnishing pharmacies, 1 was a mail-order pharmacy, and the remainder were community pharmacies. Summary data are provided in Figure 1.

Characteristics of pharmacy and pharmacy staff

We interviewed a total of 7 respondents, all of whom were practicing pharmacists. Of those, 1 pharmacist was currently in a residency program, and the others had not completed postgraduate training. Total prescription volume at each location ranged from 30-200 prescriptions per day, excepting the mail-order pharmacy, which had several locations and filled over 1000 prescriptions per day. The number of PrEP and PEP requests ranged from 1 total (a time period was not specified) to 8 in 6 months. Respondent and pharmacy characteristics are provided in Table 1.

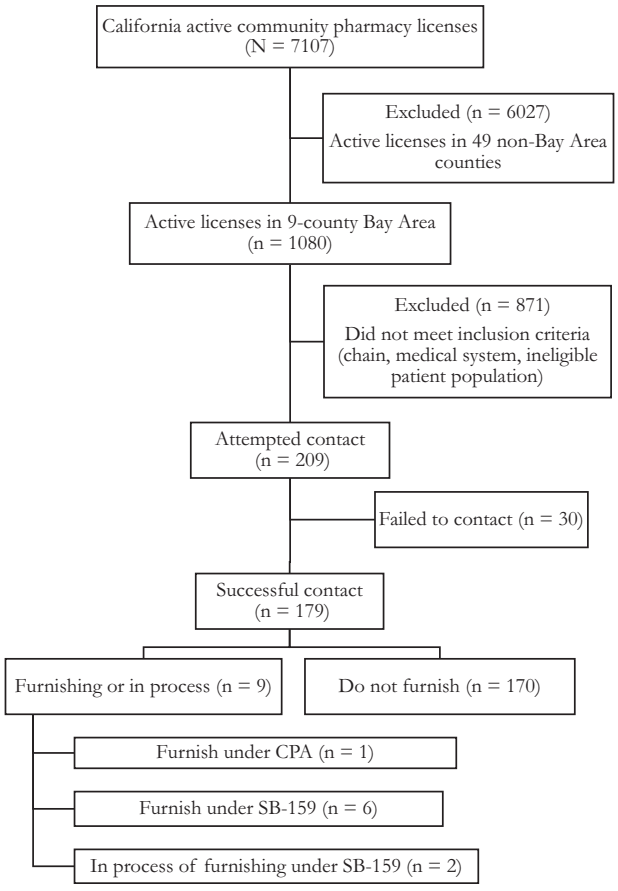

Figure 1. Results from initial pharmacy contacts. Abbreviations used: CPA, collaborative practice agreement; SB, Senate Bill.

Factors associated with implementation

Collaborations with clinics and health centers

Six of the 7 pharmacies, including the CPA pharmacy, reported that having a collaboration with a clinic or health center facilitated their implementation of SB-159. These partnerships eased the recruitment of patients, ordering laboratory tests, and patient follow-up.

Privacy

All of the 7 pharmacists reported the importance of having private consultation rooms in order to have sensitive conversations with patients. One noted that they were "pretty fortunate [that they] have a private consultation room, but not every pharmacy has that luxury, so [they] think that confidentiality might be an issue." (Respondent 1; in process furnishing) The mail-order pharmacy was able to use a smartphone application with an option of text messaging to discretely communicate with patients who did not feel comfortable speaking on the phone.

Need in the patient population and ability to provide off-site services

All of the 7 pharmacies identified a need for increased access to PrEP and PEP. Reasons included providers not having ample time to provide services, lack of proximity to providers offering these services, and high HIV prevalence in the patient populations that they served. One reported, "it's just really nice to be able to help the patient because sometimes it's hard to get a doctor's appointment, [as it] takes a couple of days, and by that time it's too late." (Respondent #3, furnishing pharmacy)

Mail-order pharmacies and community pharmacies offering delivery indicated that their ability to consult with patients remotely and to deliver medications both increased access to PrEP and PEP.

Pharmacy culture and environment

Four of the 7 interviewed pharmacies attributed their success in implementing SB-159 to a stigma-free work environment and pharmacy staff focused on HIV prevention as a public health intervention. Contributing factors to a stigma-free environment included having personnel trained to have sensitive conversations regarding sexual health and physical locale in an queer community. This was particularly evident in specialty pharmacies that focused on HIV. In addition, 3 respondents indicated that the flexibility of working in independent pharmacies allowed them to establish a successful protocol and spend adequate time with patients. Example responses are provided in Table 2.

Attitudes of pharmacists and pharmacy staff

All respondents viewed SB-159 as a valuable expansion of pharmacist furnishing, and 2 indicated that furnishing PrEP and PEP was a public health duty. In the words of one pharmacist, "It's a public health service I think we ought to actually have a commitment […] I feel there's a moral imperative in keeping transmission to a minimum." (Respondent 2, in process) All other responding pharmacists shared this attitude and felt that the policy was an opportunity for pharmacists to address stigma felt by patients in vulnerable populations in need of PrEP or PEP. One pharmacist recounted a personal experience with pharmacist furnishing of PrEP, "I felt very comfortable taking it. I had all my questions answered. And it seemed like it was more accessible than having to deal with my doctor, because he's just so busy. He just made the referral to the pharmacist and she did all the rest of the lab monitoring, all of the day-to-day administration of it. So as a personal recipient of it, I think it's great. I think it really improves a lot of access." (Respondent 1, in process)

Barriers to implementation

During initial contacts, multiple pharmacies that did not furnish volunteered that they did not do so for reasons including lack of awareness about SB-159, a perceived lack of need because the patient population they served did not include people with HIV, cost burden, and lack of information or time to implement the training or a protocol program. The participants interviewed identified additional barriers.

COVID-19

Respondents reported that COVID-19 delayed implementation of SB-159 because of an increase in demand for COVID-19 services at pharmacies (testing and vaccinations), which reduced the resources and number of staff available (4

Table 1
Characteristics of pharmacy and pharmacy staff

Respondents	No. years as pharmacist	No. years in current position	Job title	Residency completed (Y or N)	Store size (per shift)	No. prescriptions per d	PrEP and PEP requests reported
Respondent 1 (in process pharmacy)	11	2.5	Pharmacy manager	N	2 P, 3 T	120	1 [no time period provided]
Respondent 2 (in process pharmacy)	38	12	Pharmacy manager	N	1 P, 1 T, 1 D	90–110	5/y
Respondent 3 (furnishing pharmacy)	1	0.5	Pharmacist in charge	N	1 P, 1 T	30	NA
Respondent 4 (furnishing pharmacy)[a]	10	2	Lead specialty pharmacist	N	4 P, 14 T	> 1000 (all locations)	8 [no time period provided]
Respondent 5 (furnishing pharmacy)[a]	15	< 1	Accreditation Pharmacy specialist	N	4 P, 14 T	> 1000 (all locations)	8 [no time period provided]
Respondent 6 (furnishing pharmacy)	2	0.75	Staff pharmacist	N	1 P, 2 T, 2 C	200	8/6 mo
Respondent 7 (CPA pharmacy)	1	0.75	PGY 1 community resident	In process	3 P, 4 T	150-300	10/y

Abbreviations used: P, pharmacists; T, technicians; D, delivery drivers; C, clerks; Y or N, yes or no; PrEP, pre-exposure prophylaxis; PEP, postexposure prophylaxis; NA, not applicable; PGY, postgraduate year; CPA, collaborative practice agreement.
[a] Mail order pharmacy.

of 7). Some pharmacies noted a reduced number of requests for PrEP and PEP services, which they believed was due to the effects of social distancing and decreased sexual activity during the pandemic (6 of 7). One pharmacist acknowledged that "a lot of [the pharmacy's] resources were put towards COVID. And PrEP in general is pushed to the side a little bit […] I would say if COVID didn't happen a lot more resources could have been poured into our protocol and getting it, working on it." (Respondent 4, furnishing pharmacy)

Obtaining necessary laboratory tests

Some pharmacies (4 of 7) faced challenges in obtaining necessary laboratory tests for patients. These challenges included lack of recognition of pharmacists as authorized providers by most laboratories, patient hesitancy in using at-home test kits, and lack of patient understanding of how to obtain laboratory tests.

Some pharmacies had overcome this barrier by providing patients with rapid HIV test kits or having a partnership with a laboratory or clinic (5 of 7). However, not all pharmacies were able to provide these kits owing to high cost, paid by either the patient or pharmacy. Laboratory tests were described as a barrier "because some patients don't know where to go get their labs done, or they have to make an appointment with a doctor which can take them time… we send out free test kits to the patients and the results come back in about 20 minutes. They send us a picture of their results, along with their lot number. And once we get the results, we are able to write their script." (Respondent 3, furnishing pharmacy)

Lack of time and staff

Five of the 7 pharmacies expressed that lack of time was a barrier to furnishing. Individual encounters were reported to take "25 to 50" minutes, which could lead "overwhelmed community pharmacists [to] not feel like they have time." (Respondent 7, CPA pharmacy; Respondent 2, in process) Pharmacists reported the patient encounter to include risk assessment and patient screening to ensure patient eligibility and appropriateness for PrEP and PEP, discussing lab results, patient education, and managing emotional fallout from potential HIV exposures. Some pharmacies overcame this barrier by creating an appointment system. Insufficient staff was another identified barrier (e.g., 1 pharmacist per shift), which prevented pharmacies from providing additional PrEP and PEP furnishing.

Costs to the pharmacy

The medications for PrEP and PEP have high upfront costs (ranging from $1300 to $2000 per individual month supply), which may not be reimbursed until a later time. Some pharmacists identified these costs as a barrier to initial implementation, particularly for independent pharmacies with multiple patients on these medications. Moreover, pharmacists noted that their lack of provider status precluded them from billing insurance companies; "sometimes [they] don't really make the money back on [their] time and services rendered." (Respondent #1, in process)

Lack of patient awareness

One of the most common barriers identified was a lack of patient awareness that pharmacists could furnish PrEP and PEP. One pharmacist stated that they "think the biggest barrier is that patients aren't aware that a pharmacist can write a prescription for PrEP or PEP. So, it is about getting more people to know and spreading awareness." (Respondent 3, furnishing pharmacy) Proposed solutions include advertising the services through local clinics, online platforms, and community outreach (5 out of 7). Example responses are provided in Table 3.

Table 2
Pharmacy factors leading to successful implementation

Key elements	Example quotes
Collaboration with clinics or health centers (5 of 6 SB-159, 1 of 1 CPA)	"We have a really good working relationship with providers in the area, as well as various entities from Department of Public Health" (Respondent 5, furnishing pharmacy)
Privacy (6 of 6 SB-159, 1 of 1 CPA)	"There's no way you can do some of this work if you just have a consult window versus actually having a designated space to have sensitive conversation." (Respondent 7, CPA pharmacy)
Increased need in patient population (4 of 6 SB-159, 1 of 1 CPA)	"On our campus we have a community health center who frequently is overwhelmed and they're maybe not able to spend as much time with patients on the education piece, so that's the part where we can pick up on that." (Respondent 1, in process pharmacy)
Increase accessibility (6 of 6 SB-159, 1 of 1 CPA)	"[Our] advantage is obviously access and breaking down an additional barrier to getting somebody started […] on PrEP and then they have to wait for an appointment and by the time they get that appointment, they maybe don't feel like it anymore." (Respondent 5, furnishing pharmacy)
Pharmacy culture and environment (3 of 6 SB-159, 1 of 1 CPA)	"I've had one of my pharmacists actually personally courier the meds to the patient, because they know how important this is […] it's one or two medications that can change a person's life. It's a matter of hours, like 72 hours, 96 hours. […] that's ingrained in all our staff." (Respondent 4, furnishing pharmacy)

Abbreviations used: SB, Senate Bill; CPA, collaborative practice agreement.

Barriers specific to SB-159

Refill limit

Two pharmacists mentioned that the SB-159 60-day supply limit, which requires that patients follow up with another provider, had been a drawback of the policy. The pharmacist furnishing through a CPA noted that they would not be furnishing through SB-159 for this reason.

Difficulty connecting patients to follow-up care

Another drawback identified specific to SB-159 was the potential difficulty in connecting patients to follow-up care after initiation of PrEP or PEP. The pharmacist operating under a CPA indicated that in "situations where you have to refer the patient out or they need clinical consults, and if they don't have a physician on record or the clinical consult to be able to touch base and hash out clinical cases, then I can see that to be a challenge." (Respondent 7, CPA pharmacy)

Vague policy wording

Only 1 respondent had been directly involved in the process of setting up their pharmacy's SB-159 furnishing protocol. They noted that the wording of the policy left room for interpretation, which caused confusion when establishing the lab ordering protocol and follow-up care. "[T]he biggest thing that came out [of establishing the protocol] was being compliant with the words that SB-159 has […] What's the valid test? Does that mean a blood draw or OraQuick?" (Respondent 6, furnishing pharmacy)

Contrast with CPAs

The pharmacy furnishing PrEP and PEP under a CPA identified similar key elements of successful implementation.

Table 3
Barriers to implementation

Key elements	Example quotes
COVID-19 delay in implementation (3 of 6 SB-159, 0 of 1 CPA) Social distancing (5 of 6 SB-159, 1 of 1 CPA) Demand for COVID-19 services (3 of 6 SB-159, 1 of 1 CPA)	"We have had to pivot to meet all the demands of COVID, and it took our focus away because we were trying to get registered to be an immunization provider and also to do testing.[…] [taking] time away from […] ramping up our PrEP and PEP programs" (Respondent 1, in process) "I think the barrier is COVID-19 […] that prevents a lot of people from coming into our store, asking questions, we still get the emails […] [but] I had a patient today who's never used email before" (Respondent 3, furnishing pharmacy)
Laboratory tests (4 of 6 SB-159, 0 of 1 CPA)	"It seems that it's something that pharmacists can do as far as ordering the labs, but it's logistically difficult [because] the labs don't really recognize pharmacists yet." (Respondent 1, in process)
Lack of time and staff (4 of 6 SB-159, 1 of 1 CPA)	[A] big barrier is just staffing, and time commitments […] somebody coming to the window when I'm the only one here can stand in the way, and it would make it very difficult […] particularly with PEP, the PEP encounter, I want to take somebody off to a private room for at least 15 minutes, if not more. (Respondent 2, in process) "We're a very busy pharmacy […] a new patient for PrEP [is] going to take a long time for them to sign them up through the program and everything." (Respondent 4, furnishing pharmacy)
Cost to pharmacy (4 of 6 SB-159, 0 of 1 CPA)	"It costs about $1,500 per month per patient. So there typically is a delay in the time from when we dispense the medication to the time when we actually get reimbursed […] It could create a cash flow issue for the pharmacy." (Respondent 1, in process)

Abbreviations used: SB, Senate Bill; CPA, collaborative practice agreement; COVID-19, coronavirus disease 2019; PrEP, pre-exposure prophylaxis; PEP, post-exposure prophylaxis.
Note: An observational survey assessing the extent of PrEP and PEP furnishing in San Francisco Bay Area pharmacies.

Some key distinctions expressed by the respondent from a CPA pharmacy involved the ease of ordering laboratory tests, the fact that there was no 60-day refill limitation, and the ability to directly link patients to follow-up care with the collaborating clinic.

Discussion

Previous studies have not identified the extent of PrEP and PEP furnishing by pharmacists in California under SB-159. We contacted independent and mail-order pharmacies in the California Bay Area and found that less than 3% furnish PrEP and PEP. Given the barriers to implementation that we identified, including lack of patient awareness, this gap might be addressed in part through increased outreach efforts by HIV advocacy groups (i.e., contacting local pharmacies and promoting a furnishing protocol) or increased advertising by the Board of Pharmacy and organizations such as California Pharmacists Association and California Society of Health-System Pharmacists, which provide relevant training. Given that facilitator to furnishing was pharmacist commitment to increasing access, pharmacist advocacy on a personal and policy level may also promote furnishing of PrEP and PEP; this includes staying aware of recent policies and reaching out to professional networks.

We found that pharmacists faced several barriers to implementation including completing demands due to COVID-19, difficulty ordering laboratory tests, lack of time and staffing, and costs to the pharmacy. Pharmacists also identified barriers to implementation specific to the provisions of SB-159 including refill limitations, difficulty connecting patients to follow-up care, and vague wording of the bill. The 60-day refill limitation is specific to PrEP furnishing; pharmacists in California may furnish a 12-month supply of hormonal contraception, comparable to physicians.[34] We initially anticipated that obtaining laboratory tests could be a barrier to furnishing. Some pharmacies were able to overcome this by providing or ordering rapid tests; however, these involve additional costs and may not be accessible to all pharmacies.

Pharmacists also identified factors facilitating implementation of SB-159, including collaborations with local clinics and health centers, having a private consultation space, and serving a patient population at higher need. Other factors included pharmacist motivation to increase accessibility to PrEP and PEP and pharmacy culture and environment. Pharmacists whom we interviewed felt that that it was a public health duty to increase access to PrEP and PEP in order to lower infection and transmission and felt driven to make a positive impact in patients' lives by providing this service.

CPA and SB-159 protocols shared similar barriers and facilitators. However, challenges in ordering laboratory tests and 60-day refill limitations did not apply to pharmacies operating under a CPA, suggesting areas where SB-159 may have discouraged uptake of furnishing. In addition, pharmacist medical billing and reimbursement may be possible under a CPA depending on state and insurance regulations.[35]

Our study has limitations. Our analysis only considered the 9-county San Francisco Bay Area, which may limit generalizability. Our sample did not include data from pharmacies that furnish PrEP and PEP but chose not to participate, as well as pharmacies that did not meet inclusion criteria that may also have furnished PrEP and PEP. However, our coding of interviews reached saturation, suggesting that additional contacts may not have provided new information. We excluded retail chain pharmacies as previous research suggests that they are likely to delay implementation, but this may not have been the case for PrEP and PEP. Our findings involved a review of self-reported interview data, which may include personal bias or social desirability bias. Irrespective of these limitations, this exploratory study provides new insight into the factors associated with successful implementation of SB-159 and barriers that remain.

Conclusions

SB-159 intended to increase access to PrEP and PEP and reduce HIV transmission rates; however, its implementation in community pharmacies has been limited. Our findings suggest that the policy could be improved by removing refill limitations and clarifying language regarding ordering laboratory tests. The lack of provider status for pharmacists hindered insurance company billing for time and services as SB-159 only provides reimbursement for a portion of the population. For small independent pharmacies with limited staff and time, the inability to be reimbursed by all insurance companies for the time spent on furnishing may serve as a barrier to implementation. At the clinic level, ensuring adequate time and staffing, private consultation rooms, and appropriate sensitivity training for pharmacy personnel may establish broad implementation of this policy. While changes to SB-159 could expand implementation, overall, these results suggest that recognizing pharmacists as providers may have more long-term effectiveness in increasing access to PrEP and PEP for populations at risk of HIV infection.

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Appendix

Appendix 1

I. Interview guide
II. List of chain and medical center pharmacies excluded

I. **Interview guide**

Background of Participant and Pharmacy:

- What is your current role at this pharmacy?
- How many pharmacists and pharmacy technicians are employed at this pharmacy? Per shift?
- How long have you worked as a pharmacist/in your current position?
- Have you completed a residency? If so, what type of residency?
- Have you completed any training to furnish PrEP/PEP?
- If yes, what type of training?

Program Development and Implementation:

- Did you play a role in designing the PrEP/PEP furnishing program/protocol/process at this pharmacy?
- If yes, can you describe your approach in designing such model?
- What were the main factors, such as legal, financial, and logistical factors, that were considered in designing this model?
- What went well during the initial implementation of this model?
- What barriers did the pharmacy faced in the initial implementation of this model and how did the pharmacy overcome them?
- What barriers would you anticipate other pharmacies would encounter in implementing such a model/What barriers do you anticipate encountering during your implementation process?
- For CPA: pros/cons of CPA over SB-159

PrEP/PEP Furnishing Process:

- Are you aware of the process for furnishing PrEP/PEP at this pharmacy?
- If yes, can you describe the process of furnishing PrEP/PEP at this pharmacy, starting from when the patient arrives requesting for PrEP/PEP?
- What type of PrEP/PEP formulation is furnished at this pharmacy?
- How does the pharmacy identify patients in recommending PrEP/PEP to?
- Can you describe the different roles involved in furnishing PrEP/PEP at this pharmacy?
- How does the pharmacy and staff involved in PrEP/PEP furnishing meet and maintain compliance with the legal requirements for furnishing PrEP/PEP by California Board of Pharmacy?
- What is your role in the PrEP/PEP furnishing process?
- Can you describe any interaction you have with other health professionals in furnishing PrEP/PEP?
- What do you believe are the advantages and disadvantages of this PrEP/PEP furnishing model?
- What factors do you believe led to the pharmacy's success in the implementation of a PrEP/PEP furnishing program/protocol?
- How does the pharmacy provide PrEP/PEP consultation and education to both staff and patients?

Pharmacy Operation Logistics:

- On average, how many prescriptions does the pharmacy receive on a daily basis?
- How many PrEP/PEP request does the pharmacy received on a monthly basis? How many PrEP/PEP were furnished based on request for PrEP/PEP? How many PrEP/PEP were furnished based on pharmacist recommendation of PrEP/PEP?
- How much does PrEP/PEP cost to the pharmacy? How much does PrEP/PEP cost to clients?
- Are PrEP/PEP expenses reimbursed to the pharmacy?

Barriers:

- Previous studies identified some barriers pharmacists reported in furnishing PrEP/PEP were cost and reimbursement, labs, trainings, attracting clientele to the pharmacy, and time. How would you address these reported barriers?
- What do you believe are current barriers for furnishing PrEP/PEP at this pharmacy?
- What do you believe are aspects of this pharmacy's PrEP/PEP furnishing model that is different from other pharmacies?
- What are some areas of improvement for implementation of PrEP/PEP furnishing models (SB159, CPA)

Attitudes:

- How would you describe your attitude towards pharmacist furnishing PrEP/PEP on a national scale?

Recommendation and Future Direction:

- What advice do you have for pharmacies attempting to design their own PrEP/PEP furnishing model?

COVID-19 Impact:

- Did COVID-19 impact you successfully implementing PrEP/PEP furnishing?
- Do you believe that COVID-19 has limited the number of people coming in seeking PrEP/PEP services?
- What types of barriers, if any, did COVID-19 introduce while furnishing PrEP/PEP?
- Has there been a change in number of requests for PrEP/PEP furnishings since the coronavirus pandemic?
- Have shelter-in-place guidelines (6 foot spacing in line, etc) affected your ability to furnish PrEP/PEP (either directly or indirectly)?
- Any other changes in pharmacy process due to COVID-19 issues?

Potential Additional Questions:
Intervention Source:

- Who developed the PrEP/PEP furnishing protocol?
- Why was the PrEP/PEP furnishing program implemented at this pharmacy?
- How was the decision made to implement the program?

Adaptability:

- What kinds of changes or alterations do you think you will need to make to the PrEP/PEP furnishing process so it will work effectively in your pharmacy?
- Do you think you will be able to make these changes? Why or why not?
- Who will decide (or what is the process for deciding) whether changes are needed to the program so that it works well in your pharmacy?
- How will you know if it is appropriate to make any changes?
- Are there components that should not be altered?
- Which ones should not be altered?

Cost:

- How much did implementing the PrEP/PEP furnishing protocol cost to the pharmacy?

Patient Needs and Resources:

- To what extent were the needs and preferences of the individuals served by your pharmacy considered when deciding to implement the PrEP/PEP furnishing process?
- How well do you think the PrEP/PEP furnishing process will meet the needs of the individuals served by your pharmacy?
- What barriers will the individuals served by your pharmacy face in obtaining PrEP/PEP from your pharmacy?

Cosmopolitanism:

- What type of interactions do you have with other healthcare professionals in regards to PrEP/PEP furnishing at this pharmacy?

Other Organizations:

- To what extent are other pharmacies implementing and actively engaging in PrEP/PEP furnishing?
- How is PrEP/PEP furnishing different at this pharmacy?

External Policies:

- What kind of local, state, or national performance measures, policies, regulations, or guidelines influenced the PrEP/PEP furnishing process at this pharmacy?

Structural Characteristics:

- How will the infrastructure of your organization (social architecture, age, maturity, size, or physical layout) affect the PrEP/PEP furnishing process?
- What kinds of infrastructure changes will be needed to improve upon the PrEP/PEP furnishing process?

Culture:

- How do you think your organization's culture (general beliefs, values, assumptions that people embrace) affects PrEP/PEP furnishing process and engagement with patients regarding such process?

Need for Change:

- Is there a strong need for PrEP/PEP furnishing at this pharmacy? If so, why?
- How essential is PrEP/PEP furnishing to meet the needs of the individuals served by your pharmacy in meeting its goals and objectives
- How do people feel about current programs/practices/process that are available related to PrEP/PEP furnishing at this pharmacy?

Compatibility:

- How well does the PrEP/PEP furnishing process fit with your values and norms and the value and norms within the pharmacy?
- How well does the PrEP/PEP furnishing process fit with existing work processes and practices in your setting?

Goals and Feedback:

- Have your pharmacy set goals related to PrEP/PEP furnishing process? If so, what are the goals set? If so, how are the goals monitored for progress?
- Does the PrEP/PEP furnishing process receive any feedback? If so, in what form are the feedback provided in? How is the feedback addressed?

Access to Knowledge and Information:

- What type of training is required to furnish PrEP/PEP?
- Do you feel the training prepares you to carry out the roles and responsibilities expected of you in furnishing PrEP/PEP?
- What are the positive aspects of planned training?
- What is missing?

Knowledge and Beliefs About the Program:

- Do you believe the PrEP/PEP furnishing process is effective in this pharmacy? Why or Why not?

Engagement:

- Who are the key individuals who help implement PrEP/PEP furnishing protocol at this pharmacy?
- What steps have been taken to encourage pharmacy staff to commit to actively engaging in PrEP/PEP furnishing process?
- What steps have been taken to engage patients in PrEP/PEP furnishing process?
- Which individuals will you target?
- How will you approach them?
- What information will you give them?
- How frequently and how will you communicate with them?
- What is your communication or education strategy for getting the word out about the PrEP/PEP furnishing available at this pharmacy?

Reflecting and Evaluating:

- What kind of information do you collect as you furnish PrEP/PEP?
- Which measures will you track? How will you track them?
- How will this information be used?

II. List of chain and medical center pharmacies excluded

- Kaiser Permanente
- Pharmaca Integrative Pharmacy
- Stanford Health Care
- San Mateo Medical Center
- Santa Clara Valley Medical Center
- Valley Health Center
- Costco
- CVS
- Longs
- Lucky
- Pharmaca
- Raleys
- Rite Aid
- Safeway
- Walmart
- Walgreens

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Corrigendum

Enumerating the population eligible for funded HIV pre-exposure prophylaxis (PrEP) in New Zealand

Peter J. W. Saxton and Susan M. McAllister

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The publisher wishes to correct an error in the reference list of the PDF version of the above mentioned paper. The reference list from number 28 onwards should read as follows:

28 Hughes A, Saxton P. Geographic micro-clustering of homosexual men: implications for research and social policy. *Soc Policy J N Z* 2006; 28: 158–78.

29 Ludlam AH, Saxton P, Dickson N, Hughes A. General practitioner awareness of sexual orientation among a community and Internet sample of gay and bisexual men in New Zealand. *J Prim Health Care* 2015; 7: 204–12. doi:10.1071/HC15204

30 National HIV Forum. Consensus statement on comprehensive HIV prevention in Aotearoa/New Zealand. 2017. Available online at: https://hivconsensus.org.nz/ [verified 2 September 2018]

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35 Saxton P, Giola M, Coughlan E, Rich J, Azariah S, Ludlam A, O'Toole C, Pohl M, Myers J. Implementing HIV pre-exposure prophylaxis (PrEP): let's not get caught with our pants down. *N Z Med J* 2018; 131(1481): 64–73.

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Enumerating the population eligible for funded HIV pre-exposure prophylaxis (PrEP) in New Zealand

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Abstract. ***Background*:** Pre-exposure prophylaxis (PrEP) became publicly funded in New Zealand (NZ) on 1 March 2018. PrEP could have a substantial population-level effect on HIV transmission if scaled up rapidly. An accurate estimate of the size of the PrEP-eligible population would guide implementation. ***Methods*:** We drew on nine sources to estimate the PrEP-eligible population, namely Statistics NZ data, Pharmaceutical Management Agency (PHARMAC) data on adults receiving funded antiretroviral treatment (ART), expert advice, estimates of the HIV care cascade, surveillance of undiagnosed HIV in a community sample of gay and bisexual men (GBM), surveillance of HIV diagnoses, NZ Health Survey data on sexual orientation among males, behavioural surveillance among GBM and behavioural data among people living with HIV (PLWH) from the HIV Futures NZ study. From these sources we derived three estimates relating to GBM, non-GBM and total eligible population. Sensitivity analyses examined different assumptions (GBM denominators, proportion PLWH diagnosed, proportion of diagnosed PLWH treated). ***Results*:** We estimated that 17.9% of sexually active HIV-negative GBM would be eligible for PrEP, equating to 5816 individuals. We estimated that 31 non-GBM individuals would be eligible for PrEP. Thus, in total, 5847 individuals would be eligible for PrEP, comprising 99.5% GBM and 0.5% non-GBM. Sensitivity analyses ranged from 3062 to 6718 individuals. ***Conclusions*:** Policy makers can use enumeration to monitor the speed and scale in coverage as implementation of publicly funded PrEP proceeds. Sexual health and primary care services can use enumeration to forecast PrEP demand and plan accordingly. Better quality data, especially on transgender adults in NZ, would improve the accuracy of estimates.

Additional keywords: condomless anal intercourse, enumeration, homosexual, methamphetamine, sexually transmissible infection.

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Introduction

Studies among gay and bisexual men (GBM) show that pre-exposure prophylaxis (PrEP) with correct adherence is safe and highly effective against HIV.[1–3] International guidelines recommend that PrEP should be offered to individuals at highest HIV risk,[4–8] prompting country-level medicines regulators and health policy makers to consider access and funding arrangements. Hastening these deliberations are data that the HIV epidemic is expanding[9] and costly,[10] that PrEP could have a substantial population-level effect on HIV transmission if targeted and scaled up[11] and that PrEP can be cost-effective.[12] Consequently, countries have an interest in estimating the size of their populations potentially eligible for PrEP.

In New Zealand, the momentum on PrEP is accelerating after a cautious start. PrEP became fully publicly funded on 1 March 2018,[13] 1 year after Truvada (Gilead Sciences, Inc, Foster City, CA, USA) was approved for PrEP by the Medicines and Medical Devices Safety Authority (Medsafe). Eligibility reflects the pattern of HIV incidence and is focussed on GBM, the partners of people living with diagnosed but unsuppressed HIV and transgender individuals. The New Zealand Government is now one of the earliest adopters globally to publicly fund PrEP. Evidence, including uptake targets, should continue to underpin the implementation phase.

Public health personnel can use estimates of the PrEP-eligible population to make several strategic decisions. Government agencies and the pharmaceutical industry can consider information on the size, and therefore cost, of PrEP coverage when negotiating potential healthcare subsidies. Policy makers can use estimates to monitor the speed, scale and gaps in coverage once implementation begins. Sexual

health and primary care services can apply enumeration to forecast anticipated PrEP demand and plan accordingly. The enumeration process itself can also identify critical knowledge gaps for further research to improve accuracy. The aim of this study was to estimate the number of individuals potentially eligible for publicly funded PrEP in New Zealand under the current criteria.

Methods

PrEP eligibility criteria

We followed the published Pharmaceutical Management Agency (PHARMAC) funding criteria,[13] summarised below.

Patient has tested HIV negative and either:

1. Patient is male or transgender, has sex with men, is likely to have multiple episodes of condomless anal intercourse in the next 3 months and any of the following:
   - one or more episodes of condomless receptive anal intercourse with a casual male partner in the past 3 months
   - diagnosis of rectal chlamydia, rectal gonorrhoea or infectious syphilis in the past 3 months
   - methamphetamine use in the past 3 months.
2. Patient has a regular partner with HIV, the regular partner is not on HIV treatment or has a detectable viral load and condoms have not been consistently used.

Data sources

We used the following sources to enumerate the PrEP-eligible population given the above criteria: Statistics New Zealand data on the population aged 16–69 years at 31 December 2017;[14] PHARMAC data on the number of adult people living with HIV (PLWH) receiving funded antiretroviral treatment (ART) as of 30 June 2017;[15] expert advice that 85% of diagnosed PLWH are accessing funded ART;[9] estimates of the HIV care cascade in the Capital and Coast District Health Board, Wellington;[16] active surveillance of the prevalence of diagnosed and undiagnosed HIV in a community sample of GBM in Auckland in 2011;[17] passive surveillance of new HIV diagnoses;[9] New Zealand Health Survey Sexual and Reproductive Health module 2014–15 data;[18] behavioural surveillance from surveys of GBM in community settings in Auckland;[19] and behavioural data among diagnosed PLWH from the HIV Futures NZ 2 study.[20]

Subpopulation estimates

We calculated the following subpopulation estimates using the sources above:

- Subpopulation a, adult PLWH diagnosed;
- Subpopulation b, adult PLWH diagnosed non-GBM;
- Subpopulation c, adult PLWH diagnosed GBM;
- Subpopulation d, adult PLWH;
- Subpopulation e, PLWH GBM;
- Subpopulation f, HIV-negative GBM;
- Subpopulation g, sexually active HIV-negative GBM;
- Subpopulation h, sexually active HIV-negative GBM eligible for PrEP under Criteria 1 or 2;
- Subpopulation i, non-GBM eligible for PrEP under Criterion 2;
- Subpopulation j, all individuals eligible for PrEP under Criteria 1 or 2.

People living with HIV

There is no register of the number of PLWH in New Zealand. To estimate this we used: (1) PHARMAC data on the number of adults receiving funded ART at the end of June 2017; (2) an assumption that 85% of diagnosed PLWH are accessing funded ART, from previous New Zealand estimates;[9] and (3) an assumption that 79% of PLWH are diagnosed, from a 2011 HIV prevalence study among GBM in Auckland.[17] To estimate the proportion and number of PLWH who were non-GBM, we assumed that the proportion of females receiving funded ART provides a proxy for the proportion of non-GBM males receiving funded ART, based on surveillance data of new HIV diagnoses.[9] To estimate the proportion who were GBM, we subtracted the proportion assumed to be non-GBM from all adults receiving funded ART.

Gay and bisexual men

To estimate GBM, we used data from the New Zealand Health Survey Sexual and Reproductive Health module 2014–15 on males aged 16–74 years who identified as gay or as bisexual.[18]

HIV-negative GBM who are sexually active

We estimated the number of HIV negative GBM by subtracting the number of estimated GBM PLWH from the estimated number of GBM. We estimated the proportion that are sexually active using 2014 behavioural surveillance data.[19]

HIV-negative GBM eligible for PrEP

We used behavioural surveillance data[19] to estimate the proportion eligible for PrEP under current PHARMAC criteria, making best approximations where necessary. For the three respective subgroups listed under Criterion 1, we used: (1) the proportion engaging in any receptive condomless anal intercourse with a casual male partner in the past 6 months from the 2014 behavioural surveillance survey;[19] (2) the proportion reporting gonorrhoea or chlamydia (at any site) or lymphogranuloma venereum (LGV; a chlamydia variant) or syphilis in the past 12 months from the 2014 behavioural surveillance survey;[19] and (3) the proportion reporting methamphetamine use in the past 6 months from the 2006 behavioural survey.[21] For Criterion 2 (GBM only), we used the proportion reporting any condomless anal intercourse with a known HIV-positive regular male partner in the past 6 months.

Non-GBM eligible for PrEP

For Criterion 2 (non-GBM), we estimated the proportion of HIV-positive non-GBM with a regular partner, the proportion of these partnerships that were not seroconcordant, and the proportion of these not using condoms consistently from the HIV Futures NZ 2 study.[20] We estimated the proportion of diagnosed HIV-positive individuals not virally suppressed (not on ART or on ART but not virally suppressed) from the HIV

Care Cascade study[16] in the Capital and Coast District Health Board.

Sensitivity analyses

We altered various assumptions by: (1) changing the GBM denominator population to gay-identified males only and to males reporting same-sex behaviour in the previous 5 years;[18] (2) using the lower and upper 95% confidence intervals (CIs) of the proportion of PLWH who are diagnosed;[17] and (3) varying the proportion of diagnosed PLWH who are under active follow-up to the most recent HIV Care Cascade study in the Capital and Coast District Health Board.[16]

Results

We estimated 2906 adult PLWH diagnosed as of 30 June 2017 (Subpopulation a). Of these, we estimated 31.8% were either female or male non-GBM and 68.2% were GBM, enumerating 924 diagnosed non-GBM (Subpopulation b) and 1982 diagnosed GBM (Subpopulation c). Assuming 21% of PLWH are undiagnosed, we estimated 3678 PLWH overall in New Zealand (Subpopulation d), of whom 2509 are GBM (Subpopulation e; Table 1).

The New Zealand Health Survey (Sexual and Reproductive Health module)[18] found that 2.3% of males identified as gay or as bisexual, enumerating 37 481 individuals, 34 972 of whom

Table 1. Estimated number of people eligible for publicly funded pre-exposure prophylaxis (PrEP) in New Zealand (NZ) according to Pharmaceutical Management Agency (PHARMAC) criteria, 1 March 2018

ART, antiretroviral treatment; GBM, gay and bisexual men; PLWH, people living with HIV

Row	Population	Proportion	No.	Notes, source or calculation
A	NZ males aged 16–69 years		1 629 590	Statistics NZ[14]
B	NZ females aged 16–69 years		1 683 300	Statistics NZ[14]
	PLWH diagnosed and on ART			
C	No. adults receiving ART		2470	PHARMAC[15]
D	Female		393	PHARMAC[15]
E	Male		2077	PHARMAC[15]
	PLWH total			
F	Under care and on ART	0.85		Dickson *et al.*[9]
G	No. diagnosed		2906	C/F
H	Proportion diagnosed	0.79		Saxton *et al.*[17]
I	No. PLWH		3678	G/H
	PLWH by subpopulation			
J	Proportion adult PLWH female	0.159		D/C
K	Proportion adult PLWH non-GBM male	0.159		Assumed equal to J[9]
L	Proportion adult PLWH GBM	0.682		Assumed 1 – (J + K)
M	No. diagnosed non-GBM male and female		924	G × (J + K)
N	No. diagnosed GBM		1982	G × L
O	No. PLWH females		585	I × J
P	No. PLWH non-GBM males		585	I × K
Q	No. PLWH GBM males		2509	I × L
R	Transgender	–	–	No adult NZ data
	GBM			
S	Gay- and bisexual-identifying males	0.023	37 481	A × 0.023[18]
T	GBM, HIV negative		34 972	S – Q
U	GBM, HIV negative, sexually active	0.929	32 489	T × 0.929[19]
	GBM eligible for PrEP			
V	GBM, HIV negative, sexually active, PrEP eligible under Criteria 1 or 2[A]	0.179		From Table 2
	Non-GBM eligible for PrEP			
W	Proportion diagnosed positive non-GBM with regular partner	0.5		Women, estimated from Table 46 in Grierson *et al.*[20]
X	Proportion not seroconcordant	0.8		All respondents with regular partner, estimated from p.42[20]
Y	Proportion not on ART, or on ART but not virally suppressed	0.169		Raymond *et al.*[16]
Z	Proportion not using condoms consistently	0.5		Women with male partner, estimated from Table 49[20]
	Total			
AA	Total GBM eligible		5816	U × V
AB	Total non-GBM eligible		31	M × W × X × Y × Z
AC	Total eligible		5847	AA + AB
AD	Proportion GBM		0.995	AA/AC
AE	Proportion non-GBM		0.005	AB/AC

[A]See text for details.

are HIV negative (Subpopulation f). HIV behavioural surveillance[19] reports that 92.9% of participants had sex with a male in the previous 6 months, enumerating 32 489 sexually active HIV-negative GBM (Subpopulation g).

Table 2 shows the proportion of sexually active HIV-negative GBM who would satisfy the PHARMAC PrEP eligibility criteria based on each stipulation and overall. An estimated 13.4% qualify for engaging in receptive condomless anal intercourse with a casual partner, 7.3% for a diagnosis of gonorrhoea, chlamydia, LGV or syphilis, 7.4% for using methamphetamine and 0.33% for engaging in condomless anal intercourse with a known HIV-positive regular partner. There is no available estimate for the PHARMAC stipulation of likely future condomless anal intercourse, so we assume past practice will be ongoing. Overall, we estimate that 17.9% or 5816 individuals would be eligible for PrEP under criteria 1 or 2 (Subpopulation h).

We were unable to find an estimate of either the adult New Zealand transgender population or the proportion of this population that would satisfy the PHARMAC eligibility criteria.

From the HIV Futures 2 survey[20] we assumed that: (1) 50% of diagnosed non-GBM PLWH have a regular partner, using data available on female respondents; (2) 80% were not seroconcordant, using data available on all respondents; and (3) 50% were not using condoms consistently, using data from female respondents in non-concordant regular relationships (Table 1). We assumed that 11% of PLWH under clinical care were not on ART, and that a further 6.6% of those who were on ART were not virally suppressed, using data from the HIV Care Cascade study[16] in Capital and Coast District Health Board. Applying these assumptions, we estimated 31 non-GBM would be eligible for PrEP under Criterion 2 (Subpopulation i).

In total, we estimated that 5847 individuals would be eligible for PrEP, of whom 99.5% are GBM and 0.5% are non-GBM (Table 1). We then substituted in alternative estimates for the GBM denominator (1.3% identifying only as gay, 2.6% reporting same-sex behaviour in the previous 5 years),[18] the lower (67%) and upper (88%) 95% CIs for the proportion of PLWH diagnosed[17] and the proportion of diagnosed PLWH on ART (89%),[16] summarised in Fig. 1. This suggested a lowest estimate of 3062 eligible individuals (99% GBM, 1% non-GBM) and a highest estimate of 6718 individuals (99.6% GBM, 0.4% non-GBM). The GBM population denominator assumption exerted the strongest effect on our estimates.

Discussion

PrEP is publicly funded in New Zealand, and we estimate 5847 individuals are eligible to receive it, almost all (99%) GBM. This figure provides a target for the implementation phase, and the public health response must now focus on meeting this need. Achieving this coverage would deliver public as well as personal health benefits, because high-risk individuals protected by PrEP will neither acquire HIV nor subsequently transmit it to their sexual partners.

The strengths of this study include using nine data sources, sensitivity analyses of 18 alternative scenarios and its timeliness, shortly after PrEP was publicly funded in New Zealand. The findings can inform PrEP policy and implementation in New Zealand and internationally.

We based our estimates on the available New Zealand data, and there are several limitations to the assumptions we made. There are no accurate data on the number of people currently living in New Zealand with diagnosed HIV, nor on the mode of transmission of PLWH receiving ART. The estimate for undiagnosed infection is based on an Auckland study of GBM in 2011,[17] and may well now be lower among GBM and different for non-GBM. The time period relating to the behavioural estimates for GBM, such as condomless intercourse (past 6 months), methamphetamine use (past 6 months) and sexually transmissible infections (STIs; past 12 months), were greater than their respective PHARMAC criteria (past 3 months); this may overestimate eligibility. Conversely, all behavioural surveillance data from 2014 and 2006 are now out of date, especially the prevalence of condomless anal

Table 2. Estimated proportion of HIV-negative sexually active gay and bisexual men (GBM) eligible for publicly funded pre-exposure prophylaxis (PrEP) in New Zealand (NZ) according to Pharmaceutical Management Agency (PHARMAC) criteria, 1 March 2018

LGV, lymphogranuloma venereum

	% HIV-negative sexually active GBM	Measure used in present study, notes and source
PHARMAC criteria		
1. Patient is male or transgender, has sex with men, is likely to have multiple episodes of condomless anal intercourse in the next 3 months and any of the following:		
• one or more episodes of condomless receptive anal intercourse with a casual male partner in the last 3 months	13.4	Any receptive condomless anal intercourse with a casual male partner in the past 6 months; 2014 survey[19]
• diagnosis of rectal chlamydia, rectal gonorrhoea or infectious syphilis in past 3 months	7.3	Diagnosis of gonorrhoea, chlamydia, LGV or syphilis in the past 12 months, any site; 2014 survey[19]
• methamphetamine use in past 3 months	7.4	Methamphetamine use in the past 6 months; 2006 survey[21]
2. Patient has a regular partner with HIV, regular partner is not on HIV treatment or has a detectable viral load, and condoms have not been consistently used	0.33	Any condomless intercourse with a known HIV-positive current regular partner in the past 6 months; 2014 survey[19]
Proportion eligible	17.9	Any of the above criteria[A]

[A]We assumed those reporting the above criteria will be likely to engage in condomless anal intercourse in the next 3 months.

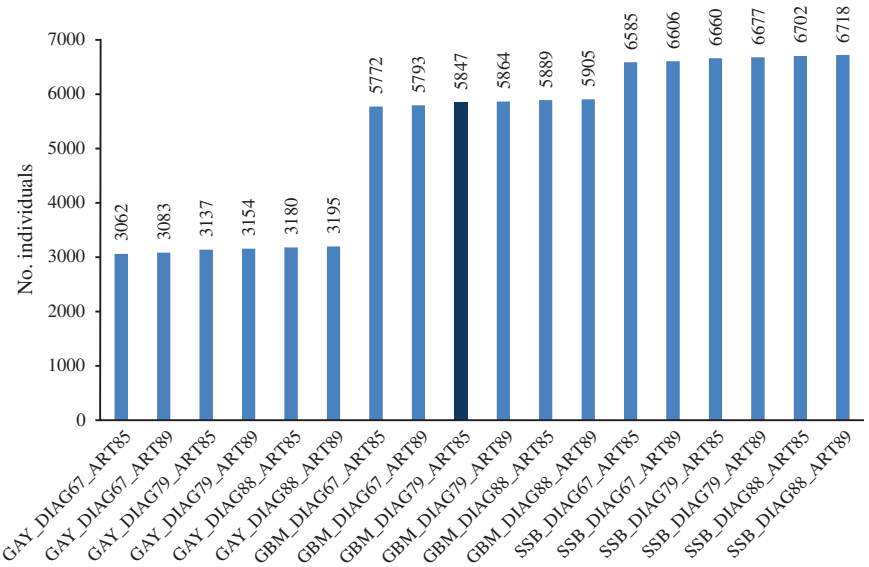

Fig. 1. Estimating the number of individuals eligible for publicly funded pre-exposure prophylaxis (PrEP) in New Zealand by varying the assumptions regarding population denominator, proportion diagnosed with HIV and proportion treated. The dark bar is the summary estimate. GAY, males identifying as gay only; GBM, males identifying as gay or bisexual; SSB, males reporting same-sex behaviour in the past 5 years; DIAG67, 67% estimated people living with HIV (PLWH) are diagnosed; DIAG79, 79% estimated PLWH are diagnosed; DIAG88, 88% estimated PLWH are diagnosed; ART85, 85% of diagnosed PLWH receiving antiretroviral therapy (ART); ART89, 89% of diagnosed PLWH receiving ART.

intercourse and STIs, which were increasing at the time,[18] potentially underestimating current eligibility. We made assumptions about sexual partnering and behaviour among non-GBM PLWH from a 2007 survey, and granular disaggregated data by mode of transmission were unavailable.[20] Estimates of the HIV care cascade (proportion under care, on ART, virally suppressed) rely on Wellington data[16] and are not routinely reported nationally. A major omission is an estimate for eligible transgender adults. In New Zealand, 1.2% of secondary school students reported being transgender,[22] but we were unable to find data for adults and their relevant sexual behaviour. Research addressing these gaps would improve our estimates.

Our New Zealand estimates are based on national publicly funded PrEP criteria, and few other countries had such provisions at the time of writing. In the US, researchers used population surveys to estimate that 1 232 000 individuals had PrEP indications in 2015, including 24.7% of GBM, 18.5% of people who inject drugs and 0.4% of sexually active heterosexual adults without HIV.[23] In New South Wales (NSW), Australia, researchers drew on gay community surveys, nationally representative data on the proportion of males identifying as gay and HIV notification data to estimate that 3700 GBM were at high risk, in order to inform the large Expanded HIV PrEP Implementation in Communities in NSW (EPIC-NSW) PrEP implementation trial.[24] The latter study proposed criteria similar to New Zealand's, but added a further stipulation of 10 or more casual partners in the previous 6 months, and calculated 8.6% of HIV-negative GBM would be eligible for the trial. A review of PrEP demonstration projects from early adopting countries provided five further national estimates, with several citing unpublished expert opinion.[25] In the UK, the 'PrEP Impact' trial investigators estimated 10 000 individuals would be eligible across publicly funded genitourinary medicine (GUM) clinics, citing GUM clinic data simulations.[26] The range of such estimates reflects population size, local HIV epidemiology and associated subgroup estimates, and trial or implementation project eligibility criteria. Estimates commonly relied on sexual behaviour data either from surveys or clinic databases, reinforcing the important role of these sources.

Access to PrEP in New Zealand before public funding was through a demonstration project in Auckland's Sexual Health Clinics (SHC) for 150 participants,[27] or by importing generic medication with a general practitioner's (GP) prescription. Scaling up access to 5847 individuals will require substantial changes to service delivery. Approximately half the GBM in New Zealand live in Auckland,[28] meaning that 2900 patients in that city alone will need screening and 3-monthly follow-up appointments. Barriers include restricted SHC capacity, low GP PrEP awareness and training and research suggesting that half the GBM have not disclosed their sexuality to their GP.[29]

To reach these targets, PrEP education and social marketing will also be needed to raise awareness of PrEP's safety, efficacy, eligibility criteria and to destigmatise PrEP use. This ought to judiciously balance promoting the benefits of PrEP while maintaining community norms for existing effective interventions that protect against HIV and other STIs, such as consistent condom use.

In New Zealand, PrEP became funded in a context of HIV and sexual health sector consensus,[30] but without a

contemporary government HIV strategy or action plan. Models of policy best practice need to be shared internationally, for example the approach of the NSW government.[31] HIV notifications in NSW have declined since implementing large-scale PrEP demonstration projects.[32] Facilitating (indeed, perhaps necessary) factors underlying this success appear to be a bipartisan partnership model[33] and timely sexual health and behavioural surveillance that has been adapted to accommodate PrEP.[34]

In conclusion, there is widespread consensus in New Zealand's HIV sector that intensified HIV prevention efforts are now urgently needed. Targeted uptake of PrEP has been identified as an important component for the HIV epidemic to be reversed, consistent with scientific advances and global recommendations since 2015. Public funding for PrEP is a critical step, and enumeration of the eligible population should help guide the next phase.[35]

Conflicts of interest

The authors declare that they have no conflicts of interest.

Acknowledgements

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Inequities in recent combination HIV prevention use among gay, bisexual, takatāpui and other men who have sex with men

Research Brief

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June 2024

Summary

- A third (36%) of SPOTS participants, who report engaging in anal sex with a casual male partner in the last six months, report that they have not used a personal HIV prevention tool (combination HIV prevention) at least once in that time.
- Determinants of intersectional marginalisation were associated with having not recently used a combination HIV prevention tool, including reporting Māori or Pacific ethnicity, a lower economic situation, and a diverse sexual identity.
- Inequity in uptake is greatest among those reporting their GP to be unaware of their sexuality and a lower level of educational qualification.

Background

Human Immunodeficiency Virus (HIV) has been a persistent epidemic in Aotearoa New Zealand (NZ) for over 40 years.[1] Recently, there has been a focused effort to drive towards zero new HIV transmissions within NZ by 2030.[2]

There have been similar calls to action across OECD countries and globally, driven by the advent of novel biomedical interventions for the prevention of HIV transmission, namely pre-exposure prophylaxis (PrEP) and treatment as prevention (TaSP).

Biomedical interventions are highly effective in the prevention of HIV transmission when taken correctly and consistently among users. However, use of these biomedical prevention tools requires access to and comfort engaging with healthcare services, which is known to be inequitable across population groups.[3-7]

Combination HIV prevention (CHIVP) is a term used to recognise the multiple tools available to prevent the transmission of HIV, these include long-standing prevention tools like condoms, as well as the novel biomedical tools available.

Health inequities and social determinants of health

In 2015, United Nations (UN) collectively committed to addressing inequalities when the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs) was unanimously adopted.[8] These commit Member States to combatting inequalities and vulnerabilities, including discrimination and exclusion.

As a body of the UN, the WHO seeks to implement the SDGs, most notably SDG 3 “Ensure healthy lives and promote well-being for all at all ages” and SDG 10 “Reduce inequalities within and among countries”.

The Global AIDS Strategy 2021–2026 outlines targets that can address both HIV-related inequities and their drivers. In order to address inequities, it is necessary to understand those most affected by HIV within a given context and recognise how these vulnerabilities are created and exacerbated at every step by social and structural drivers.

Despite the availability of HIV prevention tools, local transmission of HIV continues in NZ. By identifying inequities in CHIVP uptake among those most at risk, organisations and the health system more widely can deliver interventions where they are most needed and design more effective health promotion.

Data source

The Sex and Prevention of Transmission Study (SPOTS) survey asks participants about recent sexual behaviours and partnering, use of HIV and STI prevention tools and testing, knowledge and attitudes relating to HIV, and to provide sociodemographic measures. Data fields relevant to this analysis include sociodemographic variables, uptake of HIV and STI prevention tools, and uptake of HIV and STI testing.

Study population

This brief explores inequities in STI testing among a group of participants in the SPOTS Survey 2022. The eligibility criteria for the SPOTS survey included:

1. Aged 16 years or older at recruitment.
2. Men (cis or trans) who identify as gay, bisexual, takatāpui, queer, or have ever had sexual contact with a male.
3. Trans women and non-binary people who have sex with GBM.

The group we are focussing on in this report are those who may be at risk of HIV. The sample is participants who:

1. Report engaging in any anal sex (receptive or insertive) with a casual male partner in the six months prior to survey.

The base sample for the analyses in this brief included 39% (1497/3838) SPOTS participants who met all of the above criteria. Of these participants, 36% (533/1497) reported at least one instance of not recently using CHIVP while engaging in anal sex with a casual male partner(s) in the last six months (termed 'not recently' in the remainder of this report).

Approach

The outcome being explored is not recently using CHIVP. This is defined as the participant reporting at least one instance where they have not personally used any HIV prevention tool (condoms, PrEP, TasP) with a casual male sexual partner.

The proportion who had not tested recently was calculated for a range of subgroups, defined by characteristics that are potential determinants of inequities. A brief description of each determinant is provided in Appendix (see Table 1). These are broadly grouped into three categories:

1. Demographic determinants.
2. Social (structural) determinants.
3. Individual determinants.

For each determinant, we first explore how not recently using CHIVP in the last six months differs between groups and whether this difference is statistically significant. We then explore the size of the difference between the groups, using one group as the reference, and take into account other determinants that may also be associated with not recently using CHIVP in the last six months (e.g. age). This helps us be clearer about the impact of the particular determinant being looked at on CHIVP equity. See the Notes section for more details on this approach.

Please note that the group of people whose data is presented in this brief are only those who reported having engaged in anal sex with casual male partners in the last six months. Inequities in access to prevention tools will also affect overall health equity but are not represented here.

1: Demographic determinants

Age group

Among SPOTS participants who report any anal sex with a casual male partner in the last six months, having not recently used CHIVP is greatest among those who are aged 16-19 years (see Figure 1). It is lowest among those aged 60-69 years. The variation across groups was statistically significant (p<0.001).

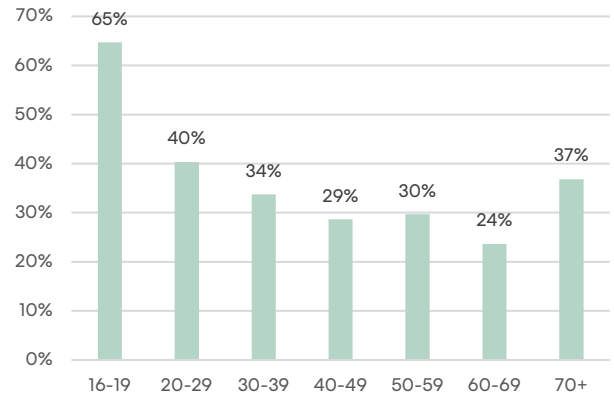

Figure 1. Proportion reporting not recently using CHIVP by age group

Compared to participants aged 20-29 years, having not recently used CHIVP was two thirds more likely among those who were aged 16-19 years.

Sexual identity

Figure 2 shows that participants reporting an identity not included in the groups provided (Other) had the greatest proportions reporting not recently using CHIVP. The difference across groups was statistically significant (p=0.001).

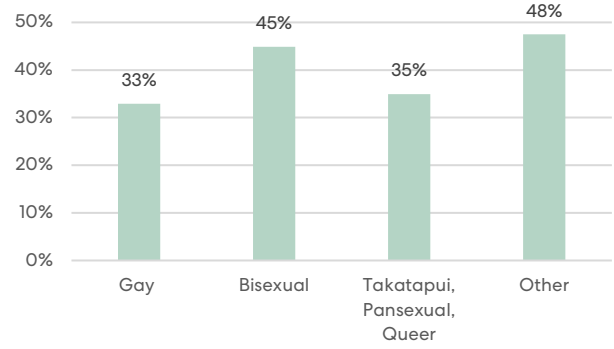

Figure 2. Proportion reporting not recently using CHIVP by sexual identity

Compared to gay identifying participants, “Other” and bisexual identifying participants were two fifths and a third, respectively, more likely to report having not recently used CHIVP. After controlling for age, the greater odds of having not recently tested remained for both groups.

Gender identity

Figure 3 shows that participants identifying as trans men had the greatest proportion not recently using CHIVP. The variation across groups was statistically significant (p=0.021).

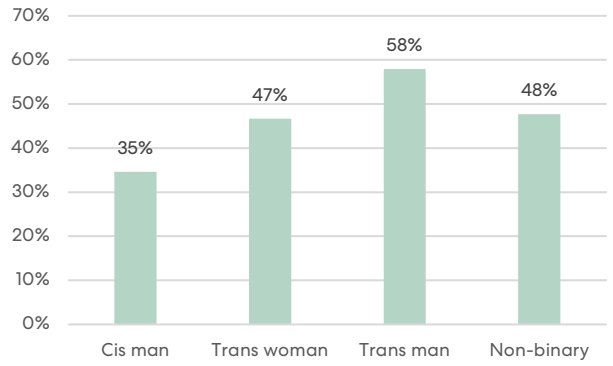

Figure 3. Proportion reporting not recently using CHIVP by gender

Compared to participants reporting a cis male identity (N=1398), trans men were two thirds more likely to report having not recently used CHIVP. However, after controlling for age, no statistically significant difference in odds were found between groups.

Ethnic group (prioritised)

The proportion reporting not recently using CHIVP is greatest among participants identifying as Pacific (N=38) (see Figure 4). It is lowest among those identifying with an ethnicity other than those listed. The variation across groups was statistically significant (p<0.001).

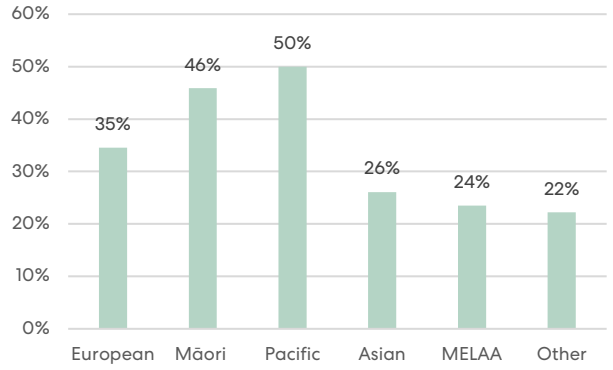

Figure 4. Proportion reporting not recently using CHIVP by ethnicity (prioritised)

Compared to participants identifying as European, those identifying as Māori or Pacific were more likely to report not recently using CHIVP (a third and a half more likely, respectively), while those identifying as Asian were a quarter less likely. The difference in odds for these groups remained after controlling for age and region of residence.

Region

From Figure 5, we can see that those residing in the Auckland region had the lowest proportion reporting having not recently using CHIVP. The variation across groups was statistically significant (p<0.001).

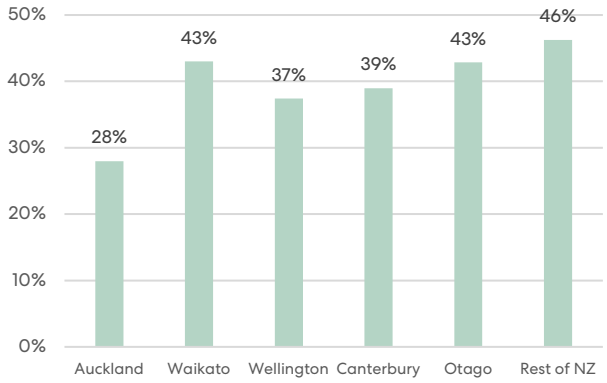

Figure 5 Proportion reporting not recently using CHIVP by region of residence

Compared to participants residing in the Auckland region, those residing in all other regions were more likely to report having not recently used CHIVP. The greater odds for each of the regions remained after controlling for age and ethnicity.

Disability status

Figure 6 shows that the proportion having not recently used CHIVP were similar across the two groups. The variation across groups was not statistically significant.

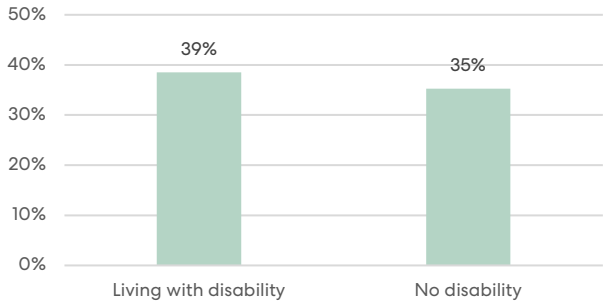

Figure 6. Proportion reporting not recently using CHIVP by disability status

There was no statistically significant difference in odds of reporting not recently using CHIVP between the two groups, which remained after controlling for age and region of residence.

HIV status

Figure 7 shows that participants reporting their last HIV test as having a negative result had the greatest proportion not recently using CHIVP compared to people that reported living with HIV (PLHIV). The variation across groups was statistically significant (p<0.001).

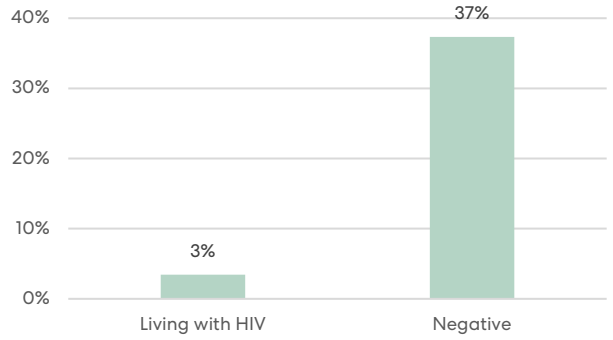

Figure 7. Proportion reporting not recently using CHIVP by HIV status

Compared to PLHIV, those whose last test was negative were close to ten times more likely to report having not recently used CHIVP. The greater odds for this group remained after controlling for age and region of residence.

2: Social determinants

Education level

The greatest proportion having not recently used CHIVP was among those reporting no school qualification (see Figure 8). The proportion was lowest for those reporting a tertiary level qualification. The variation across groups was statistically significant (p<0.001).

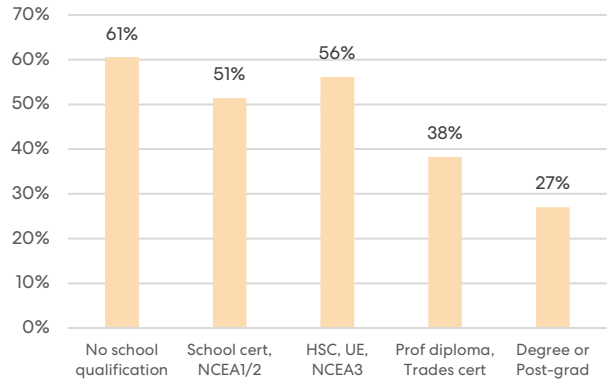

Figure 8. Proportion reporting not recently using CHIVP by highest qualification attained

Compared to those with a tertiary education, all other groups were more likely to report having not recently used CHIVP. The greater odds of not recently using CHIVP remained for these groups after controlling for participants' age.

Employment status

Participants reporting being unemployed had the highest proportion not recently using CHIVP (see Figure 9), while those who are retired (N=41) report the lowest. The variation across groups was statistically significant (p<0.001).

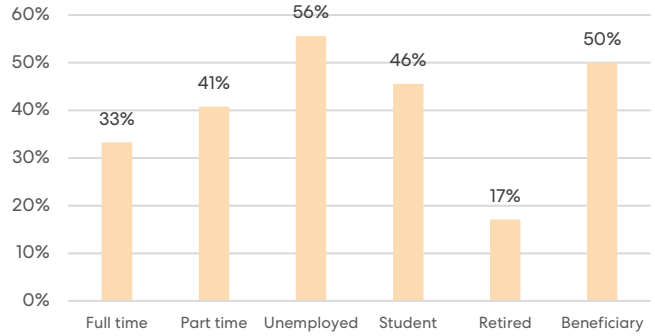

Figure 9. Proportion reporting not recently using CHIVP by employment status

Participants who report unemployment were two thirds more likely to report not recently using CHIVP and those reporting being a beneficiary were half more likely, compared to those in full-time employment, while those who are retired were half as likely. The greater odds for the unemployed and beneficiary groups remained after controlling for participants' age, while the lower odds for the retired group was no longer statistically significant.

Immigration status

Almost 90% of participants (n=1264) reported being an NZ citizen. The proportion of those preferring not to state their visa status (N=11) had the greatest proportion reporting not recently using CHIVP. The difference between groups was statistically significant (p<0.001).

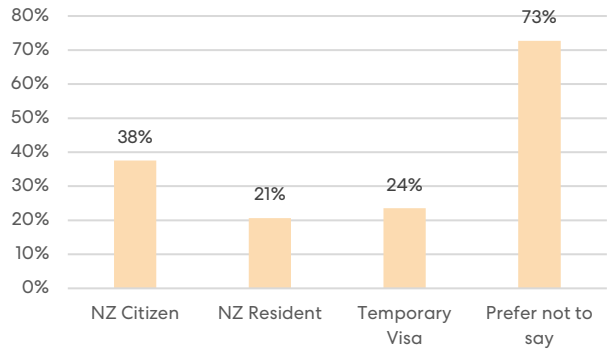

Figure 10. Proportion reporting not recently using CHIVP by immigration status

Participants with residency or a temporary visa were a half and two fifths less likely to report not recently using CHIVP, respectively, compared to those reporting citizenship, while those preferring not to state were close to twice as likely. The difference in odds for each group remained statistically significant after controlling for age and ethnicity.

Economic situation

In Figure 11, we can see that the proportion reporting not recently using CHIVP gradually increases as self-reported economic situation worsens. The variation across groups was statistically significant (p<0.001).

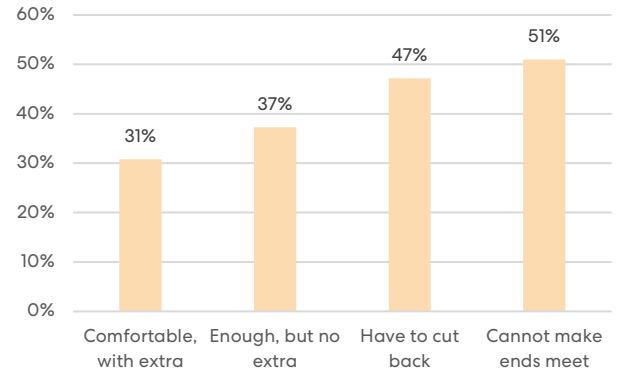

Figure 11. Proportion reporting not recently using CHIVP by economic situation

Compared to those reporting being "comfortable, with extra", those reporting that they "cannot make ends meet" were two thirds more likely to report having not recently used CHIVP and those who report they "have to cut back" were over half more likely. The greater odds of having not used CHIVP among these groups remained after controlling for age.

Free time spent with community

Participants reporting spending none of their free time with community peers had the greatest proportion reporting not recently using CHIVP (see Figure 12). The proportion reporting not recently using CHIVP decreased as time spent with community peers increased. The variation across groups was statistically significant (p=0.006).

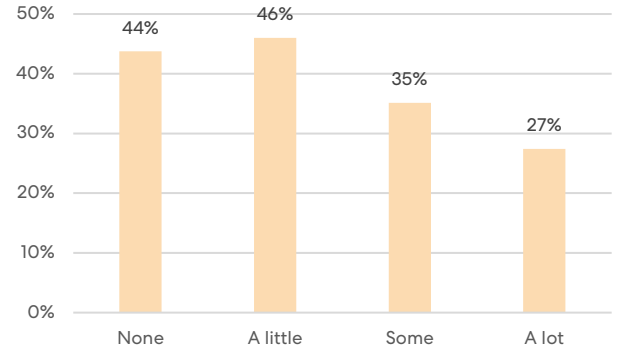

Figure 12. Proportion reporting not recently using CHIVP by time spent with community peers

Compared to those who spent a lot of free time with community peers, the remaining groups were more likely to report having not used CHIVP, which remained after controlling for age.

Housing situation

Figure 13 shows that participants reporting being homeless (N=3) or living in a "family home" had the greatest proportion of not recently using CHIVP. The variation across groups was statistically significant (p<0.001).

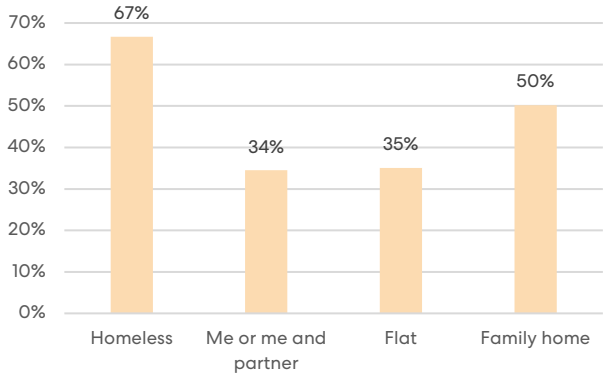

Figure 13. Proportion reporting not recently using CHIVP by housing situation

Those reporting being homeless were nearly twice as likely to report not using CHIVP compared to those reporting living alone or with their partner, while those in a family home were half more likely. After controlling for age, the greater odds of having not used CHIVP remained for those in a family home but was no longer significant for the homeless group.

3: Individual determinants

Number of male sexual partners

Participants reporting ten or fewer male sex partners in the previous six months had a greater proportion reporting not recently using CHIVP (see Figure 14). The variation across groups was statistically significant (p=<0.001).

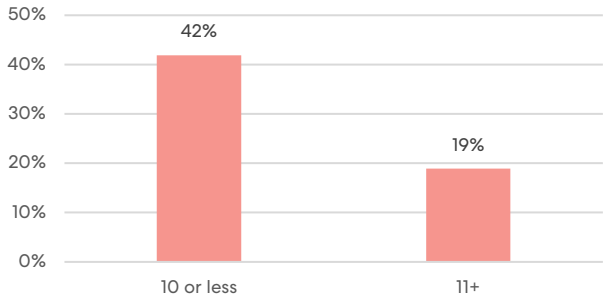

Figure 14. Proportion reporting not recently using CHIVP by number of male sex partners in the previous six months

Participants with ten of fewer partners were one and a quarter more likely to report having not recently used CHIVP. The greater odds for this group remained after controlling for age.

Type of male sexual partners

Not recently using CHIVP was greatest among those participants reporting only casual sexual partners (see Figure 15). The variation across groups was statistically significant (p=0.003).

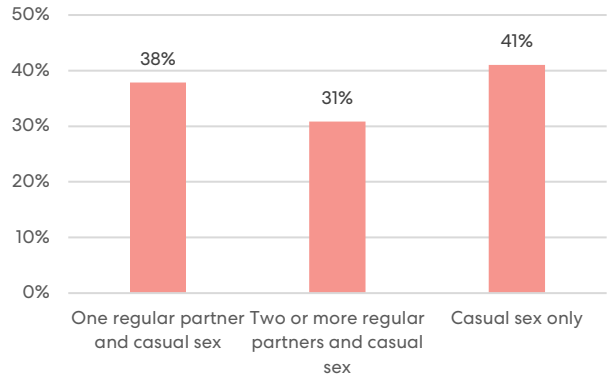

Figure 15. Proportion reporting not recently using CHIVP by type(s) of male sex partner(s) in the previous six months

Compared to those reporting one "regular" partner and casual partner(s), those with two or more regular partners and also reporting casual sexual partners were a fifth less likely to report having not used CHIVP. The lower odds remained for this group after controlling for age.

Engagement with commercial sex work

Participants reporting paying or having been paid for sex have a higher proportion also reporting not recently using CHIVP (see Figure 16). The variation across groups was statistically significant (p=0.003).

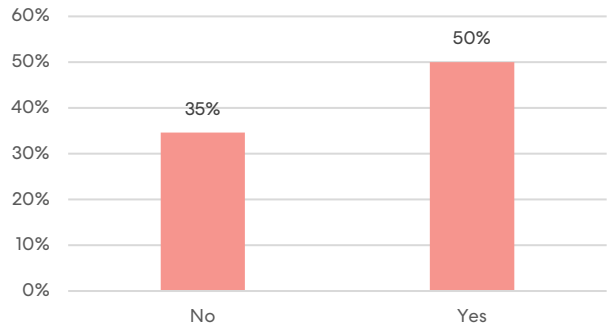

Figure 16 Proportion reporting not recently using CHIVP by engagement with commercial sex work

Participants who had paid or been paid for sex were two fifths more likely to report having not recently used CHIVP comapred to those who had not. The greater odds of having not used CHIVP for this group remained after controlling for age and number of male sex partners.

Reported drug use

Figure 17 indicates the proportion of participants reporting not recently using CHIVP is similar among those reporting recent drug use and those who have not. The variation between groups was not statistically significant.

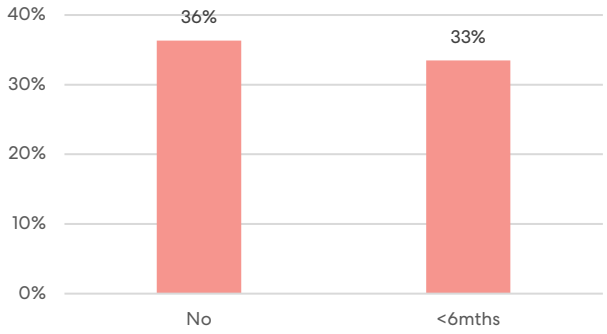

Figure 17. Proportion reporting not recently using CHIVP by drug use in last six months

Compared to those who report no drug use, the lower odds of reporting having not used CHIVP among those reporting recent drug use was not statistically significant, which remained after controlling for age.

Experience of discrimination in healthcare

Figure 18 shows that the proportion of participants reporting having not recently used CHIVP is lowest among those who have ever experienced discrimination when accessing healthcare. The variation across groups was statistically significant (p<0.001).

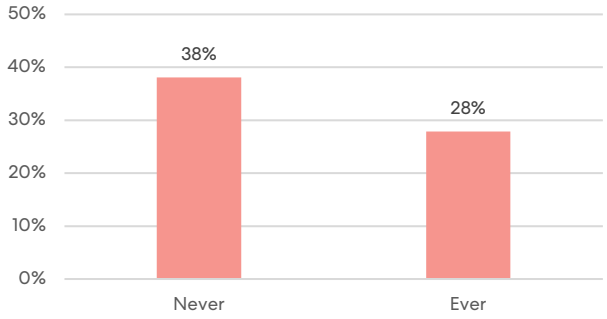

Figure 18. Proportion reporting not recently using CHIVP by experience of discrimination in healthcare relating to sexuality

Participants who have ever experienced discrimination were a quarter less likely to report not recently using CHIVP compared to those who had not experienced discrimination. The lower odds of having not recently used CHIVP among this group remained after controlling for age.

Discomfort discussing sexuality with GP

Those participants reporting being uncomfortable discussing sexuality with a GP had the greatest proportion reporting not recently using CHIVP (see Figure 19). The variation across groups was statistically significant (p<0.001).

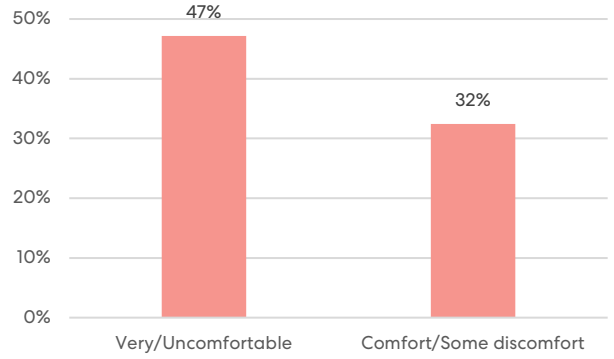

Figure 19. Proportion reporting not recently using CHIVP by comfort discussing sexuality with GP

Compared to those who report being comfortable, those who report discomfort were almost half more likely to report having not recently used CHIVP. The greater odds for this group remained after controlling for age.

Believe GP aware of sexuality

Those participants reporting that their GP is not aware of their sexuality had the greatest proportion reporting not recently using CHIVP (see Figure 20). The variation across groups was statistically significant (p<0.001).

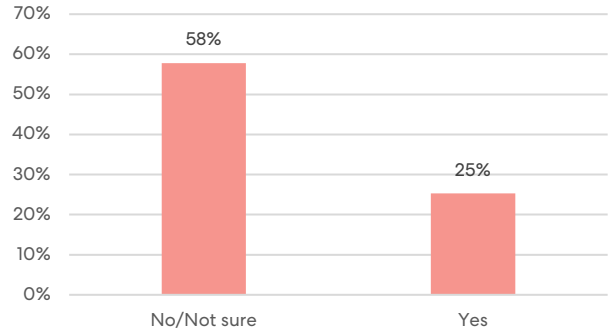

Figure 20. Proportion reporting not recently using CHIVP by belief that GP I aware of participant's sexual orientation

Those who believed their GP to b unaware of their sexuality were one and a quarter times more likely to report having not recently used CHIVP compared to those who believed their GP to be aware. The greater odds for this group remained after controlling for age and comfort discussing sexuality with their GP.

Knowledge of HIV-related questions

Figure 21 shows that participants who reported not knowing at least one of the three HIV-related knowledge statements had the greatest proportion having not recently used CHIVP. The variation across groups was statistically significant (p<0.001).

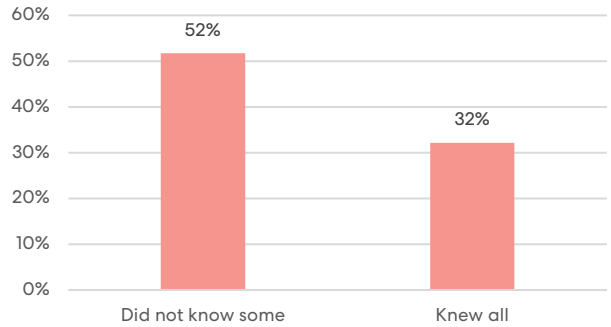

Figure 21. Proportion reporting not recently using CHIVP by knowledge of HIV-related survey statements

Compared to those who knew all three statements, those who did not know at least one were close to two thirds more likely to report having not used CHIVP recently. The greater odds of having not used CHIVP remained for this group after controlling for age.

Discussion

Among SPOTS participants who report any anal sex with a casual male partner in the last six months, those reporting any of the following determinants were associated with reporting not using CHIVP with a casual male partner at least once in the previous six months.

- Identifying as bisexual or an "Other" sexual identity.
- Identifying as Māori or Pacific ethnicity.
- Residing outside of the Auckland region.
- Reporting a negative HIV result at last test.
- Reporting no school qualification or any qualification lower than a tertiary degree.
- Reporting being unemployed or a beneficiary.
- Reporting having to "cut back" or "cannot make ends meet" for their financial situation.
- Spending anything less than "a lot" of free time with community peers.
- Living in a "family" home situation.
- Reporting 10 or fewer male sexual partners in the past six months.
- Ever paying or having been paid for sex.
- Discomfort discussing sexuality with a GP.
- Belief that GP is unaware of sexuality.
- Not knowing at least one HIV-related knowledge statement.

Collectively, these begin to paint a picture of participants who may be experiencing intersectional marginalisation within an already marginalised group. They include a mix of the different types of drivers explored in the UNAIDS framework—including social, structural, health system and services—along with individual participant demographics and behaviours.[9]

Recommendations

What can we reasonably target to improve uptake of combination HIV prevention tools among this population?

1. **Improve culturally appropriate promotion of HIV prevention tools.** Continuing to work with Māori and Pacific communities to improve promotion of HIV prevention tools and access pathways that are culturally safe and appropriate.
2. **Improve the inclusivity of HIV prevention promotion.** Consider targeted promotion to those with diverse sexual identities.
3. **Improve comfort with healthcare.** There are two options here, first is to improve the system to provide culturally appropriate care for rainbow communities. Secondly, to improve the individual's comfort with disclosing sexuality in healthcare and why this might be relevant.
4. **Improve connection to community.** Novel models for enhancing community connections and utilising those that already exist could be explored.

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Notes

- Variables for the analyses were chosen based on the UNAIDS list of social determinants of health).[9]
- Bivariate analyses were conducted for each determinant of health and the outcome variable. Pearson's chi-squared test was used to determine the significance of variation between groups. However, where participant numbers in a single group were below ten, Fisher's exact test was used.
- Where bivariate analyses resulted in a crosstabulation containing a group combination with zero participants, the variable groups were collapsed in a meaningful way until this was no longer the case.
- Logistic regression was used to explore which groups within each determinant were independently associated with non-recent STI testing.
    - Participants' age was included in each logistic model as a potential confounding variable.
    - Where a potential determinant was regarding healthcare access or populations who may require more interaction healthcare services (living with a disability, PLHIV), region of residence was included as a potential confounding variable as healthcare services are not distributed equally across the country.
    - Region of residence was also included as a confounding variable in the model for ethnicity as Census data indicated that ethnic groups are not equally distributed across the country. Equally, ethnicity was considered in the model for region of residence.
    - Both age and ethnicity were controlled for in the model exploring visa status.
- Reference groups for statistical analyses were chosen based on the group with the greatest number of respondents or where it was hypothesis driven.

Acknowledgements

- Funding for the 2022 round was received from the Ministry of Health and Health Research Council of NZ
- The 2022 round was led by the Gay Men's Sexual Health research group at the School of Population Health, University of Auckland in partnership with the AIDS Epidemiology Group at the University of Otago, Burnett Foundation Aotearoa, Body Positive, Te Whāriki Takapou and the NZ Blood Service
- Author affiliations for this research brief: University of Auckland (Saxton P, Ludlam A, Paynter J, Sriamporn KT, Ritchie S), University of Otago (McAllister S, Priest P), Burnett Foundation Aotearoa (Haunui K, Leakey C, Hollingshead B, Rich J), Body Positive (Fisher M)
- We would like to thank all participants, without whom this programme would not be possible.

Appendix

Table 1: Description of available SPOTS variables that correlate to determinants of health.

Determinant	Grouping	Description of variable(s)
Age	Demographic	Participant's age at time of survey. Grouped by decade.
Sexual Identity	Demographic	Participant's self-reported sexual identity. Multiple identities could be selected. A prioritisation system was used, with "gay" being the lowest/last to be prioritised during variable construction.
Gender identity	Demographic	Constructed based on participant's reported current gender, sex assigned at birth, and current identity. For greater detail, see the SPOTS Report 1.2 Basic Frequencies Tables. The groupings are as follows: 1. Cis Man: combines cisMSM and cisGBM 2. Trans Woman: combines transWSexMlast5, transWPNSabSexMlast5 3. Trans Man: combines transMSM, transMNoSexM 4. Non-binary: combines nonBMabSM, nonBFabSexMlast5, nonBMabNoSM, nonBPNSabSexMlast5
Ethnicity	Demographic	Participant's self-reported ethnic identity. Multiple identities could be selected. A prioritisation system was used in line with the StatsNZ prioritisation standard.
Geography	Demographic	Participant's region of residence. Only one region could be selected. For the analyses, the regions with the largest populations were separated and the remaining grouped.
Disability	Demographic	Participant's self-selected disability status.
HIV status	Demographic	Participant's self-selected HIV status. For those who report not living with HIV, this is also inclusive of the result of their last HIV test.
Education	Social	Participant's highest level of educational qualification achieved.
Employment	Social	Participant's self-reported employment status. Only a single option could be selected.
Housing	Social	Participants were asked about other people who lived in their place of residence. Multiple options could be selected. Groupings were created based on these using a prioritisation process, with "myself" or "my partner" being lowest/last priority.
Wealth	Social	Participant's self-reported economic situation. Only a single option could be selected.

Migration	Social	Participant's self-reported migration or visa status. Only a single option could be selected.
Behaviours	Individual	Three behavioural questions were included in the analyses. 1. The number of male sex partners the participant has had in the previous six months. Grouped as 10 or less and 11+. 2. Use of drugs during sex or reported injecting drug use in the last 12 months. Grouped as ever (at least one) or never (none). 3. Participant's engagement with commercial sex work. Participants were asked if they had ever paid for sex and if they had ever been paid for sex as separate questions. If a participant had answered yes to either, they were grouped as "ever" and if they reported no to both questions they were grouped as "never".
Knowledge	Individual	Three HIV-related knowledge statements were provided and respondent's self-reported whether they "knew" the statement to be true or if they were unaware. If respondents reported "I knew this" to all three statements, they were grouped as "knew all". If they reported not knowing or being unsure of at least one statement, they were grouped as "Did not know/Unsure". Statements included: 1. Condoms are the most effective tool to prevent both HIV and stis. 2. Being on HIV treatments, reaching and maintaining an undetectable viral load (UVL) means that someone living with HIV cannot pass on HIV to their sexual partners. 3. PrEP (Pre-Exposure Prophylaxis) is a pill that can be used by someone who is HIV-negative to significantly decrease their risk of acquiring HIV, if taken as prescribed.
Discrimination	Individual	Participant's self-reported experience of discrimination due to their sexuality in healthcare.
Community attachment	Individual	Participant's self-reported amount of free time spent with community peers (LGBTIQ+). Only a single option could be selected.

Inequities in HIV testing uptake among gay, bisexual, takatāpui and other men who have sex with men reporting recent casual sex without HIV prevention coverage

Research Brief

Ludlam A, Priest P, McAllister S, Paynter J, Haunui K, Sriamporn KT, Leakey C, Hollingshead B, Fisher M, Ritchie S, Rich J, Saxton P.

May 2024

Summary

- About a third (31%) of gay, bisexual, and other men who have sex with men (GBM) with a recent potential HIV exposure report that they have not tested recently for HIV.
- Drivers of inequitable recent HIV testing uptake include determinants indicating intersectional marginalisation, such as reporting Māori ethnicity, non-binary gender, and no free time spent with community peers.
- Inequity is greatest among those reporting a lower level of HIV-related knowledge and belief their GP is unaware of their sexuality.

Background

Human Immunodeficiency Virus (HIV) has been a persistent epidemic in Aotearoa New Zealand (NZ) for over 40 years.[1] Recently, there has been a focused effort to drive towards zero new HIV transmissions within NZ by 2030.[2]

There have been similar calls to action across OECD countries driven by the advent of novel biomedical interventions for the prevention of HIV transmission, namely pre-exposure prophylaxis (PrEP) and treatment as prevention (TaSP).

Biomedical interventions are highly effective in the prevention of HIV transmission when taken correctly and consistently among users. For groups at elevated risk of HIV who are not using PrEP or condoms, testing regularly for HIV is important, in order to minimise the time spent with undiagnosed infection. However, uptake of testing tools has required access to and comfort engaging with healthcare services, which is known to be inequitable for across population groups.[3-7]

HIV health inequality is defined in the Global AIDS Strategy 2021–2026 as being:

"An imbalance or lack of equity . . . [that] encompasses the many inequities . . . Disparities and gaps in HIV vulnerability, service uptake and outcomes experienced in diverse settings and among the many populations living with or affected by HIV."

Health inequities and social determinants of health

The Global AIDS Strategy 2021–2026 outlines targets that can address both HIV-related inequities and their drivers. In order to address inequities, it is necessary to understand those most affected by HIV within a given context and recognise how these vulnerabilities are created and exacerbated at every step by social and structural drivers.

Despite the wide availability of HIV testing tools, local transmission of HIV continues in NZ. This implies that many individuals are living with HIV that is undiagnosed and untreated, and are not using some form of prevention such as condoms or PrEP. By identifying inequities in HIV testing uptake among those most at risk, health systems and organisations can target interventions where they are most needed and design more effective health promotion.

Data source

The Sex and Prevention of Transmission Study (SPOTS) survey asks participants about recent sexual behaviours and partnering, use of HIV and STI prevention tools and testing, knowledge and attitudes relating to HIV, and to provide sociodemographic measures. Data fields relevant to this analysis include sociodemographic variables, uptake of HIV and STI prevention tools, and uptake of HIV and STI testing.

Study population

For this brief, we are using data from the SPOTS Survey 2022. The eligibility criteria for the SPOTS survey included:

1. Aged 16 years or older at recruitment.
2. Men (cis or trans) who identify as gay or bisexual, takatāpui or queer, or have ever had sexual contact with a male.
3. Trans women and non-binary people who have sex with GBM.

The group we are focussing on in this report are those who may be at elevated risk of HIV. Therefore, the analyses are limited to SPOTS participants who:

1. Do not report living with HIV.
2. Report engaging in any condomless anal sex with casual male partners in the previous six months.
3. Do not report any PrEP use in the previous six months.

In other words, the base sample for this analysis is non-HIV positive participants who have recently engaged in condomless anal intercourse without PrEP. The sample for the analyses in this brief included 14% (551/3838) of SPOTS participants who met all of the above criteria. Of these participants, 31% (173/551) reported not recently testing for HIV (termed 'not recently' in the remainder of this report).

Approach

In these analyses, the outcome being explored is not having testing recently for HIV among participants with a recent potential HIV exposure. This is defined as the participant reporting that they have not tested for HIV in the last 12 months, including those who report never having tested for HIV.

The proportion who had not tested recently was calculated for a range of subgroups, defined by characteristics that are potential determinants of inequities. A brief description of each determinant is provided in Appendix (see Table 1). These are grouped into three categories:

1. Demographic drivers.
2. Social (structural) drivers.
3. Individual drivers.

For each determinant, we first explore how not having tested for HIV recently differs across groups and whether the pattern across groups was statistically significant. We then explore the size of the difference between the groups, using one group as the reference, and take into account other factors that may also be associated with non-recent HIV testing (e.g. age). This helps us be clearer about the impact of the particular determinant being looked at on testing equity. See the Notes section for more details on this approach.

Please note that the group of people whose data is presented in this brief are those who have been sexually active but are not using personal HIV prevention tools. Inequities in access to these prevention tools will also affect overall health equity but are not represented here.

1: Demographic drivers

Age group

Of SPOTS participants who were not using HIV prevention tools and report any anal sex with a casual male partner in the last six month, the proportion who had not tested recently for HIV, varied significantly across age groups ($p<0.001$) (see Figure 1). It was lowest among those aged 30-39 years and is highest among those aged 16-19 years.

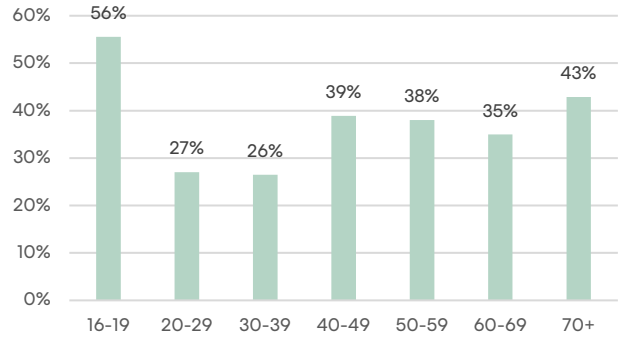

Figure 1. Proportion reporting not recently testing for HIV by age group

Sexual identity

Figure 2 shows that there is little difference in the proportion who report not having tested recently across groups split by sexual identity, with no statistically significance difference found across groups.

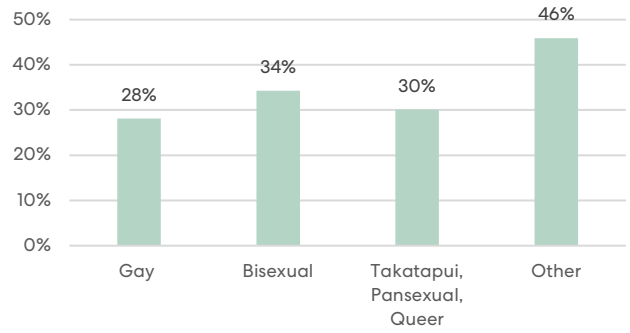

Figure 2. Proportion reporting not recently testing for HIV by sexual identity

Compared to participants identifying as gay, those with identities not included in the groups provided (Other) were close to two thirds more likely to report not recently testing. The great odds of reporting not having tested recently among this group remained after controlling for participants' age.

Gender identity

Participants identifying as non-binary had the greatest proportion reporting having not tested recently for HIV (see Figure 3). It is lowest among those identifying as a trans man. The variation across groups was statistically significant (p=0.040).

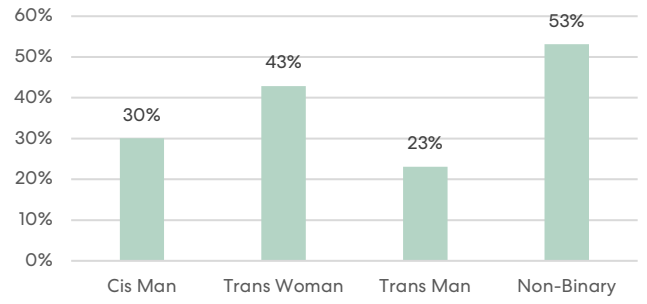

Figure 3. Proportion reporting not recently testing for HIV by gender identity

Non-binary identifying participants were over three quarters more likely to report having not recently tested for HIV compared to those identifying as cis male. After controlling for age, the greater odds of not recently testing among this group remained.

Ethnic group (prioritised)

The highest proportion reporting not testing recently was greatest among those identifying as Māori (see Figure 4). It was lowest among those reporting a Middle Eastern, Latin American or African (MELAA) ethnicity (N=8). The variation across groups was statistically significant (p=0.041).

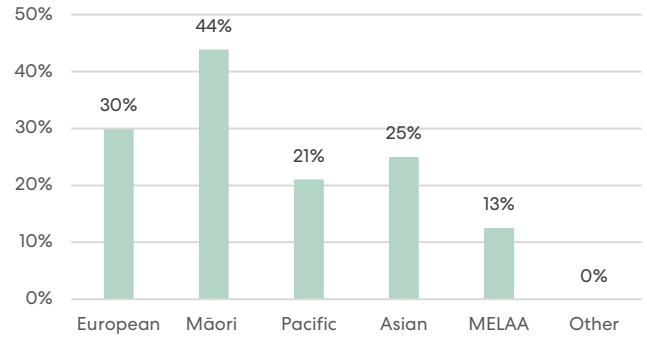

Figure 4. Proportion reporting not recently testing for HIV by ethnicity (prioritised)

Compared to participants selecting a European ethnicity, those identifying as Māori were a half more likely to report not testing recently. The greater odds of reporting not recently testing for Māori remained after controlling for age and region of residence.

Region

In Figure 5, we can see that those residing in the Waikato region had the greatest proportion not recently testing for HIV, while the proportion was lowest among those in the Canterbury region. However, the variation across groups was not statistically significant.

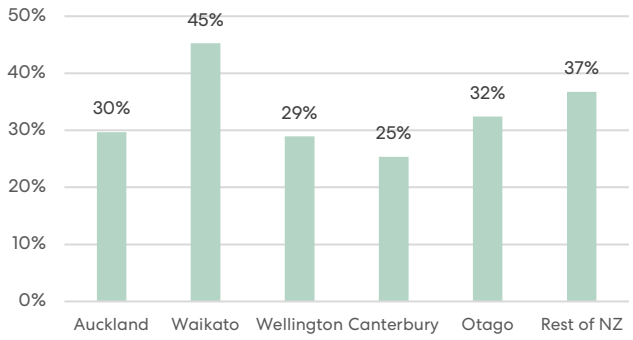

Figure 5. Proportion reporting not recently testing for HIV by region of residence

Participants residing in the Waikato region were a half more likely to report not recently testing compared to those residing in Auckland. After controlling for participants' age and ethnicity, those residing in the Waikato had greater odds of reporting not recently testing compared to those residing in Auckland.

Disability status

Figure 6 shows that participants reporting living with disability had the highest proportion reporting not recently testing. The variation across groups was not statistically significant.

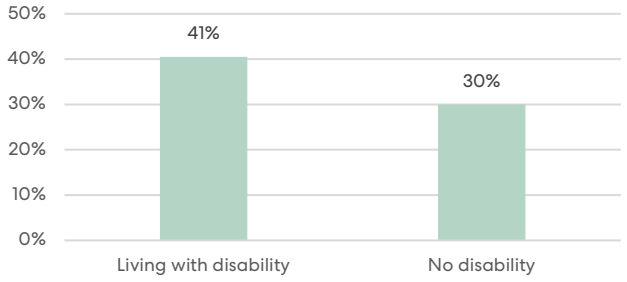

Figure 6. Proportion reporting not recently testing for HIV by disability status

Participants living with a disability were two fifths more likely to report not recently testing compared to those reporting no disability. There was no statistically significant difference in odds between the two groups, which remained after controlling for age and region of residence.

2: Social drivers

Education level

Not recently testing for HIV was greatest among those reporting no school qualification (see Figure 7). The proportion gradually decreased as the highest level of education achieved increased. The variation across groups was statistically significant (p=0.024).

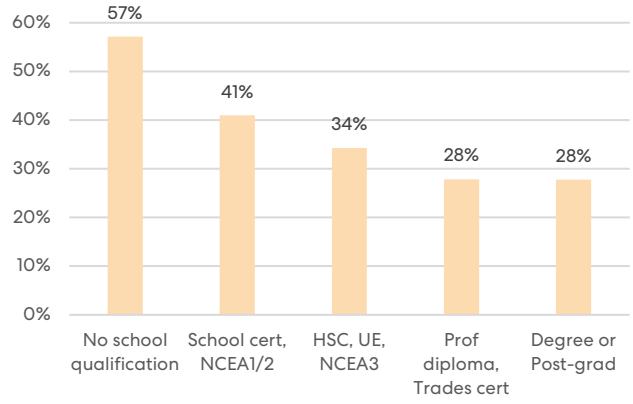

Figure 7. Proportion reporting not recently testing for HIV by highest qualification attained

Compared to participants that report a tertiary level degree, those with no school qualification twice as likely to report not recently testing for HIV, while those with an NCEA one/two or equivalent were a half more likely. The greater odds of reporting not recently testing remained for these groups after controlling for participants' age.

Employment status

Participants in full-time employment had the lowest proportion reporting not recently testing for HIV (see Figure 8). The proportions were similar for the remaining groups. The variation across groups is not statistically significant.

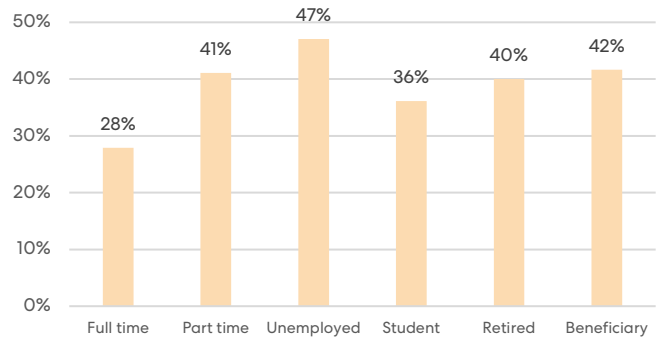

Figure 8. Proportion reporting not recently testing for HIV by employment status

Compared to those in full-time employment, those in part-time employment were a half more likely to report not recently testing. The greater odds among this group remained after controlling for age.

Immigration status

Almost 90% of participants (N=491) reported being an NZ citizen. There were few numbers of participants in the remaining categories, limiting the utility of statistical tests.

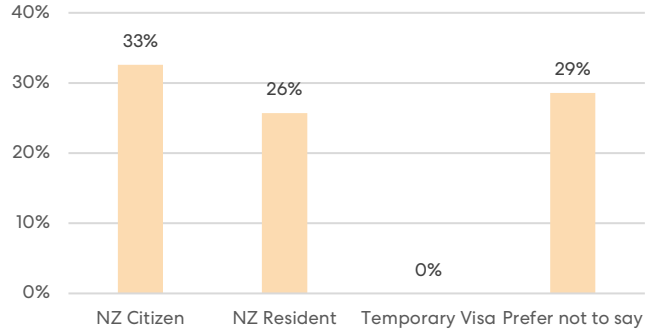

Figure 9. Proportion reporting not recently testing for HIV by immigration status

Calculation of odds ratios were not conducted for this determinant due to the limited number of participants in some groups.

Economic situation

In Figure 10, we can see that across the groups, the proportion of those reporting not recently testing for HIV was similar, with the variation across groups was not statistically significant.

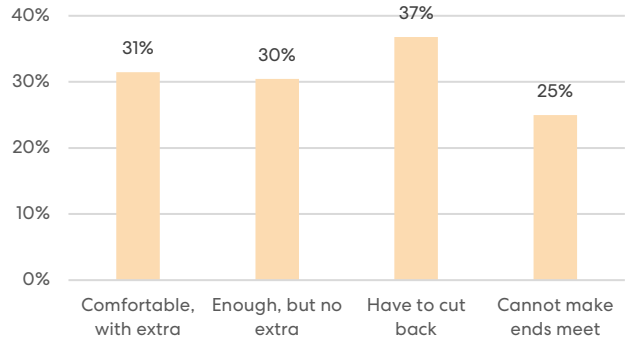

Figure 10. Proportion reporting not recently testing for HIV by economic situation

Those reporting not being able to make ends meet were a fifth less likely to report not recent testing compared to those who reported being comfortable with extra. There were no statistically significant differences in odds of not having recently tested compared to those who reported being comfortable with extra across the groups. The lack of statistical significance remained after controlling for age.

Free time spent with community

Participants reporting spending none of their free time with community peers had the greatest proportion reporting not recently testing for HIV (see Figure 11). The proportion reporting not recently testing for HIV decreased as time spent with community peers increased. The variation across groups was statistically significant ($p<0.001$).

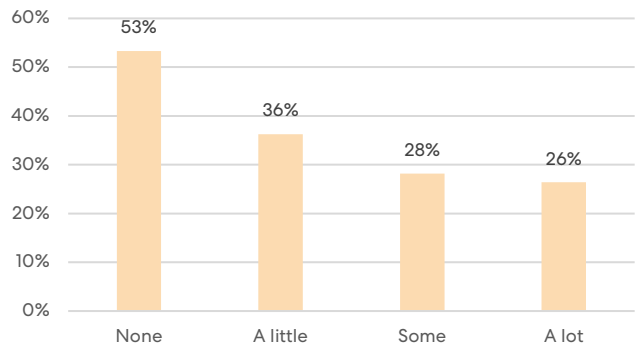

Figure 11. Proportion reporting not recently testing for HIV by time spent with community peers

Those spending no free time with community peers were twice as likely to report not recently testing for HIV compared to those who spent a lot of time. The greater odd for this group remained after controlling for age.

Housing situation

Figure 12 shows that participants reporting being homeless (N=2) or living in a family home had the greatest proportions of not recently testing for HIV. However, the variation across groups was not statistically significant.

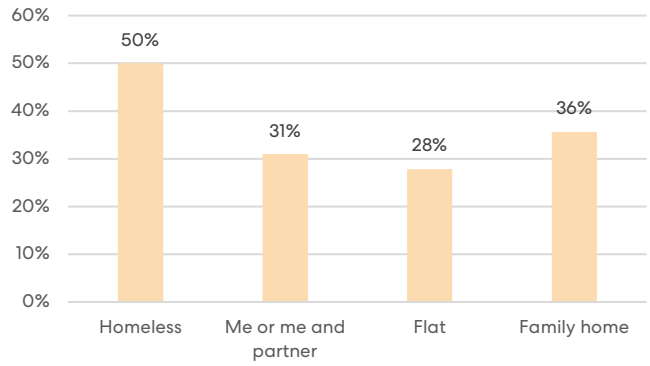

Figure 12. Proportion reporting not recently testing for HIV by housing situation

Compared to those who report living alone or with a partner, those reporting being homeless were nearly two thirds more likely to report not having tested recently. There were no statistically significant differences in odd found between groups.

3: Individual drivers

Number of male sexual partners

Participants reporting ten or fewer male sex partners in the previous six months had the greatest proportion reporting not recently testing for HIV (see Figure 13). However, the variation across groups was not statistically significant.

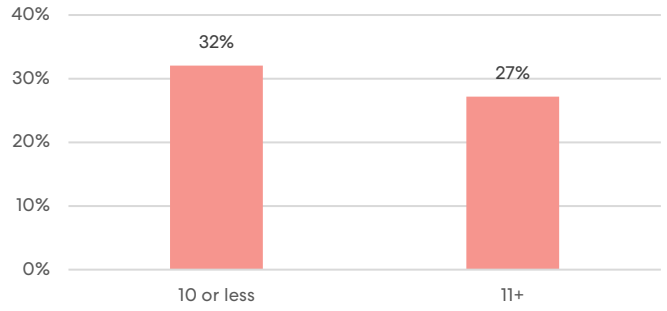

Figure 13. Proportion reporting not recently testing for HIV by number of male sex partners in the previous six months

There was no statistically significant difference in reporting not recently testing for HIV between the groups, which remained after controlling for age.

Engagement with commercial sex work

Those participants that reported ever paying or being paid for sex had the greatest proportion reporting not recently testing for HIV (see Figure 14). The variation across groups was not statistically significant.

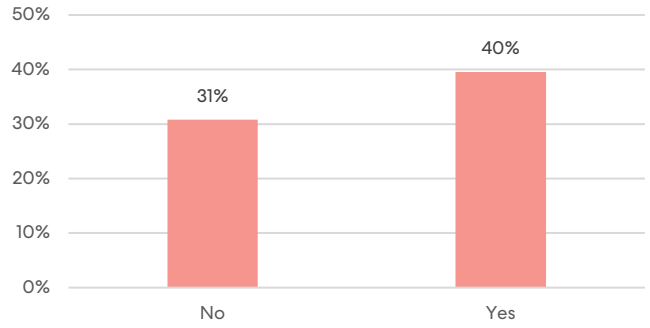

Figure 14. Proportion reporting not recently testing for HIV by engagement with commercial sex work in last six months

Compared to participant who had never paid or been paid for sex, those who had were over a quarter more likely to report not recently testing. No statistically significant difference in odds of not recently testing were found between groups, which remained after controlling for age.

Reported drug use

Figure 15 indicates the proportion of participants reporting not recently testing for HIV was similar across the two groups. The variation across groups was not statistically significant.

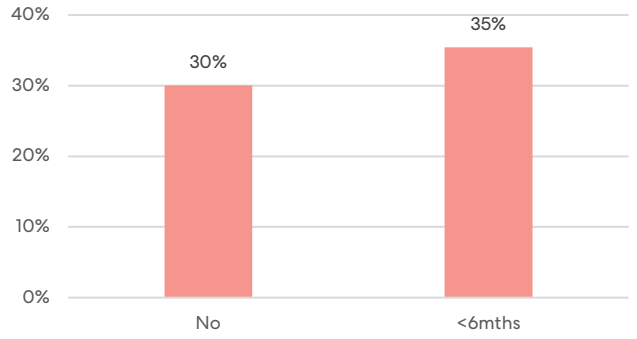

Figure 15. Proportion reporting not recently testing for HIV by drug use in last six months

No difference in odds of not recently testing for HIV was found between the two grpups, which remained after controlling for age.

Experience of discrimination in healthcare

Figure 16 shows that the proportion of participants reporting not recently testing for HIV was similar across the two groups. The variation across groups was not statistically significant.

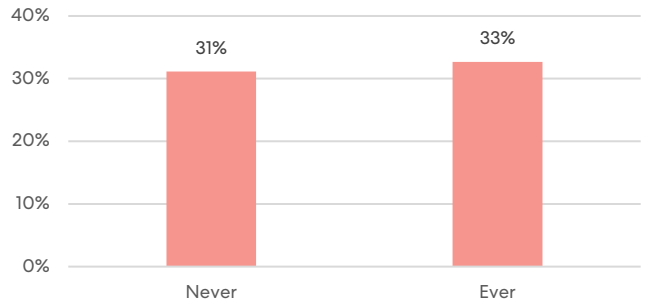

Figure 16. Proportion reporting not recently testing for HIV by experience of discrimination in healthcare relating to sexuality

No difference in odds of not recently testing for HIV was found between the two groups, which remained after controlling for participants' age.

Discomfort discussing sexuality with GP

Participants reporting being uncomfortable discussing sexuality with a general practitioner (GP) had the highest proportion reporting not recently testing for HIV (see Figure 17). The variation across the groups was statistically significant (p<0.001).

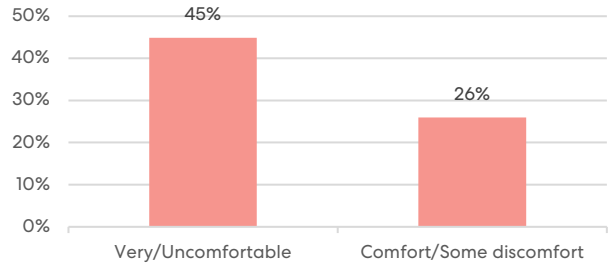

Figure 17. Proportion reporting not recently testing for HIV by comfort discussing sexuality with GP

Compared to participants who were comfortable, those who were not were close to twice as likely to report not recently testing for HIV. The greater odds of reporting not recently testing remained after controlling for age.

Believe GP aware of sexuality

Participants reporting that they believe their GP is unaware of their sexuality had a greater proportion who also reported not recently testing for HIV (see Figure 18). The variation across groups was statistically significant (p<0.001).

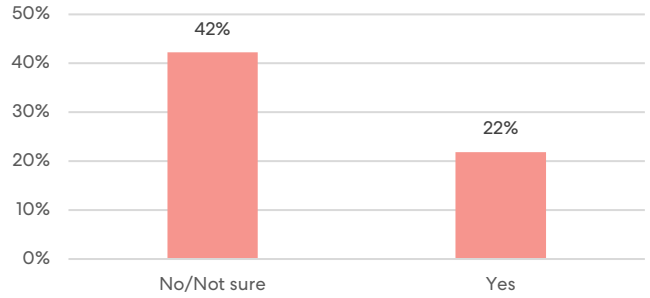

Figure 18. Proportion reporting not recently testing for HIV by belief that GP is aware of participant's sexual orientation

Those reporting that their GP was unaware of their sexuality were close to twice as likely to report having not recently testing compared to those who believed their GP was aware of their sexuality. The greater odds of reporting having not recently tested remained for this group after controlling for age and comfort discussing their sexuality with their GP.

Knowledge of HIV-related statements

Figure 19 shows that participants who reported knowing all three HIV-related knowledge statements had the lowest proportion having not recently testing for HIV. The variation across groups was statistically significant (p<0.001).

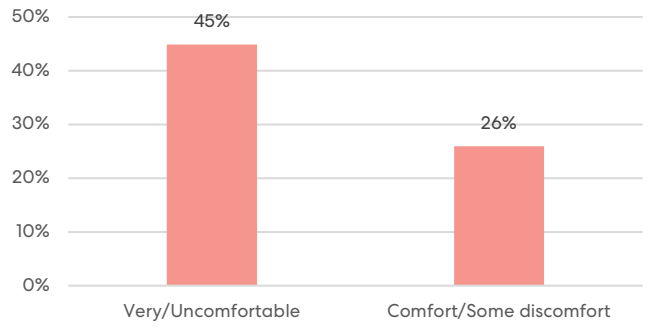

Figure 19. Proportion reporting not recently testing for HIV by knowledge of HIV-related survey statements

Compared to participants that reported knowing all three statements, those who did know at least one were twice as likely to report having not tested recently for HIV. The greater odds of having not recently tested among this group remained after controlling for age.

Discussion

Among SPOTS participants who reported recent behaviour that places them at risk of HIV, those reporting any of the following drivers were found to report less testing for HIV in the last 12 months.

- Report a sexual identity other than gay, bisexual, takatāpui, pansexual or queer.
- Reporting a non-binary gender identity.
- Residing in the Waikato region.
- Identifying as Māori ethnicity.
- A lower level of or no educational qualification.
- Being in part-time employment.
- No time spent with community peers.
- Lower HIV-related knowledge.
- Discomfort discussing sexuality with a GP.
- Belief that GP is unaware of sexuality.

Collectively, these begin to paint a picture of participants who may be experiencing intersectional marginalisation within an already marginalised group. They include a mix of the different types of determinants explored in the UNAIDS framework—including social, structural, health system and services—along with individual participant demographics and behaviours.[8]

Recommendations

What can we reasonably target to improve timeliness of testing among this population?

1. **Improve culturally appropriate HIV testing.** Continuing to work with Māori communities to improve HIV testing options and access that are culturally safe and appropriate.
2. **Improve the inclusivity of HIV testing options and promotion.** Those with diverse gender and sexual identities need representation and access to HIV testing options that are safe and appropriate.
3. **Improve basic knowledge of HIV**. This is the "why" behind the ask to get tested. Each generation has to be taught again.
4. **Improve comfort with healthcare**. There are three options here, first is to improve the system to provide culturally appropriate care for rainbow communities. Secondly, to improve the individual's comfort with disclosing sexuality in healthcare and why this might be relevant. Thirdly, is to remove the interaction with healthcare for those uncomfortable through the offering of home/self-testing options.
5. **Improve connection to community.** Increasing connection and time spent with community peers has the potential to improve HIV testing outcomes. Novel models for enhancing community connections and utilising those that already exist could be explored.

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8. A framework for understanding and addressing HIV-related inequalities: UNAIDS 2022.

Acknowledgements

- Funding for the 2022 round was received from the Ministry of Health and Health Research Council of NZ
- The 2022 round was led by the Gay Men's Sexual Health research group at the School of Population Health, University of Auckland in partnership with the AIDS Epidemiology Group at the University of Otago, Burnett Foundation Aotearoa, Body Positive, Te Whāriki Takapou and the NZ Blood Service
- Author affiliations for this research brief: University of Auckland (Saxton P, Ludlam A, Paynter J, Sriamporn KT, Ritchie S), University of Otago (McAllister S, Priest P), Burnett Foundation Aotearoa (Haunui K, Leakey C, Hollingshead B, Rich J), Body Positive (Fisher M)
- We would like to thank all participants, without whom this programme would not be possible.

Notes

- Variables for the analyses were chosen based on the UNAIDS list of social determinants of health).[8]
- Bivariate analyses were conducted for each determinant of health and the outcome variable. Pearson's chi-squared test was used to determine the significance of variation between groups. However, where participant numbers in a single group were below ten, Fisher's exact test was used.
- Where bivariate analyses resulted in a crosstabulation containing a group combination with zero participants, the variable groups were collapsed in a meaningful way until this was no longer the case.
- Logistic regression was used to explore which groups within each determinant were independently associated with non-recent STI testing.
    - Participants' age was included in each logistic model as a potential confounding variable.
    - Where a potential determinant was regarding healthcare access or populations who may require more interaction healthcare services (living with a disability, PLHIV), region of residence was included as a potential confounding variable as healthcare services are not distributed equally across the country.
    - Region of residence was also included as a confounding variable in the model for ethnicity as Census data indicated that ethnic groups are not equally distributed across the country. Equally, ethnicity was considered in the model for region of residence.
    - Both age and ethnicity were controlled for in the model exploring visa status.
- Reference groups for statistical analyses were chosen based on the group with the greatest number of respondents or where it was hypothesis driven.

Appendix

Table 1: Description of available SPOTS variables that correlate to drivers of HIV testing inequity.

Determinant	Grouping	Description of variable(s)
Age	Demographic	Participant's age at time of survey. Grouped by decade.
Sexual Identity	Demographic	Participant's self-reported sexual identity. Multiple identities could be selected. A prioritisation system was used, with "gay" being the lowest/last to be prioritised during variable construction.
Gender identity	Demographic	Constructed based on participant's reported current gender, sex assigned at birth, and current identity. For greater detail, see the SPOTS Report 1.2 Basic Frequencies Tables. The groupings are as follows: 1. Cis Man: combines cisMSM and cisGBM 2. Trans Woman: combines transWSexMlast5, transWPNSabSexMlast5 3. Trans Man: combines transMSM, transMNoSexM 4. Non-binary: combines nonBMabSM, nonBFabSexMlast5, nonBMabNoSM, nonBPNSabSexMlast5
Ethnicity	Demographic	Participant's self-reported ethnic identity. Multiple identities could be selected. A prioritisation system was used in line with the StatsNZ prioritisation standard.
Geography	Demographic	Participant's region of residence. Only one region could be selected. For the analyses, the regions with the largest populations were separated and the remaining grouped.
Disability	Demographic	Participant's self-selected disability status.
Education	Social	Participant's highest level of educational qualification achieved.
Employment	Social	Participant's self-reported employment status. Only a single option could be selected.
Housing	Social	Participants were asked about other people who lived in their place of residence. Multiple options could be selected. Groupings were created based on these using a prioritisation process, with "myself" or "my partner" being lowest/last priority.
Wealth	Social	Participant's self-reported economic situation. Only a single option could be selected.
Migration	Social	Participant's self-reported migration or visa status. Only a single option could be selected.

Behaviours	Individual	Three behavioural questions were included in the analyses. 1. The number of male sex partners the participant has had in the previous six months. Grouped as 10 or less and 11+. 2. Use of drugs during sex or reported injecting drug use in the last 12 months. Grouped as ever (at least one) or never (none). 3. Participant's engagement with commercial sex work. Participants were asked if they had ever paid for sex and if they had ever been paid for sex as separate questions. If a participant had answered yes to either, they were grouped as "ever" and if they reported no to both questions they were grouped as "never".
Knowledge	Individual	Three HIV-related knowledge statements were provided and respondent's self-reported whether they "knew" the statement to be true or if they were unaware. If respondents reported "I knew this" to all three statements, they were grouped as "knew all". If they reported not knowing or being unsure of at least one statement, they were grouped as "Did not know/Unsure". Statements included: 1. Condoms are the most effective tool to prevent both HIV and stis. 2. Being on HIV treatments, reaching and maintaining an undetectable viral load (UVL) means that someone living with HIV cannot pass on HIV to their sexual partners. 3. PrEP (Pre-Exposure Prophylaxis) is a pill that can be used by someone who is HIV-negative to significantly decrease their risk of acquiring HIV, if taken as prescribed.
Discrimination	Individual	Participant's self-reported experience of discrimination due to their sexuality in healthcare.
Community attachment	Individual	Participant's self-reported amount of free time spent with community peers (LGBTIQ+). Only a single option could be selected.

HIV pre-exposure prophylaxis uptake, suitability and gaps 2022

Research brief

Saxton P, Leakey C, Ludlam A, Paynter J, McAllister S, Haunui K, Sriamporn KT, Hollingshead B, Fisher M, Ritchie S, Rich J, Priest P.

June 2024

Executive summary

- A quarter of gay, bisexual and other men who have sex with men (GBM) reported taking HIV pre-exposure prophylaxis (PrEP) in the six months prior to survey in 2022
- Approximately one in every six participants were suitable to take PrEP and were willing to use it, but had not (the gap)
- Both PrEP uptake and the PrEP gap were associated with a number of participant characteristics

Background

HIV pre-exposure prophylaxis (PrEP) is the use of medications by HIV-negative people that protect them from acquiring HIV. Studies have shown that PrEP can be up to 99% effective if taken as prescribed.[1] PrEP was first recommended by the World Health Organization (WHO) in 2015 for people at heightened risk of HIV exposure,[2] and PrEP is now considered to be an important biomedical prevention tool, alongside condoms, testing and early diagnosis and treatment of HIV infection.

In Aotearoa New Zealand (NZ), PrEP was publicly funded in 2018.[3] Eligibility was initially highly targeted and restricted to those most at risk, estimated to be ~5800 individuals, or around 18% of gay, bisexual and other men who have sex with men (GBM) who were HIV-negative and sexually active.[4] PrEP criteria were then widened in July 2022,[5] when NZ moved from the more restrictive "eligibility" criteria and adopted broader "suitability" criteria. Now, PrEP is recommended in NZ if the patient tests negative for HIV and is suitable for PrEP, based on a clinician's judgement and guided by clinical guidelines. At the time of writing, NZ's clinical guidelines for GBM include the following:[6]

- insertive or receptive condomless anal intercourse with casual partners
- history of chemsex or methamphetamine use
- diagnosis of rectal gonorrhoea, rectal chlamydia, or syphilis <12 months (mths)
- regular relationship with an HIV-positive partner whose virus is not undetectable
- where there is concern from the clinician about substance use or mental health, where HIV risk may be elevated.

NZ's HIV Action Plan notes that high PrEP uptake is essential if the country is to virtually eliminate HIV transmission by 2030.[7] A better understanding of PrEP uptake among those who are suitable, and whether this varies between GBM, can help government, community agencies and physicians understand where unmet need is greatest and improve PrEP service delivery.

Behavioural surveillance data

This research brief presents data on PrEP from NZ's HIV behavioural surveillance round in 2022.[8] This captured the experiences of 3,838 GBM and people who have sex with GBM (hereafter "GBM", see Notes for more information).

The first section describes basic findings about PrEP. The second section then examines PrEP uptake in the context of PrEP suitability and participants' willingness to use PrEP. We define the "PrEP gap" here as the proportion of participants who were suitable and willing to use PrEP, but had not taken PrEP in the six months prior to survey. This section also examines whether PrEP uptake and the PrEP gap varied across certain participant characteristics. The third section compares participants in the PrEP gap to participants suitable and on PrEP. When we investigate if an outcome is associated with a characteristic of participants, we note if the "p-value" is <0.05, which indicates that there is a statistically significant difference.

Note that this research brief complements findings on the "PrEP Cascade". Cascades are a national-level tool to measure PrEP awareness, willingness and uptake. They are typically used to compare across countries and subpopulations, and are reported elsewhere.[9]

1. PrEP basic findings

Of the 3,838 participants who started the survey, N=3,451 reached the PrEP section of the questionnaire. Almost all (96.6%) had heard about PrEP, and 25.6% of non-HIV positive participants had taken PrEP in the six months prior to survey. Of those who had taken PrEP, three quarters (74.8%) had taken it daily or most days, 16.9% had taken it around the time of sex (so-called "on demand", "event-

driven" or "2-1-1" dosing), and 8.0% had taken it daily for a limited time (so-called "intermittent" dosing).

Figure 1 shows that the last time participants took PrEP was associated with their dosing approach (p<0.001). Over 90% of participants taking PrEP daily had last taken pills in the last 24 hours or last 7 days, whereas this was true for 42.9% of participants taking PrEP episodically, and 25.4% of those taking PrEP intermittently.

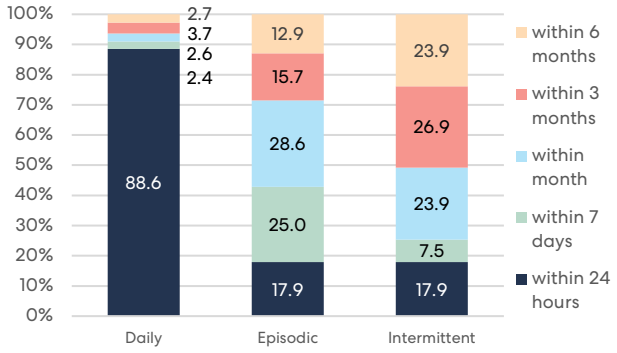

Figure 1. Last time took PrEP by PrEP dosing approach

The most common place for participants to be prescribed PrEP in 2022 was "my regular GP" (56.2%), followed by a sexual health clinic (37.0%), with 7.2% stating "a different GP" (a small proportion were from other sources).

Almost all participants acquired their PrEP medication from a pharmacy or chemist that was publicly funded (93.4%). However, 7.0% stated they had self-funded their medication acquired from a pharmacy or chemist, 1.3% stated they had purchased it online (from an overseas supplier), and 0.5% "another way".

All non-HIV positive participants were also asked how willing they were to take PrEP in future. Over three quarters (77.6%) indicated they would take PrEP in pill form (either daily or intermittently). The remainder stated they would either not be willing to take PrEP, or would but only if it came in an injectable form (not currently available in NZ).

2. PrEP uptake, suitability and the PrEP gap

To estimate the PrEP gap, we examined the subset of participants who provided full information on their PrEP suitability, PrEP use in the last six months, and their willingness to use PrEP (in pill form) if they were suitable but not on PrEP.

Figure 2 shows PrEP uptake for the overall 2022 sample who provided full information (N=2,857). More than a fifth (22.8%) were PrEP suitable and on PrEP. Slightly fewer (18.9%) were PrEP suitable and willing to take PrEP, but had not done so in the six months prior to survey (the PrEP gap).

Around 1 in every 15 (6.5%) were PrEP suitable but not willing to take PrEP. A further (3.1%) had taken PrEP, even though they did not report behaviours in the previous six months that made them suitable. Just under half (48.8%, striped in Figure 2 and not shown in remaining Figures) were not PrEP suitable, and had not taken PrEP in the six months prior to survey.

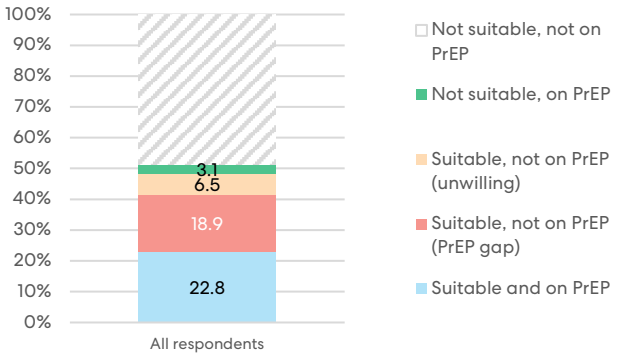

Figure 2. PrEP engagement, overall sample (N=2,857)

By socio-demographic characteristics

PrEP uptake varied by age group (p<0.001) (Figure 3). PrEP uptake was proportionately highest among those aged in the 30s, 40s and 50s, and was lowest among those aged under 20. The PrEP gap was similar across age groups, with no statistically significant differences in the proportion of participants reporting they were suitable and willing but had not taken PrEP.

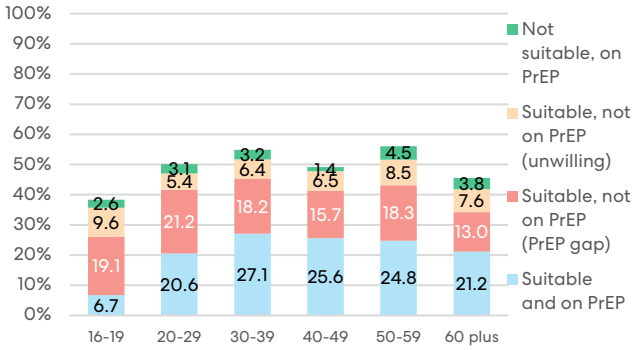

Figure 3. PrEP engagement by age group

PrEP uptake was highest among those reporting one of several Asian ethnicities (30.0%), compared to those not reporting Asian ethnicities (p=0.003) (Figure 4). PrEP uptake was lower among participants reporting a European ethnicity (22.0%), compared to participants not reporting a European ethnicity (p=0.023). However, the PrEP gap was highest among Māori participants (27.4%), compared to non-Māori participants (p<0.001).

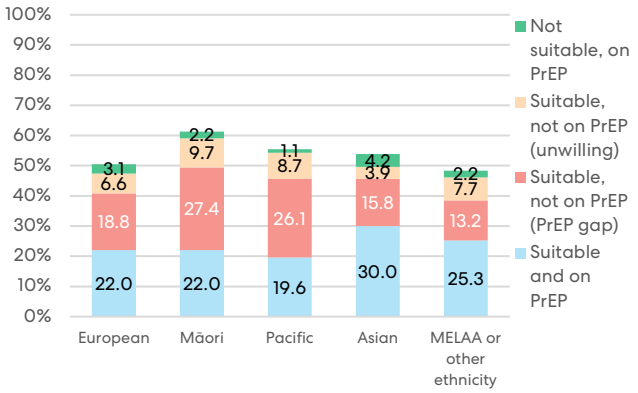

Figure 4. PrEP engagement by ethnicity (total response method)

Region was associated with PrEP uptake (p<0.001) (Figure 5). Participants living in Auckland reported the highest PrEP uptake (27.4%), with those living in Waikato, Canterbury, Otago and the rest of NZ all reporting under 20% uptake in the previous six months. The PrEP gap also varied across the country (p=0.013), being lowest in Auckland (16.1%) and higher in Waikato (23.2%), Otago (22.4%) and the rest of NZ (23.0%).

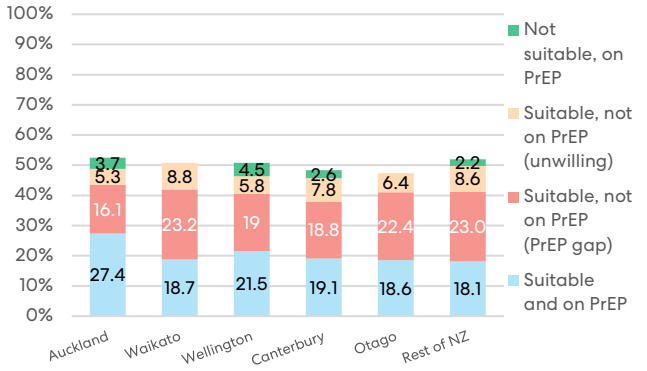

Figure 5. PrEP engagement by region

PrEP uptake varied by highest educational qualification (Figure 6) (p<0.001). Over a quarter of participants with a tertiary degree had been on PrEP (27.2%), whereas this was 13.6% of those whose highest qualification was at high school. Consequently, the PrEP gap also varied by highest education (p<0.001), being lower among those with more formal educational qualifications.

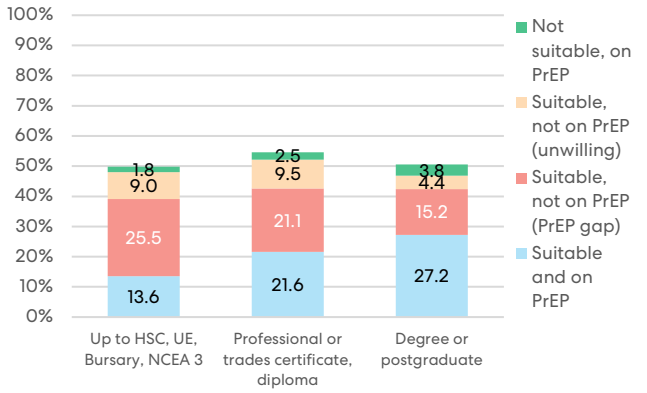

Figure 6. PrEP engagement by highest education

PrEP uptake varied by sexual identity (p<0.001), with 25.8% of those identifying as gay reporting PrEP, whereas this was 16.9% of those reporting bisexual or other (12.1%) sexual identities (Figure 7). The PrEP gap also differed by sexual identity (p=0.002), and was greatest among participants identifying as bisexual (26.2%).

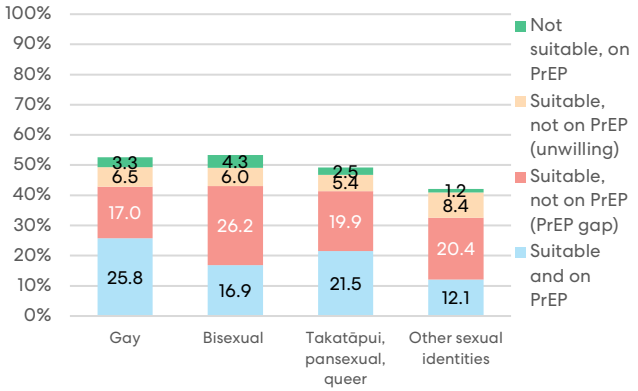

Figure 7. PrEP engagement by sexual identity (prioritised)

The proportion of the sample using PrEP in the last six months was significantly lower among participants who identified as trans women, or as non-binary people (who were assigned female at birth) (9.5%), compared to GBM participants (23.3%) (Figure 8) (p<0.001). However, there was no statically significant difference in the PrEP gap by gender identity among our participants.

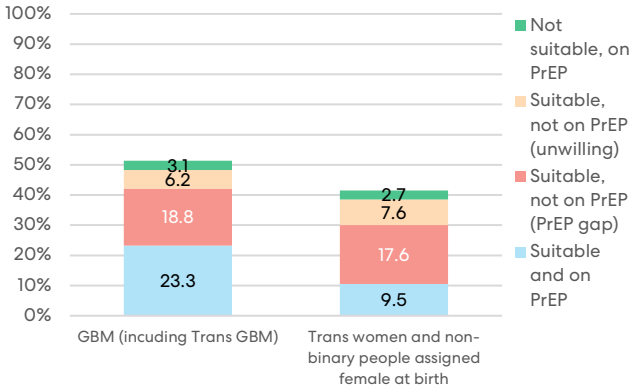

Figure 8. PrEP engagement by gender identity

There were no statistically significant differences in PrEP uptake by participant's money situation (Figure 9). However, the PrEP gap did vary (p<0.001) by money situation. The PrEP gap was a quarter (24.6%) of those who had to "cut back" expenses, and was 27.7% among those who could not make ends meet. In comparison, the PrEP gap was 16.3% among participants who stated their money situation was "comfortable, with extra".

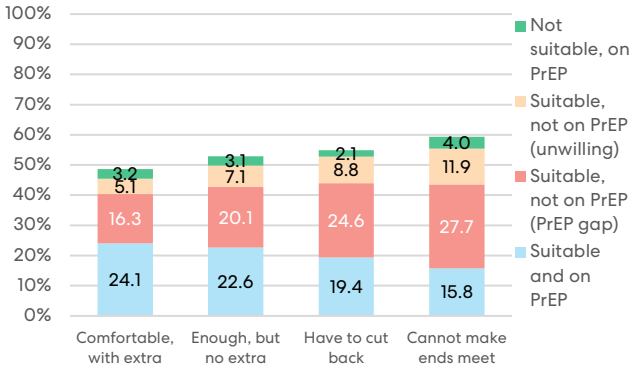

Figure 9. PrEP engagement by money situation

By sexual behaviours

The number of male sexual partners participants had in the previous six months was associated with PrEP uptake (p<0.001) (Figure 10). PrEP use was 66% or more among those reporting more than ten partners over this period, and was lower in participants reporting one sexual partner (1.6% uptake). The PrEP gap also varied by partner numbers (p=0.001), and was greatest among those reporting between 2-5 partners (29.7%) and 6-10 partners (29.4%).

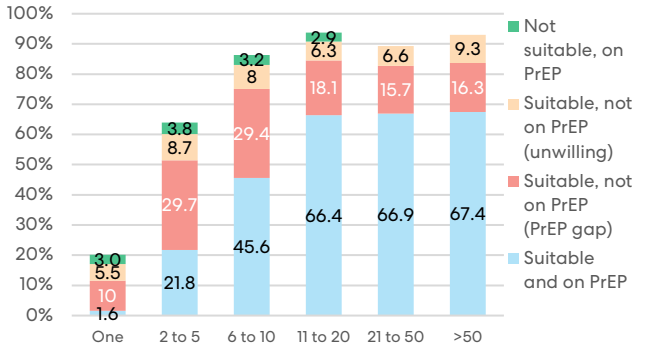

Figure 10. PrEP engagement by no. male sexual partners <6 months

As expected, PrEP uptake was significantly associated with the type of casual sex participants had in the previous six months (p<0.001) (Figure 11). Over half (52.8%) of participants reporting inconsistent condom use with casual partners had used PrEP in the last six months. Among all other participants, PrEP uptake was less than 5%. Despite the high PrEP uptake in those reporting inconsistent condom use (by definition, all of whom would be PrEP-suitable), the prep gap was also greatest for these participants (35.7%) (p<0.001).

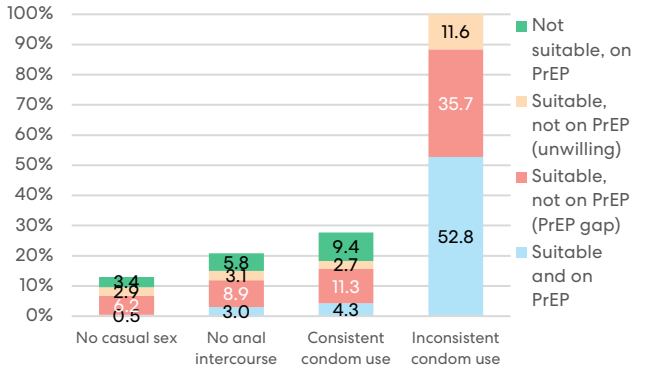

Figure 11. PrEP engagement by casual sex status <6 months

The types of sexual relationships participants had in the previous six months was associated with PrEP uptake (p<0.001) (Figure 12). PrEP use was highest in those reporting two or more regular partners and casual sex partners over this period (51.3%) or one regular partner and casual sex (30.5%), being lower among those reporting just casual sex (23.2%). Few participants (less than 1%) who had a regular partner and no casual sex had used PrEP over this period.

The PrEP gap also varied by relationship status (p<0.001), being 24% or greater among those reporting any casual sex, and less than 7% among those with only regular partners or who had not had sex.

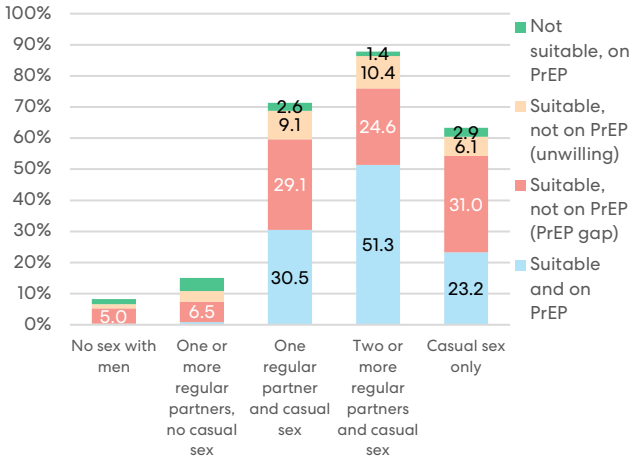

Figure 12. PrEP engagement by relationship status <6 months

Having a recent syphilis diagnosis, rectal gonorrhoea or rectal chlamydia is an indicator for PrEP suitability in NZ. More than three-quarters (78.4%) of participants who had been diagnosed with any of these STIs in the last 12 months had used PrEP, compared to 17.4% of those who had not (p<0.001) (Figure 13). The difference in PrEP gap between these two groups was not statistically significant (p=0.054).

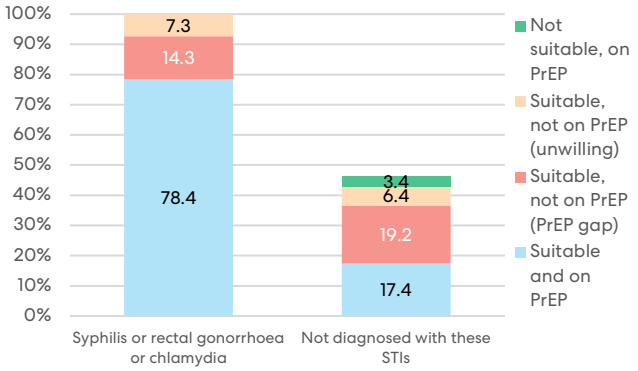

Figure 13. PrEP engagement by recent syphilis or rectal gonorrhoea/chlamydia diagnosis

Sex work history was associated with PrEP uptake (p<0.001). Although only a small group (n=59 in this analysis) had engaged in sex work in the previous six months, 39.0% had been on PrEP, while this was reported by 31.1% of those who engaged in sex work more than six months ago, and 21.5% of those had never been paid for sex (Figure 14). The PrEP gap varied by sex work history as well (p<0.001). More than a third (35.6%) of those who had been paid for sex recently reported being suitable and willing to be on PrEP, but had not taken it in the last six months.

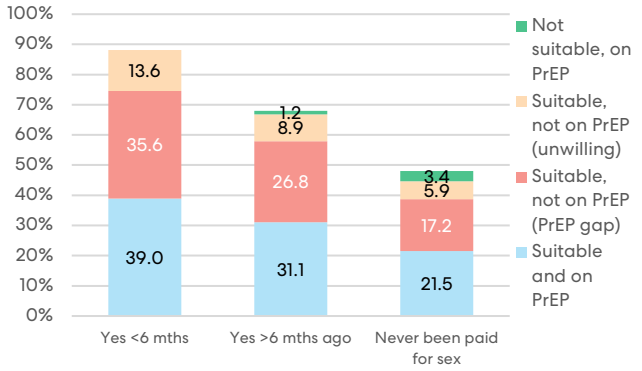

Figure 14. PrEP engagement by receiving payment for sex

By health and substance use-related behaviours

Whether participants had disclosed their sexuality to their GP or not was associated with PrEP uptake (p<0.001) (Figure 15). Less than 15% of participants who did not think their GP knew their sexuality, were unsure, or who did not have a GP, had used PrEP recently, whereas 30.2% of participants who believed their GP knew their sexuality had used PrEP in the last six months. Consequently, the PrEP gap also varied by this characteristic (p<0.001). Almost a quarter or more of participants who had not told their current GP their sexuality experienced a PrEP gap, whereas this was 14.8% among those who had told their GP.

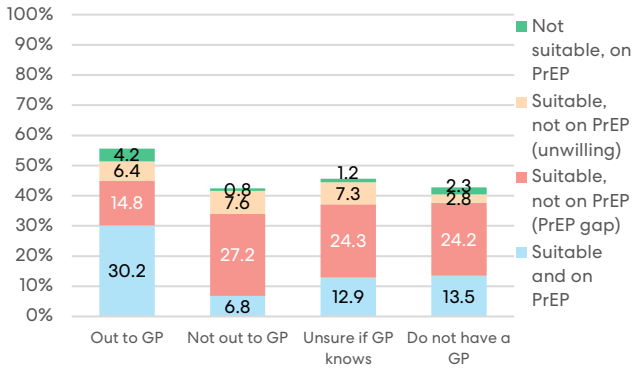

Figure 15. PrEP engagement by sexuality disclosure to GP

Chemsex is another indicator for PrEP in NZ. Chemsex history was associated with PrEP uptake in this sample (p<0.001) (Figure 16). PrEP use was 41.9% among those engaging in chemsex at least monthly, and 42.5% among those engaging in it less frequently in the previous six months, whereas it was 18.8% among participants who had not engaged in chemsex. Even so, the PrEP gap was still very high among those reporting more frequent (38.0%) or less frequent (44.4%) chemsex, being 13.6% among those not reporting chemsex (p<0.001).

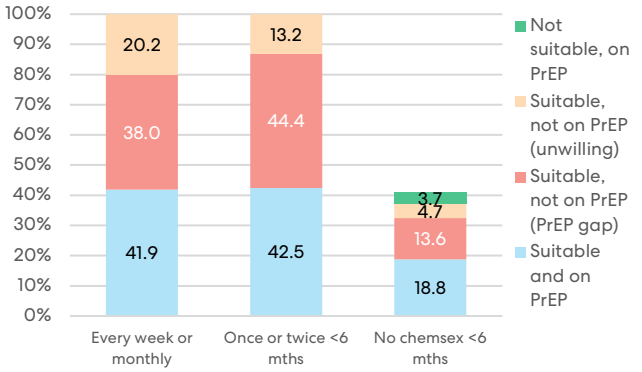

Figure 16. PrEP engagement by chemsex <6 mths

PrEP uptake was not statistically significantly different between participants who had injected illegal drugs at least once in their lifetime compared to those who had never injected illegal drugs (Figure 17). However, since PrEP suitability was higher among people who had injected drugs, the PrEP gap was greater in this group (34.6%) compared to those who had never injected drugs (18.3%) (p<0.001).

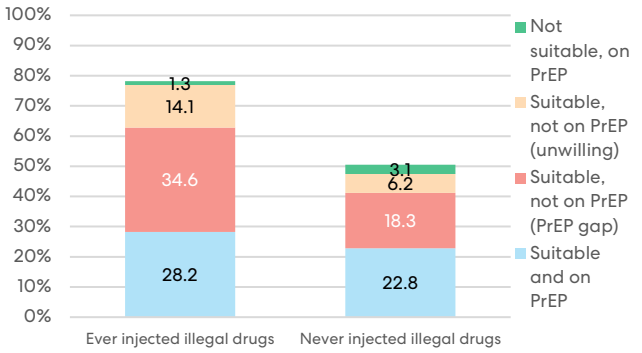

Figure 17. PrEP engagement by ever injected illegal drugs

3. Comparison of PrEP suitable participants on PrEP, and not on PrEP but willing to take it

Table 1 compares the socio-demographic, behavioural and other health-related characteristics of participants in the PrEP gap (suitable and willing but not on PrEP, N=539) to those suitable and on PrEP (N=650).

Compared to participants on PrEP, those in the PrEP gap differed in age (p<0.001), ethnicity (p=0.001) and sexual identities (p<0.001). Their regional distribution was different (p<0.001) as was their highest educational qualification profile (p<0.001). Those in the PrEP gap also differed in their current money situation, compared to those on PrEP (p<0.001).

Behaviourally, participants in the PrEP gap differed according to the number (p<0.001) and nature (p<0.001) of sexual partnerships, casual sex status (p<0.001) and chemsex status (p=0.017).

Participants in the PrEP gap had a different profile in their sexuality disclosure to a GP (p<0.001) and whether they

had been diagnosed with specific STIs that indicate PrEP suitability ($p<0.001$).

There were no statistically significant differences between the two groups of participants according to gender identity, sex work status or injecting drug use history.

The associations above need to be further investigated. That will help us understand whether specific experiences differ between two groups (for example, whether participants in the PrEP gap were more likely or not to have 2-5 sexual partners, compared to participants on PrEP).

We can also control for the potential effect of confounding on these associations, for example, whether the apparent differences in money situation remain, after controlling for the difference in the two group's age profiles.

Table 1. PrEP-suitable GBM willing to use PrEP: Comparison of those on PrEP and not on PrEP

	PrEP status, of those PrEP-suitable and willing to use PrEP		
	On PrEP (n=650)	Not on PrEP (PrEP gap) (n=539)	Chi-squared test
Age			**<0.001**
16-19	1.9	5.6	
20-29	35.5	44.2	
30-39	32.9	26.7	
40-49	14.2	10.5	
50-59	9.5	8.5	
60+	6.1	4.5	
Ethnic group (prioritised)			**0.001**
European	69.5	68.7	
Māori	12.7	19.1	
Pacific	2.3	3.4	
Asian	11.9	6.7	
MELAA and Other	3.6	2.1	
Region			**<0.001**
Auckland	49.1	34.7	
Waikato	5.6	8.4	
Wellington	19.1	20.5	
Canterbury	10.3	12.2	
Otago	4.5	6.6	
Rest of NZ	11.5	17.6	
Highest education			**<0.001**
Up to HSC, UE, Bursary, NCEA 3	14.2	32.1	
Professional or trades certificate, diploma	18.8	22.3	
Degree or postgraduate	67.0	45.6	
Sexual identity			**<0.001**
Gay	70.7	55.9	
Bisexual	8.0	14.9	
Takatāpui, pansexual, queer	15.1	16.8	
Other sexual identity	6.2	12.5	
Gender identity			
GBM (including trans GBM)	98.9	97.6	0.111[1]
Trans women and non-binary people assigned female at birth	1.1	2.4	
Money situation			**<0.001**
Comfortable, with extra	53.8	43.5	
Enough, but no extra	33.8	36.0	
Have to cut back	10.0	15.2	
Cannot make ends meet	2.5	5.3	

Continued...	PrEP status, of those PrEP-suitable and willing to use PrEP		
	On PrEP (n=650)	Not on PrEP (PrEP gap) (n=539)	Chi-squared test
No. male sexual partner <6 months[2]			**<0.001**
One	2.2	17.1	
2-5	27.8	46.9	
6-10	28.4	22.7	
11-20	24.5	8.3	
21-50	12.6	3.7	
>50	4.5	1.4	
Casual sex status <6 months			**<0.001**
No casual partners	0.9	12.8	
No anal intercourse	1.3	4.3	
Consistent condom use	1.7	5.4	
Inconsistent condom use	96.1	77.5	
Relationship status <6 months			**<0.001**
No sex with men	0.2	2.0	
One or more regular partners, no casual sex	1.1	9.7	
One regular partner and casual sex	27.4	31.7	
Two or more regular partners and casual sex	57.5	33.4	
Casual sex only	13.9	22.3	
Diagnosed with syphilis or rectal gonorrhoea/chlamydia <12 months			**<0.001**
Yes	31.3	7.0	
No	68.7	93.0	
Received payment for sex			0.786
Yes <6 months	3.5	3.9	
Yes >6 months ago	16.6	17.9	
Never been paid for sex	79.9	78.2	
Sexuality disclosure to GP			**<0.001**
Out to GP	82.3	49.5	
Not out to GP	4.0	19.1	
Unsure if GP knows	10.0	23.4	
Do not have a GP	3.7	8.0	
Chemsex <6 months			**0.017**
Every week or monthly	8.4	9.3	
Once or twice <6 months	24.4	31.3	
No chemsex <6 months	67.2	59.4	
Injected illegal drugs			0.160
Ever injected illegal drugs	3.4	5.0	
Never injected illegal drugs	96.6	95.0	

[1] Fisher's exact test. [2] Of those with one or more partners. Bold denotes statistically significant association.

Summary

- In this behavioural surveillance sample of GBM in 2022, a quarter of non-HIV positive participants had taken PrEP in the six months prior to survey. Of those on PrEP, the majority (three-quarters) were taking it on a daily regimen, with event-driven and intermittent dosing being less common.

- Most of those stating they were on a daily regimen had taken PrEP in the last 24 hours. GPs were the most common place to be prescribed PrEP, although over a third had been prescribed PrEP at a sexual health clinic. Most participants were on publicly-funded PrEP that they had acquired at a pharmacy.

- Over three-quarters of all non-HIV positive participants stated they were willing to take PrEP in pill form in the future.

- Among the subset of participants who provided full information on their PrEP use, suitability and willingness to use PrEP in future, 18.9% were suitable and willing but had not used PrEP in the previous six months (the PrEP gap).

- PrEP use in the six months prior to survey was associated with a number of participant characteristics. These included age, ethnicity, region, highest education, sexual and gender identity, number of sexual partners, casual sex and relationship status, STI history, sex work, status, outness to a GP and chemsex.

- The PrEP gap also varied across several participant characteristics. These included ethnicity, region, highest education, sexual identity, money status, number of sexual partners, casual sex and relationship status, STI history, sex work status, outness to a GP, chemsex and injecting drug use history.

- When profiled against participants on PrEP, participants in the PrEP gap differed across a number of socio-demographic, behavioural and health seeking behaviours.

Discussion

- That a quarter of non-HIV positive participants in this 2022 NZ sample had used PrEP in the prior six months, just four years after PrEP was publicly funded, represents a substantial public health achievement by agencies and GBM communities.

- In many cases, PrEP uptake scaled with risk and therefore need. Participants with more partners reported more PrEP use, as did participants reporting condomless anal intercourse with casual partners.

- However, there were also many participants reporting behaviours making them suitable for PrEP who had not used PrEP in the six months prior to survey. Of these, some stated they were not willing to use PrEP at the time of survey. This needs to be understood better, and efforts to address their motivations considered, since by definition they are at risk of HIV exposure and would benefit from PrEP.

- Others were both suitable for PrEP and willing to use it, but had not in the last six months, equating to around one in every six participants. This represents a critical gap to close in the next few years. Clearly, it should be an important target for all agencies involved in the HIV response, if NZ is to meet the goal of virtually eliminating HIV transmission by 2030.

- We also found evidence that this PrEP gap was patterned. In some cases, for example characteristics such as education status and region, there appeared to be similar levels of PrEP suitability, but different levels of PrEP uptake, creating wider PrEP gaps for some participants.

- For some PrEP indicator characteristics, such as participants diagnosed with syphilis, or rectal gonorrhoea or chlamydia, it was encouraging to see PrEP coverage being very high. With others however, for example chemsex or injecting illegal drugs, PrEP coverage was lower, and consequently there is considerable room to improve. Offering PrEP to GBM presenting with STIs is relatively straightforward (although again, while uptake is high, it is not universal). Offering PrEP to GBM engaging in chemsex or injecting drug use may be more challenging, so working with agencies and peers trusted by such GBM will be important.

- For other characteristics, for example ethnicity, the proportion of some participants using PrEP appeared to be similar (for example, Māori and European participants). Yet, different levels of PrEP suitability meant that the PrEP gap (and therefore, unmet need) appeared to be greater for Māori GBM.

- The latter finding has important implications. Similar PrEP uptake between any two groups does not necessarily imply PrEP equity, where equity is read as meeting a group's needs. Consequently, we have to take care when interpreting pharmacy data on PrEP uptake, since official data will not easily capture different levels of PrEP suitability.

- To guide responses, the comparison of participants in the PrEP gap with those on PrEP (Table 1) can give a sense of the size of groups that could be targeted. For example, participants reporting between 2-10 sexual partners in the last six months comprised around 56% of those on PrEP, but almost 70% of those suitable and willing but not on PrEP. Increasing uptake among GBM with these more moderate levels of partnering, who may not view themselves as being at high risk of HIV, could be an effective way to increase coverage.

- Future HIV behavioural surveillance rounds can monitor progress on both PrEP uptake and the PrEP

gap, for all participants and sub-populations of interest.

- The findings reported in this research brief are from a large and diverse sample of GBM in NZ. However, as with all behavioural surveillance using non-random sampling, they are not generalisable to all GBM. Further statistical testing is also required to know whether differences between any two groups of participants are statistically significant or not, after controlling for potential sources of confounding.

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[9] Leakey C. HIV pre-exposure prophylaxis (PrEP) cascades for Aotearoa New Zealand: Monitoring engagement with PrEP to inform HIV prevention. MPH Thesis. Auckland: University of Auckland, 2023.

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Notes

- In the 2022 HIV behavioural surveillance round, eligibility criteria included men (cis or trans) who had ever had sex with a man, or men (cis or trans) who had not yet had sex with a man but identified as gay, bisexual, takatāpui, pansexual or queer. The 2022 survey also included a small number of transwomen and non-binary people who had had sex with MSM in the previous 5 years. For simplicity, in this report we refer to all participants as "GBM". However, we note that participants include GBM and people who have sex with GBM, and this term might not reflect a particular individual's gender or sexual identity. We acknowledge this terminology is imperfect, and continue to seek ways to improve how we describe our communities at greatest risk of HIV in Aotearoa
- HIV behavioural surveillance employs non-random sampling, and care must be taken before generalising findings to all GBM. SPOTS sampled participants online via social and news media, gay dating apps and websites, community organisations and physical promotion e.g. posters and fliers nationwide over 3 months
- These surveys are voluntary, self-completed and anonymous
- This research brief reports basic chi-squared tests of association between an outcome (e.g. PrEP uptake) and a characteristic (e.g. region). By convention, a p-value of <0.05 denotes there is a statistically significant association across that variable. However, when there are three or more groups of participants in a variable (e.g. region), it cannot be used to determine if one group of participants (e.g. those in Auckland) is statistically significantly more likely to report the outcome compared to another group (e.g. those in Waikato, or Wellington).* Other statistical tests are needed to establish whether that is true, and also whether the difference remains after we control for the potential influence of other factors on the association (such as age). *This does not apply if there are only two groups of participants in a variable (e.g. ever injected drugs), or when the analysis explicitly compares participants with that characteristic versus those without that characteristic, such as with the ethnicity total response method (i.e. Māori versus non-Maori, and European versus non-European).

Acknowledgements

- Funding for the 2022 round was received from the Ministry of Health and Health Research Council of NZ
- The 2022 round was led by the Gay Men's Sexual Health research group at the School of Population Health, University of Auckland in partnership with the AIDS Epidemiology Group at the University of Otago, Burnett Foundation Aotearoa, Body Positive, Te Whāriki Takapou and the NZ Blood Service
- Author affiliations for this research brief: University of Auckland (Saxton P, Ludlam A, Paynter J, Sriamporn KT, Ritchie S), University of Otago (McAllister S, Priest P), Burnett Foundation Aotearoa (Haunui K, Leakey C, Hollingshead B, Rich J), Body Positive (Fisher M)
- We would like to thank all participants, without whom this programme would not be possible.

Trends in combination HIV prevention and HIV testing 2002-2022

Research brief

Saxton P, Ludlam A, Paynter J, McAllister S, Haunui K, Sriamporn KT, Leakey C, Hollingshead B, Fisher M, Ritchie S, Rich J, Priest P.

April 2024

Executive summary

- The proportion of gay, bisexual and other men who have sex with men (GBM) reporting combination HIV prevention (avoiding anal intercourse, or using condoms, pre-exposure prophylaxis (PrEP) or anti-retroviral treatments (ART)) with casual partners increased in 2022, after a steady decline 2002-2014
- Lifetime and recent HIV testing rates were the highest ever recorded in 2022. Sites of HIV testing are increasingly diversifying
- These overall trends were experienced by all key subpopulations. However, trends for some groups of GBM are not as high.

Background

"Combination HIV prevention" refers to the way multiple behaviours shown to be effective against HIV transmission can be combined together to limit HIV spread. For most of the HIV epidemic, this included consistent condom use or avoiding anal intercourse, especially with casual (non-regular) sex partners. From 2015 onwards, new biomedical tools such as HIV pre-exposure prophylaxis (PrEP) among HIV-negative people, and the use of anti-retroviral treatments (ART) by people living with HIV that can achieve an undetectable viral load (UVL), were added to this mix of options.[1] High and equitable coverage of combination HIV prevention behaviours by groups most at risk will be necessary to eliminate HIV transmission in Aotearoa New Zealand (NZ) by 2030.[2]

At the same time, frequent HIV testing, especially after someone has been exposed to HIV, is key to a timely diagnosis and epidemic control. People testing positive can be offered effective treatment and linked into care, and those testing negative but with ongoing exposure risks can be offered PrEP.

A better understanding of trends over time in combination HIV prevention and HIV testing can help evaluate past interventions, direct future responses, and interpret trends in the epidemiology of HIV (annual diagnoses).[3,4] Such insights are therefore a critical part of NZ's epidemic response.

Behavioural survey data

This research brief presents data from NZ's HIV behavioural surveillance programme 2002-2022. The experiences of 18,679 participants are included, drawing on large and diverse samples each round (see the Notes for more information).

To estimate combination HIV prevention behaviours, we combined participants' responses on: anal intercourse and condom use with casual male partners, HIV testing history, PrEP and ART.

We then allocated participants into a unique category, ordered from lowest HIV risk (no anal intercourse with casual partners, regardless of HIV status) to highest HIV risk (any condomless anal intercourse among HIV negative or status unknown participants not using PrEP). For the combination HIV prevention analysis, we limited the sample to participants who engaged in casual sex in the 6 months prior to survey. Rates of engaging in casual sex can vary over time, and in 2022 these declined sharply, to 60.4% (Figure 1). This likely reflected the COVID-19 lockdowns and physical distancing restrictions, that were common in NZ and especially Auckland in 2021 and 2022.

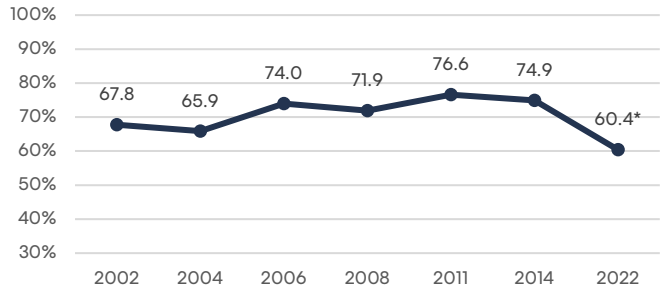

Figure 1. Trends in casual sex with a man <6 mths

We then examine trends over time in HIV testing. This collates participants' responses on their HIV test history, timing and result, and the place participants went for their last test.

We denote statistically significant trends over time by "*" in the Figures (see Notes at end). For both topics, we are also interested in whether changes over time are being experienced by all participants, or just some. To examine this, we separate ("disaggregate") the overall sample by certain participant characteristics, for example by age group, ethnicity, region and sexual behaviours. These trends only show whether the behaviours have increased or declined over time for that population subgroup. Other analyses presented elsewhere will examine if apparent differences *between* subgroups are statistically significant or not.

Trends in combination HIV prevention

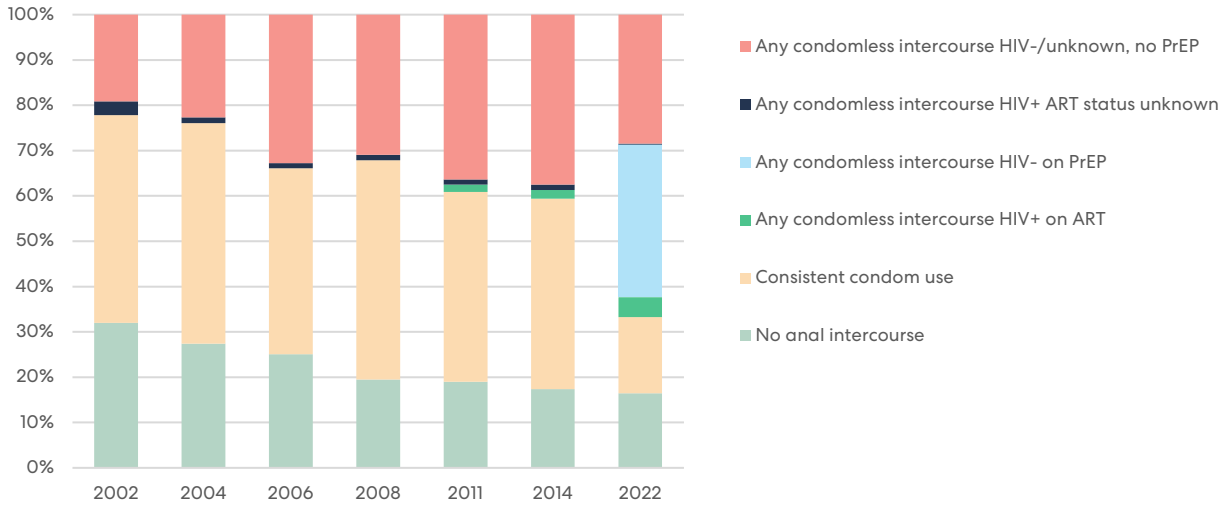

Figure 2. Trends in combination HIV prevention <6 mths

HIV combination prevention coverage during casual sex between GBM declined over time 2002-2014, then increased in 2022 (Figures 2 and 7). The overall decline in HIV prevention coverage over the first period was comprised of reductions in condom use, and increases in GBM having anal intercourse.

In the 2022 survey, the rise in HIV prevention coverage since 2014 was due to a large increase in PrEP among HIV negative participants engaging in condomless sex, and also a rise in the proportion of participants with diagnosed HIV being on ART (almost all with a UVL) while engaging in condomless sex.

The increase over time in "any" condomless anal intercourse may understate the actual volume of condom use, since some GBM reporting at least once not using a condom may be using condoms some of the time, with some partners.

Figure 3 expands Figure 2 by showing the modality of anal intercourse and HIV testing history of respondents reporting condomless intercourse, and who were either not on PrEP, or not living with HIV on ART.

The proportion reporting any receptive condomless intercourse (and not on PrEP or living with HIV on ART) was increasing over time, then decreased for the first time in 2022. This is likely due to the increase in biomedical prevention coverage among GBM engaging in condomless sex with casual partners, including PrEP and UVL.

From 2006, among those engaging in condomless receptive anal intercourse, there was also a steady decline in the fraction that had never tested for HIV, from a high of 9.4% in 2006 to 2.5% in 2022 (Figure 3 and 6). This likely reflects an increase in HIV testing among such GBM, which should decrease the proportion living with undiagnosed HIV, and improve the time to diagnosis among those who contract HIV.

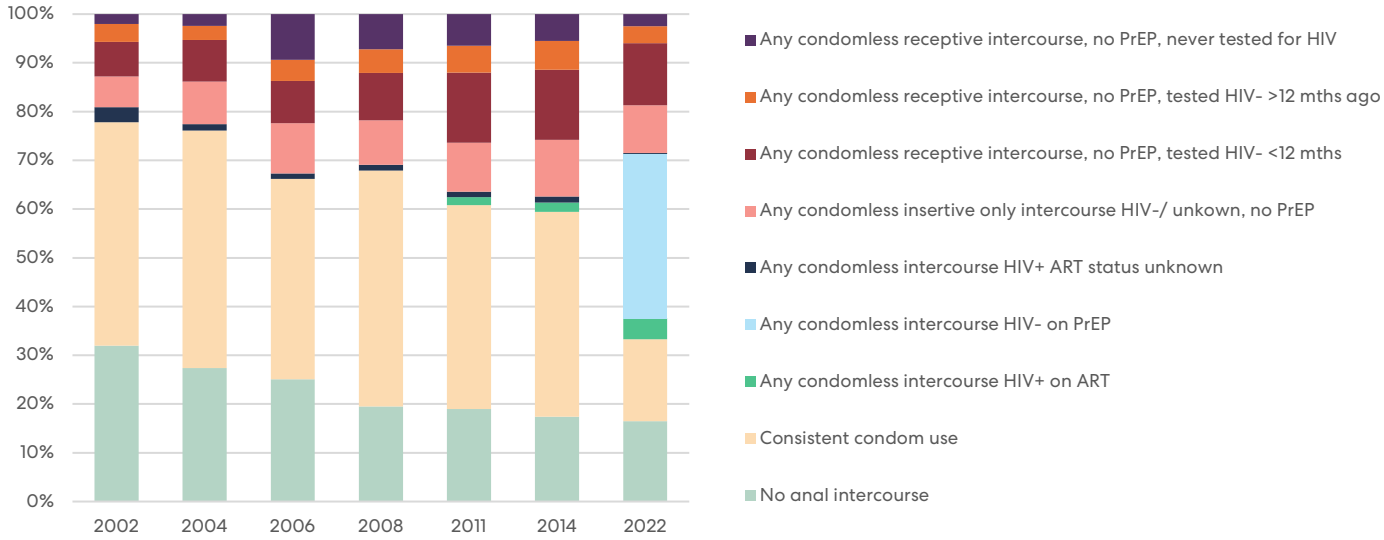

Figure 3. Trends in combination HIV prevention <6 mths by modality of anal intercourse and HIV testing history

Anal intercourse

Anal intercourse with casual partners became more common over time (Figure 4). Among those having sex with casual partners in the 6 months prior to survey, the proportion reporting anal intercourse rose from 68.0% in 2002, to a high of 83.5% in 2022.

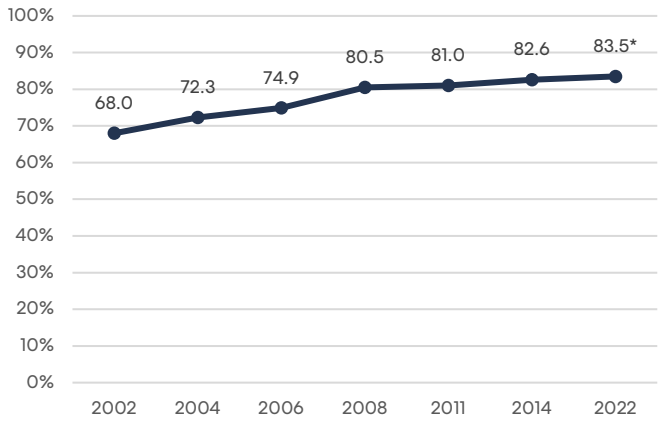

Figure 4. Trends in anal intercourse with casual partners <6 mths

Consistent condom use

Among GBM engaging in anal intercourse with casual partners, consistent condom use has declined over time (Figure 5). This was highest in 2002 (67.4%), decreasing to 50.8% by 2014, then more than halving to 20.2% (1 in 5 participants) in 2022.

Because an increasing proportion of GBM reported engaging in anal intercourse with casual partners over time (Figure 4), the overall proportion of GBM reporting consistent condom use with casual partners remained relatively steady 2002-2014, before declining in 2022 (Figure 5).

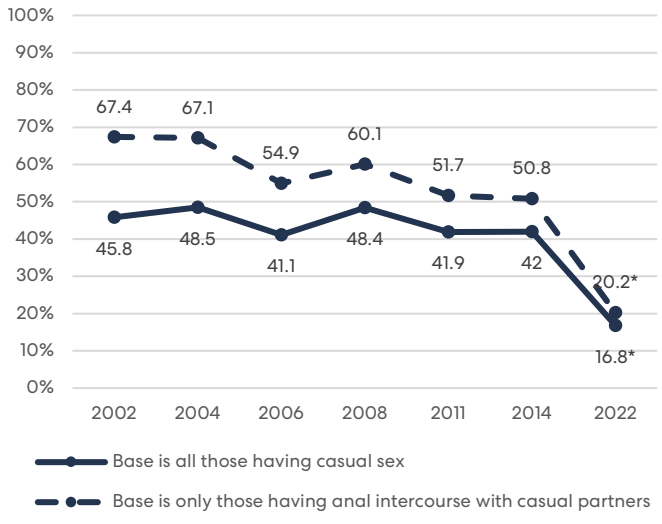

Figure 5. Trends in consistent condom use <6 mths

Condomless anal intercourse and PrEP

A third (33.7%) of GBM having casual sex reported taking PrEP in the 6 months prior to the 2022 survey and engaging in condomless sex (note: the 2014 and earlier surveys did not ask about PrEP). Among the subset of participants who were HIV negative or of unknown HIV status and who were engaging in anal intercourse with casual partners, this proportion equated to 42.9%.

Condomless receptive anal intercourse and never tested for HIV

The proportion of GBM having casual sex who had engaged in condomless receptive anal intercourse in the previous 6 months and had never tested for HIV increased to a high of 9.4% in 2006 then declined to 2.5% in 2022 (Figure 6).

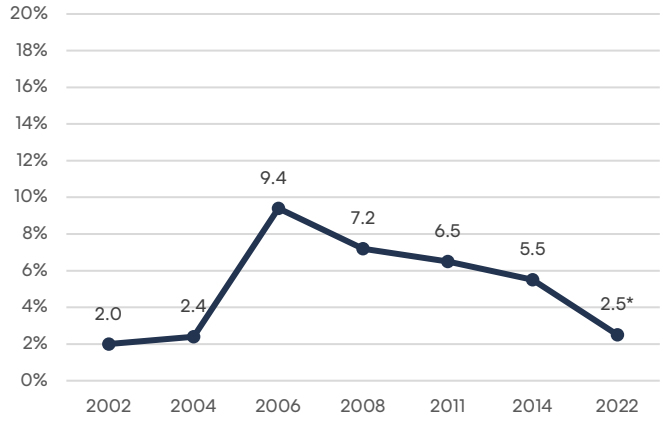

Figure 6. Trends in condomless receptive anal intercourse and never HIV tested

Combination HIV prevention coverage

Overall HIV combination prevention coverage during casual sex between GBM was highest in 2002 (77.8%) before steadily declining to a low point in 2014 (61.3%) (Figure 7). Combination HIV prevention coverage then increased markedly in the 2022 survey to 71.4%.

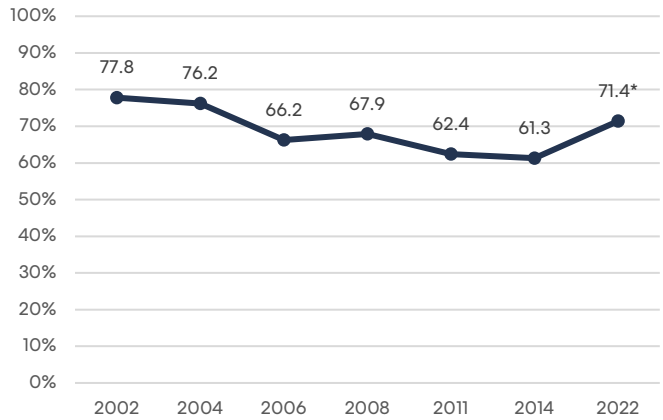

Figure 7. Trends in combination HIV prevention coverage <6 mths

Combination HIV prevention coverage by age group

Overall HIV combination prevention coverage during casual sex declined for all age groups until 2014 then increased in 2022 (Figure 8). Coverage was highest among those aged 45 and over, and lowest among those aged under 30.

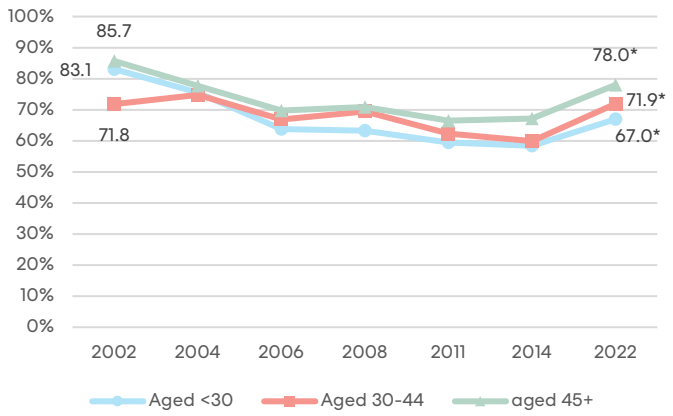

Figure 8. Trends in combination HIV prevention coverage <6 mths by age group

Combination HIV prevention coverage by ethnic group

HIV combination prevention coverage improved for all ethnic groups in the 2022 round compared to 2014 (Figure 9).

Participants categorised as an Asian or Other ethnicity (including Middle Eastern, Latin American, and African) had the highest combination HIV prevention coverage in 2022 (Figure 9). Conversely, participants who were Māori or a Pacific ethnicity had lower combination HIV prevention coverage in 2022.

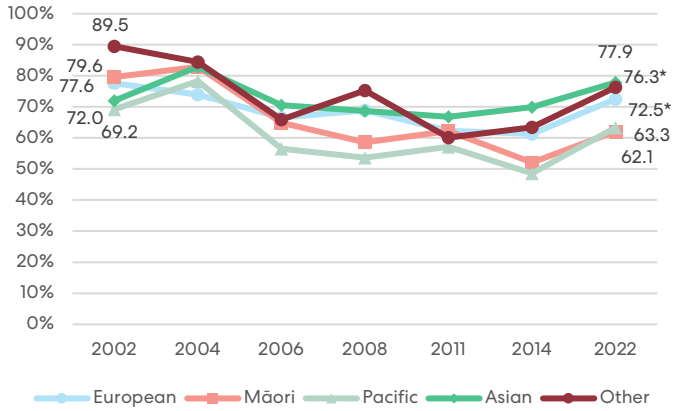

Figure 9. Trends in combination HIV prevention coverage <6 mths by ethnic group

Combination HIV prevention coverage by region

Participants living in Auckland, Wellington or Canterbury consistently reported higher HIV combination prevention coverage over time (Figure 10). Coverage for both groups improved in 2022, although the gap widened, with those living in Auckland, Wellington and Canterbury experiencing accelerated coverage.

Figure 10. Trends in combination HIV prevention coverage <6 mths by region

Combination HIV prevention coverage by number of partners

Combination HIV prevention coverage declined steadily over time for participants reporting up to 10 sexual partners in the 6 months prior to survey, with the decline stopping in 2022 (Figure 11). Between 2002-2014, participants with more than 10 partners had consistently reported lower coverage than less sexually active participants.

However, in 2022 this changed considerably, and participants reporting a higher number of partners also reported the greatest combination prevention coverage. This is likely due to more highly sexually active participants in 2022 being able to access PrEP, or being on ART with UVL, compared to 2014 and earlier.

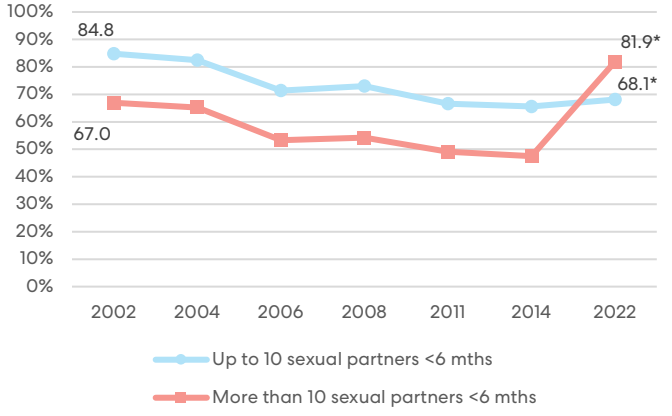

Figure 11. Trends in combination HIV prevention coverage <6 mths by number of partners

Trends in lifetime HIV testing

Lifetime HIV testing rates progressively increased after 2006. By 2022 these were the highest ever reported, with 86.9% having tested for HIV at least once in their life (Figure 12).

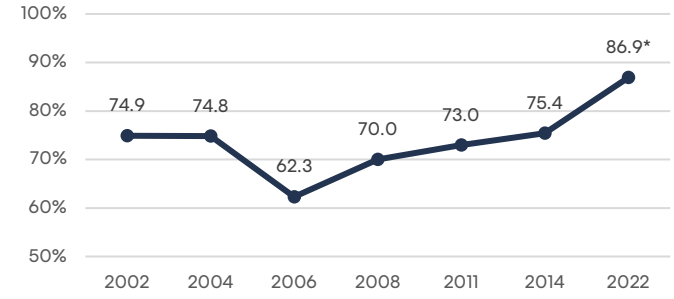

Figure 12. Trends in lifetime HIV testing

Trends in HIV status

Approximately 4% of participants across the surveys (1 in every 25) reported they had tested positive for HIV (Figure 13). In the 2022 survey, the proportion diagnosed HIV positive was higher in those classified as European or as Pacific (Figure 14), and among those aged in their 40s, 50s and 60s (Figure 15).

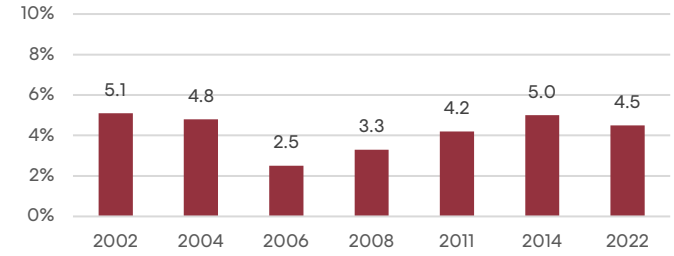

Figure 13. Trends in HIV status*

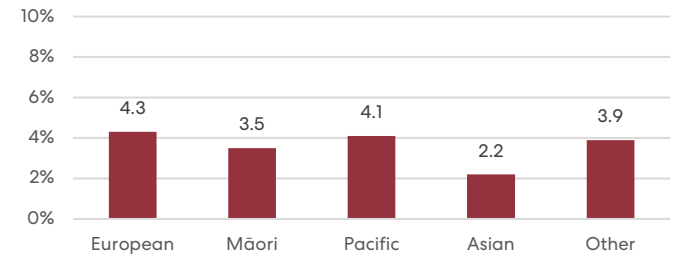

Figure 14. Proportion diagnosed HIV positive by ethnicity (2022 only)*

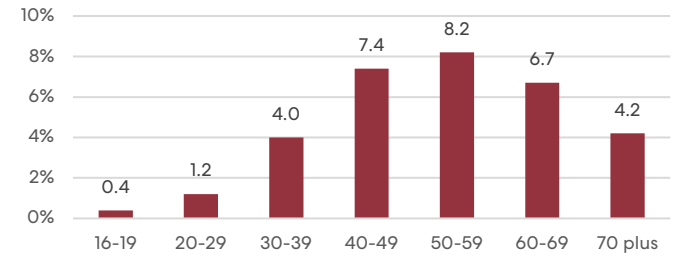

Figure 15. Proportion diagnosed HIV positive by age decile (2022 only)*

Trends in recent HIV testing

This section examines trends in recent HIV testing, defined here as having tested for HIV in the 12 months prior to survey. The sample is limited to participants who had not previously tested HIV positive.

The proportion that had tested for HIV at least once in the previous 12 months gradually increased over time 2006-2014, then increased significantly in 2022 to 59.6% (Figure 16). Conversely, the proportion with no recent HIV test (i.e those who had never tested for HIV, or who last tested negative more than 12 months ago) was the lowest ever in 2022, at 40.4%.

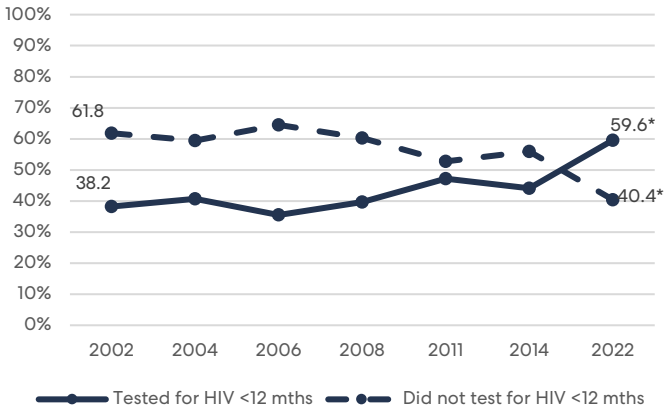

Figure 16. Trends in recent HIV testing

Recent HIV testing by age group

Recent HIV testing trends were similar for all age groups (Figure 17). Participants aged 30-44 showed the highest proportional increase, increasing from 36.0% in 2022 to 63.4% in 2022.

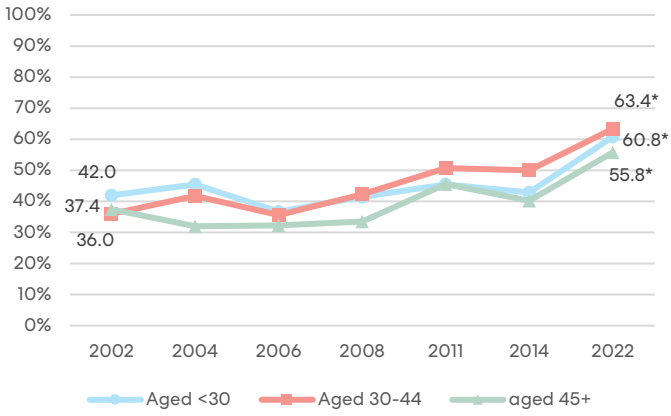

Figure 17. Trends in recent HIV testing by age group

Recent HIV testing by ethnicity

Recent HIV testing improved for all ethnic groups over time (Figure 18). This was especially seen from 2006, although for some participants it declined in 2014, before increasing substantially again in 2022.

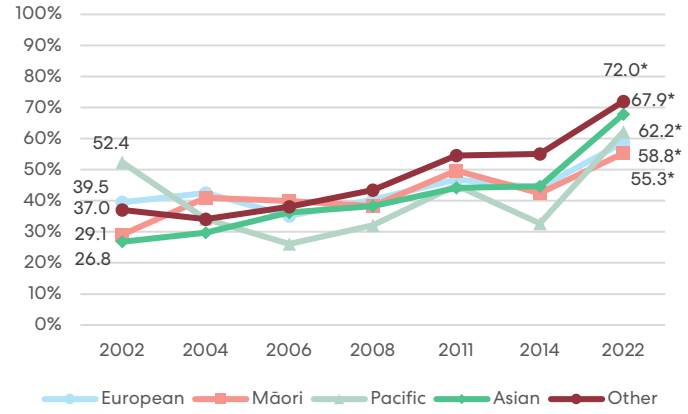

Figure 18. Trends in recent HIV testing by ethnicity

Recent HIV testing by region

From 2006, participants from Auckland, Wellington and Canterbury showed a similar increase in recent HIV testing to those living in other parts of NZ (Figure 19). Participants from both regions reported a noticeable increase in the 2022 survey.

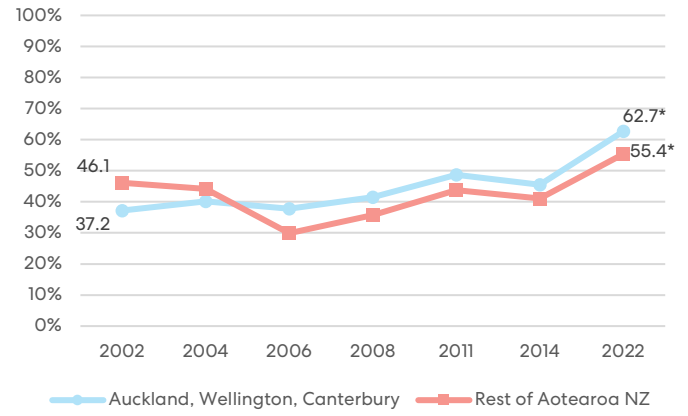

Figure 19. Trends in recent HIV testing by region

Recent HIV testing by number of partners

Participants with more than ten sexual partners in the 6 months prior to survey consistently reported higher rates of recent HIV testing compared to those with fewer partners (Figure 20). These trends diverged further in 2022, when 89.6% (approximately 9 out of every 10) participants with a greater number of sexual partners reported having tested negative for HIV in the previous 12 months.

The increase in recent testing among more sexually active GBM is likely influenced by the better availability of PrEP in 2022, which requires frequent HIV testing to obtain prescriptions.

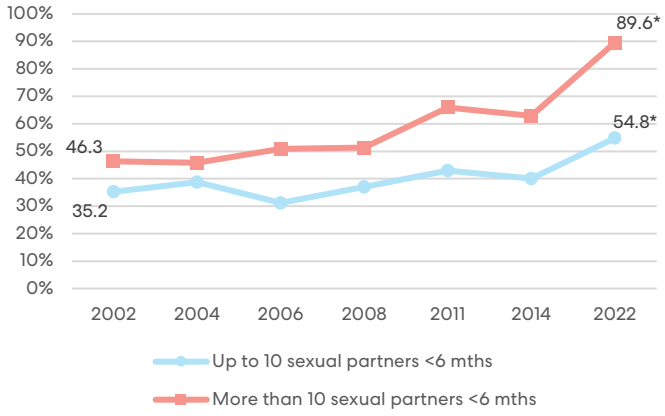

Figure 20. Trends in recent HIV testing by number of partners

Recent HIV testing by identity

Recent HIV testing rates gradually increased among gay identified participants from 2006, then rose noticeably in 2022 (Figure 21). Among participants who identified as bisexual, takatāpui, pansexual, queer or as another identity, recent testing rates appeared to be steady up to 2014, after which they also increased substantially.

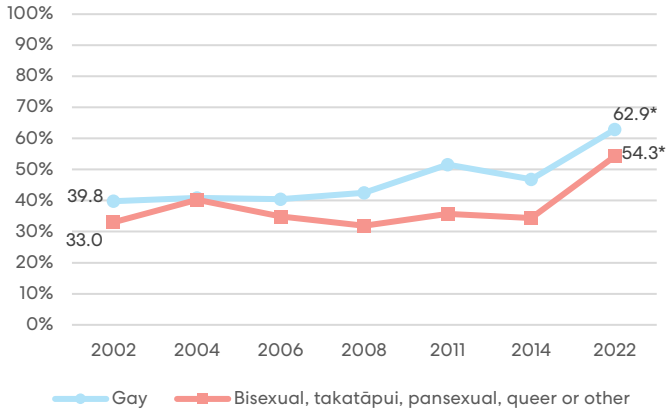

Figure 21. Trends in recent HIV testing by identity

Recent HIV testing by condom use with casual partners

Recent HIV testing was consistently higher among those engaging in anal intercourse with a casual partner (Figure 22). In 2022, this rose for all except those not having casual sex.

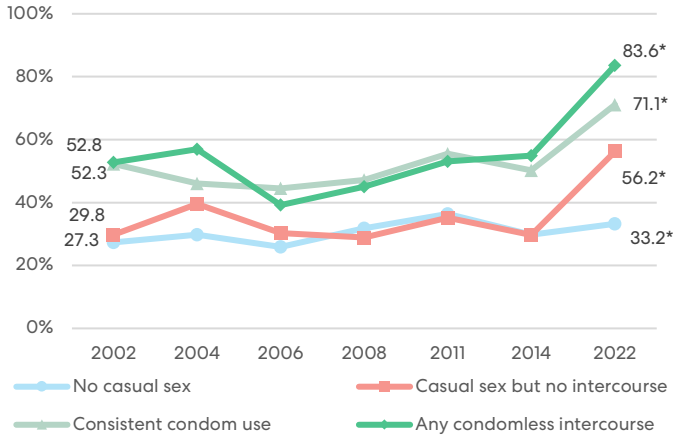

Figure 22. Trends in recent HIV testing by condom use with casual partners

Place last tested for HIV

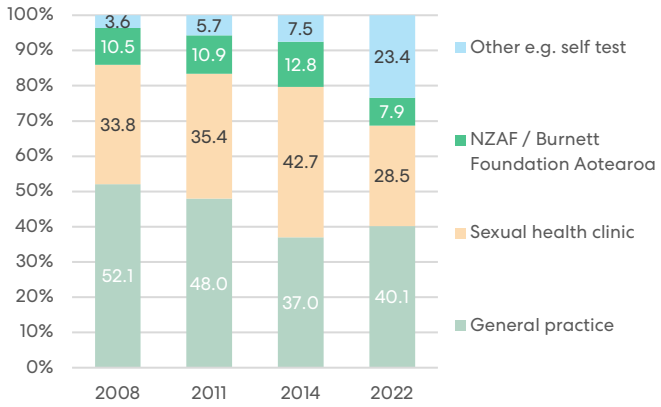

Figure 23. Trends in place last tested for HIV (among those testing recently)*

From 2008, participants testing for HIV were asked where they last tested. Among those who had tested in the 12 months prior to survey, the proportion testing at a general practice (GP) or sexual health clinic declined over time (Figure 23).

In 2022, there was a sizable increase in the proportion stating they had last tested for HIV at another place (23.4%). Responses included "Self-test kit (at home)" (18.6%), "Sauna" (1.1%), "Body Positive" (0.8%), "At an event" (0.4%), "Other" (2.5%).

Summary

Trends in combination HIV prevention

- Combination HIV prevention in the context of casual sex between men declined over time 2002-2014, then increased in 2022
- The overall decline in combination HIV prevention coverage over the first period 2002-2014 was comprised of reductions in condom use, as well as reductions in GBM avoiding anal intercourse with casual partners
- In the recent 2022 round, the increase in HIV prevention coverage since 2014 is comprised of a large increase in PrEP use among HIV-negative participants (even though they were engaging in condomless sex), as well as a rise in the proportion of participants with diagnosed HIV being on ART (even while engaging in condomless sex)
- The increase in participants engaging in condomless anal intercourse while on PrEP in 2022 appears to be comprised both of HIV-negative or previously untested GBM who had in prior years engaged in condomless sex without any HIV biomedical prevention coverage, as well as GBM who in prior years used condoms consistently (i.e. PrEP has shifted both). Note however, these data are anonymous and cross-sectional, not longitudinal, so we cannot say which participants have shifted behaviours or not
- The overall rise in "any" condomless anal intercourse may understate how many condoms are being used, since some participants reporting at least once not using a condom may use condoms some of the time. It is also affected by a general increase in anal intercourse with casual partners over time
- In contrast, the sudden drop in casual sex partnering seen in 2022 (likely due to COVID-19) will have reduced even further the already declining proportion of participants that had engaged in condomless receptive anal intercourse and never tested for HIV
- Trends in combination HIV prevention coverage for key subgroups of participants (e.g. by age, ethnicity, number of partners) generally reflected these overall trends.

Trends in HIV testing

- There has been a gradual increase in HIV testing coverage over time
- In the 2022 round, the proportion of non-HIV positive participants reporting having recently tested for HIV (i.e. in the 12 months prior to survey) was the highest ever recorded
- The substantial increase in recent HIV testing seen in 2022 was seen among all key subgroups of participants, but especially among those with higher potential HIV exposure risk (e.g. those with more sexual partners or who had engaged in condomless anal intercourse with casual partners)
- In the 2022 round, the proportion living with diagnosed HIV was similar across ethnic groups (slightly higher among European and lower among Asian participants). Participants aged in their 40s, 50s and 60s had the highest proportion living with diagnosed HIV
- Of those testing for HIV in the previous 12 months, the place of last HIV test is diversifying over time. In 2022, a significant proportion had last tested using a self-test or home-test.

Discussion

- HIV behavioural surveillance conducted over 20 years reveals substantial shifts in risk, protective and screening behaviours among GBM in NZ
- The behavioural shifts are consistent with trends in HIV diagnoses, that peaked in 2016, then have steeply declined.[5] This suggests NZ is tracking in the right

direction to virtually eliminate HIV transmission by 2030, although more work is needed to reach that target

- We highlight three notable and interrelated features of the 2022 findings

- Firstly, among people living with HIV, uptake of ART and consequently the proportion living with a UVL escalated from 2017, when Pharmac agreed to fund HIV treatments regardless of CD4 count.[6] This not only improved the wellbeing of all people living with HIV, but also rendered GBM living with HIV with a sustained UVL (around 4% of GBM in NZ) sexually non-infectious

- Secondly, PrEP was publicly funded on a targeted basis in early 2018, NZ being one of the first countries to do so.[7] This followed an initial demonstration project in Auckland from early 2017.[8] Some GBM will have also been using PrEP prior to this e.g. via personal import, but because of the behavioural surveillance gap 2014-2022, it is difficult to know when PrEP uptake started to rise in a meaningful way. PrEP suitability criteria changed (widened) again in July 2022,[9] near the end of the 2022 data collection round

- Thirdly, because testing for HIV has become the entry point for both HIV care and PrEP, testing rates had sharply increased in 2022. This undoubtedly reflects the stronger emphasis on and promotion of HIV testing by community organisations (for example the "Ending HIV" social marketing campaign extolling the benefits of an early diagnosis), that until 2017 had been a less noticeable feature of NZ's HIV control programmes. Community agencies also increased the variety of HIV testing options in NZ, as witnessed by the jump in non-traditional testing sites reported by participants in 2022. HIV sector agencies have also strengthened their public awareness campaigns to de-stigmatise HIV, addressing an additional barrier to HIV screening

- Collectively, this meant that by 2022 more condomless anal intercourse no longer equated to more HIV exposure. A shrinkingly small proportion of GBM over time are reporting risky exposures and no HIV testing, which likely reduces the number of GBM living with undiagnosed HIV

- Furthermore, sexual mixing means many GBM not using at least one form of combination HIV prevention will now be indirectly protected by GBM who are. For example, it is possible that progressively fewer participants engaging in condomless anal intercourse without PrEP or ART coverage are being exposed to HIV, if an increasing proportion of them are having sex with casual partners who have no potential to sexually transmit HIV (i.e if their partners are on PrEP or have UVL)

- Encouragingly, the improvements in combination HIV prevention and testing have been seen in all groups, but especially among some that are strategically vital in controlling HIV spread. GBM reporting the most partners increased their rates of recent HIV testing the most. This group also showed the most dramatic shift in combination HIV prevention coverage; from below 50% coverage in 2014 to 81.9% coverage by 2022. Their high sexual connnectivity means better coverage among this group will disproportionately quell HIV transmission across sexual networks of GBM

- Nevertheless, the improvements in combination HIV prevention and testing are still patterned, and some subgroups of GBM defined by their age, ethnicity, identity or place of residence are still reporting lower uptake than others. These disparities need to be understood in more detail, and this will be investigated in other research briefs

- Improvement in these behaviours beyond 2022 is not inevitable. Behavioural surveillance programmes monitor modifiable behaviours that are relevant to eliminating HIV transmission in NZ. Continual public health action and innovation will be required to engage GBM, promote behaviour change, make services more accessible, and ensure they are suitable.

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Notes

- The HIV behavioural surveillance programme combines data previously collected in the Gay Auckland Periodic Sex Survey (GAPSS) and Gay men's Online Sex Survey (GOSS) up to 2014, with the Sex and Prevention of Transmission Study (SPOTS) in 2022

- From 2002-2014, eligibility criteria were being a man who had had sex with a man (MSM) in the previous 5 years. In 2022, eligibility was expanded to include men (cis or trans) who had ever had sex with a man, or men (cis or trans) who had not yet had sex with a man but identified as gay, bisexual, takatāpui, pansexual or queer. The 2022 survey also included a small number of transwomen and non-binary people who had had sex with MSM in the previous 5 years. For simplicity, in this research brief we refer to all participants as "GBM", even though this might not reflect a particular individual's gender or sexual identity

- As HIV behavioural surveillance employs non-random sampling, care must be taken before generalising findings to all GBM. GAPSS sampled participants in person at a gay community fair day, gay bars and sex-on-site venues in Auckland. GOSS sampled participants online via internet dating sites across the whole of NZ, once GAPSS recruitment had completed that year. SPOTS sampled participants online via social and news media, gay dating apps and websites, community organisations and physical promotion e.g. posters and fliers nationwide over 3 months

- These surveys are voluntary, self-completed and anonymous

- This research brief reports basic statistical tests of trend (Cochran-Armitage tests) over time. We have chosen 2006 as the baseline, as this was the first year national data were available. Statistically significant findings (where $p<0.05$) are denoted by an asterisk ("*") by the corresponding data in Figures. In the accompanying text, we describe how the proportions have changed over time, however, more rigorous statistical testing is needed to know whether any differences over time (and for a specific time point or period) remain significant after accounting for changes in sample characteristics each round. Other research briefs will examine whether apparent differences *between* subgroups are statistically significant or not

- Data on ART status was asked for the first time in 2011 and 2014 without information on undetectable viral load (UVL). In 2022, both ART status and UVL status were collected; almost all those on ART had UVL, so we have not differentiated participants based on UVL status. For comparisons over time, all participants with diagnosed HIV prior to 2011 are recorded as ART status unknown

- Data on PrEP status is based on self-reported PrEP use in the 6 months prior to survey. It does not take account of adherence or dosing regimen. PrEP use and condomless anal intercourse may not coincide for some participants (e.g. some may have engaged in condomless intercourse prior to starting PrEP within the 6-month recall period. Also, some participants taking PrEP but consistently using condoms with casual sex partners are coded as consistent condom users (i.e. the Figures presented in this research brief will underestimate overall PrEP use)

- Behavioural surveillance was not conducted 2015-2021, therefore we cannot tell from these data when some of the large changes in behaviours seen between 2014-2022 (such as PrEP) occurred.

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REVIEW

Getting HIV Pre-exposure Prophylaxis (PrEP) into Private Pharmacies: Global Delivery Models and Research Directions

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Abstract

Purpose of Review To provide an overview of the current state of HIV pre-exposure prophylaxis (PrEP) delivery via private sector pharmacies globally, to discuss the context-specific factors that have influenced the design and implementation of different pharmacy-based PrEP delivery models in three example settings, and to identify future research directions.

Recent Findings Multiple high- and low-income countries are implementing or pilot testing PrEP delivery via private pharmacies using a variety of delivery models, tailored to the context. Current evidence indicates that pharmacy-based PrEP services are in demand and generally acceptable to clients and pharmacy providers. Additionally, the evidence suggests that with proper training and oversight, pharmacy providers are capable of safely initiating and managing clients on PrEP. The delivery of PrEP services at private pharmacies also achieves similar levels of PrEP initiation and continuation as traditional health clinics, but additionally reach individuals underserved by such clinics (e.g., young men; minorities), making pharmacies well-positioned to increase overall PrEP coverage. Implementation of pharmacy-based PrEP services will look different in each context and depend not only on the state of the private pharmacy sector, but also on the extent to which key needs related to governance, financing, and regulation are addressed.

Summary Private pharmacies are a promising delivery channel for PrEP in diverse settings. Countries with robust private pharmacy sectors and populations at HIV risk should focus on aligning key areas related to governance, financing, and regulation that have proven critical to pharmacy-based PrEP delivery while pursuing an ambitious research agenda to generate information for decision-making. Additionally, the nascency of pharmacy-based PrEP delivery in both high- and low-and-middle-income settings presents a prime opportunity for shared learning and innovation.

Keywords Private pharmacies · Pre-exposure prophylaxis (PrEP) · HIV prevention · Differentiated service delivery (DSD)

Introduction

Successful scale-up of HIV antiretroviral therapy (ART) has required simplifying access criteria and diversifying delivery channels to meet client needs and reduce strain on healthcare systems; a similar approach will likely be needed to scale up novel HIV prevention services, including pre-exposure prophylaxis (PrEP) [1–5]. With an estimated 1.3 million people newly infected with HIV in 2022 [6] and cumulative oral PrEP initiations at 4.3 million [7], the world is not on

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track to meet the UNAIDS 2025 targets of new HIV infections reduced to 370,000 and "PrEP available to 10 million people at substantial risk of HIV [8](p.4)."

There is a growing consensus that private-sector pharmacies are an underutilized resource for HIV service delivery [9], including among global HIV policymakers and donors—like the World Health Organization, Global Fund, and United States (US) President's Emergency Plan for AIDS Relief—who have called for leveraging the private pharmacy sector as one of several ways to increase access to HIV prevention services and help countries financially sustain their HIV response [3, 10, 11]. Several high- and low-and-middle-income countries, such as the USA, South Africa, and Kenya, have also identified private pharmacies as target delivery points in their national HIV/AIDS strategies [5, 12, 13].

Compared to public sector clinics, private pharmacies are typically more numerous, closer to where people live and work, and have longer operating hours. They are also a common first stop for sexual and reproductive health (SRH) products and services, such as condoms, emergency contraception, pregnancy testing, and treatment of sexually transmitted infections [14–16], making them a logical place to reach individuals who may benefit from HIV PrEP or post-exposure prophylaxis (PEP) services. However, regulation of private pharmacies varies considerably across countries, with the prevalence of illegal pharmacies low in countries with strictly enforced regulations and routine inspections (e.g., the USA and South Africa), moderate in countries that allocate fewer resources to routine enforcement but conduct periodic crackdowns (e.g., Kenya), and high in countries with both weak regulation and enforcement (e.g., Uganda).

In places with robust, organized private pharmacy sectors, the rationale for pharmacy-based PrEP delivery is sound; however, our understanding of how to operationalize it in different pharmacy settings, and the context-specific factors that may influence its feasibility, acceptability, and sustainability, are still in their early stages. This review focuses on three countries, each with > 300,000 cumulative PrEP initiations [17] that are leading in the space of private pharmacy-based PrEP delivery: the USA, Kenya, and South Africa. We will discuss how local context has influenced the design of different pharmacy PrEP models, describe early findings from programs and research studies, and identify future directions for research and implementation.

Pharmacy PrEP Models in Use

In select parts of the USA, South Africa, and Kenya, three main pharmacy PrEP models are being implemented programmatically and/or tested via research studies: (1) a co-located model (with no task shifting), (2) a partially task-shifted model, and (3) a fully-task shifted (i.e., standalone) model, each described in Table 1. The following case studies provide specific examples of each model, with key statistics about each country's HIV epidemic presented in Table 2.

Table 1 Pharmacy PrEP delivery models that have been tested or implemented in the USA, Kenya, and/or South Africa

Model	Description	Examples
Co-located model (i.e., no task shifting)	A cadre of healthcare worker legally authorized to initiate and manage clients on PrEP independently or under remote physician supervision (e.g., a nurse/nurse practitioner) is based in a private sector pharmacy and provides PrEP services. If involved, pharmacy providers dispense against PrEP prescriptions issued	USA: CVS Minute Clinics [18]; Walgreens HIV-specialized Pharmacies [19]; Walmart Specialty Pharmacies of the Community [20] Kenya: AGYW Nurse-Navigator Model [21••] South Africa: Pharmacies with physicians and/or NIMART-trained nurses on staff
Partially task-shifted model	Pharmacy providers are upskilled to deliver select components of PrEP services to eligible clients (e.g., HIV risk screening, HIV testing), with components that are beyond their scope of practice (e.g., PrEP prescribing) provided remotely via telehealth consultation by a higher-cadre healthcare worker	Kenya: Pharm PrEP Refill Model [22••] South Africa: EPIC Model [23•] prior to August 2023
Fully task-shifted model (i.e., standalone model)	Pharmacy providers are upskilled to independently initiate (i.e., screen, prescribe) and manage eligible clients on PrEP, with access to an HIV specialist, as needed, for consultations and referrals	USA: Kelley-Ross Pharmacy One-Step PrEP program [24] Kenya: Pharm PrEP Initiation Model [25••] South Africa: EPIC Model post-August 2023

PrEP pre-exposure prophylaxis, *AGYW* adolescent girls and young women, *NIMART* nurse-initiated management of antiretroviral therapy, *EPIC* Expanding ART/PrEP Innovation Consortium

Table 2 Key statistics about the HIV epidemics in the USA, South Africa, and Kenya

	USA	South Africa	Kenya
Population [26]	333.2 million	59.9 million	54.0 million
People living with HIV [27, 28]	1.2 million	7.5 million	1.4 million
New HIV infections in 2021 [27, 28]	36,000	210,000	35,000
HIV incidence per 1000 population [27, 28]	0.13	4.2	0.73
Total oral PrEP initiations[a] [17]	381,784	888,217	321,662
Received oral PrEP at least once during 2021[b] [17, 27]	227,047	346,667	117,174
Total number of private pharmacies	60,000	4700	6500

[a]Total number of individuals ever initiated on PrEP, including PrEP re-initiations following pauses in PrEP use

[b]Total number of individuals who were dispensed PrEP medication at least once during the 2021 calendar year

Case Study 1: The United States

Across the USA, only 25% of the 1.2 million individuals who could benefit from PrEP have been prescribed it [29], with uptake particularly low among populations with disproportionate HIV burden, such as Black and LatinX individuals [30]. Key barriers to PrEP use include distance to PrEP clinics, provider bias, client distrust of the healthcare system, and cost [30]. The current US National HIV/AIDS Strategy identifies expanding the diversity of PrEP providers as a key goal, with pharmacy providers specifically called out as a workforce to engage [5]. Nationwide, there are ~ 60,000 private pharmacies, two-thirds of which are part of retail chains [31]. In July 2021, the US government clarified that most health insurance plans are required to cover the cost of PrEP medication and ancillary services [32, 33]; however, reports of private insurer non-compliance (e.g., denying claims for PrEP-related HIV testing) are not uncommon [34]. Individuals without health insurance may qualify for assistance programs—sponsored by the manufacturer [35], state [36], or federal government [37]—that cover some or all costs. For most, purchasing PrEP out of pocket is cost-prohibitive, with brand-name oral PrEP running upwards of $1800 US Dollar (USD) per month [38] and generic formulation costing ~ $60 USD per month [34].

Co-located Model

In recent years, large retail pharmacy chains, such as CVS, Walgreens, and Walmart, have transformed thousands of outlets into specialized pharmacies [18–20, 39, 40]. Staffed with higher-level cadres with prescribing privileges (like nurse practitioners) who have undergone HIV-specific training, these specialized pharmacies offer an array of primary care services, including HIV testing and PrEP [18–20]. If the client has public or private health insurance, the pharmacy bills the insurer directly; uninsured clients not enrolled in any assistance programs pay out of pocket. A major limitation, however, is that chain pharmacies operating this co-located model are less common in the neighborhoods with the highest need (ones with high baseline HIV incidence and poverty); the community (independently-owned) pharmacies that prevail in these neighborhoods often lack the revenue needed to sustain an in-house nurse practitioner.

Fully Task-Shifted Model

Select US states have also implemented the standalone model. As of July 2023, the pharmacy boards of 15 states had authorized pharmacists to prescribe PrEP under certain conditions (e.g., under a collaborative practice agreement; limited to an initial 60-day prescription [41]); enabling legislation is pending in 11 other states [42]. Currently, there is no standardized pharmacy provider PrEP delivery training, though the Pharmacy Taskforce of the Ending the HIV Epidemic in the US initiative is developing a continuing medical education program for this, and some pharmacy schools have begun incorporating PrEP delivery into the core curricula of their degree programs [43].

One example of the standalone model is the Kelley-Ross One-Step PrEP program [24] in Seattle, Washington. This program is based on collaborative practice agreements that allow pharmacists to perform certain functions under specified circumstances beyond their typical scope of practice with appropriate training and oversight by a certified drug prescriber. Since 2015, pharmacists at Kelley-Ross Pharmacy have initiated and managed > 1000 clients on oral PrEP under this model, and in 2022, they also began administering long-acting injectable PrEP [44].

A threat to the long-term feasibility of this model, however, is pharmacists' lack of provider status at the federal level, which precludes pharmacists from being able to bill the government for clinical services rendered, even ones that fall within their scope of work (e.g., counseling, HIV testing) [45]. Since private insurers tend to follow the federal

government's payment policies [46], this limitation jeopardizes this model's economic viability.

Case Study 2: South Africa

Community-based, decentralized delivery of ART refills in South Africa has helped ART clients mitigate many of the same challenges currently faced by prospective PrEP clients, such as distance to clinics, long queues, and inconvenient operating hours [47]. With ~ 4700 registered private pharmacies nationwide (many with a nurse on staff at least part time) [48], the potential for private pharmacies to directly support HIV service delivery is considerable [49] and known to South Africa's National Department of Health (NDoH). Since 2014, the NDoH has partnered with hundreds of private pharmacies across the country to serve as free ART refill collection points for stable ART clients as part of the Central Chronic Medicines Dispensing and Distribution program; however, this program does not currently include PrEP [50].

As the NDoH continues to discuss the details of its National Health Insurance scheme, there is growing pressure to establish payment and health information systems that would enable private-sector providers to deliver health services. To this end, the NDoH conducted a small pilot from 2018 to 2022 in two districts to assess the feasibility of contracting private pharmacies and physicians to deliver a predefined basket of services—including ART and PrEP—using government stock of commodities [48].

Co-located model

Nurses who have completed the NDoH's course in nurse-initiated management of ART (NIMART) are permitted to prescribe ARVs in private pharmacies with appropriate permits, with physician oversight and remote consultation via a referral app. As of August 2021, 465 clients had initiated ART, PrEP, or PEP under this model, which serves both clients with private health insurance that covers PrEP and clients willing to pay out of pocket for PrEP (with name-brand and generic PrEP costing ~ $30 USD and ~ $13 USD per month, respectively [51]). In this model, uninsured clients pay separately for required laboratory exams (e.g., ~ $8 USD for hepatitis B testing). In sum, these costs are unaffordable for the 63% of South Africa's population living below the poverty line of $6.85 USD per day [52].

Partially Task-Shifted Model

From August 2019 to December 2020, the Expanding ART/PrEP Innovation Consortium (EPIC)—a program of the South African HIV Clinicians Society—pilot tested a partially task-shifted model of pharmacy-based PrEP delivery in 488 private pharmacies across nine provinces [23•]. Pharmacy providers were trained to assess clients for PrEP eligibility. Once preliminary eligibility was confirmed, clients paid out of pocket to get required laboratory tests at nearby affiliated pathology labs. Upon returning to pharmacy, PrEP prescriptions were issued by a physician via telehealth consultation. Pharmacies obtained generic PrEP through their normal supply channels (i.e., no government or donor subsidies). In total, participants typically paid ~ $50 USD per month for PrEP services—an amount that pilot stakeholders viewed as a barrier to maximizing model impact [23•].

Fully Task-Shifted Model

Concurrent with this pilot, EPIC developed a short course similar to NIMART called pharmacist-initiated management of ART (PIMART) for training pharmacists to prescribe and manage clients on PrEP, PEP, and first-line ART [53]. Although the SAPC published enabling legislation for PIMART in August 2021 [54], a legal challenge brought forth by a group of private physicians halted implementation in December 2022 [55]. The opposing physicians argued that PIMART encroaches on the domain of medical practitioners and would compromise care quality [56]. In August 2023, the court ruled in SAPC's favor, thereby opening up the possibility for PIMART-trained pharmacists to execute a fully task-shifted (i.e., standalone) model for pharmacy-based PrEP delivery. What clients would pay out of pocket to obtain PrEP services via this model has yet to be determined and could vary depending on factors such as private health insurance coverage and government subsidies to support this model (e.g., donated PrEP drugs).

Case Study 3: Kenya

In Kenya, PrEP is still delivered predominantly through public channels [48]. However, in recent years, the Kenya Ministry of Health (MOH) has made private sector engagement a priority [57] and included private pharmacies as one of several target PrEP delivery points in its national framework for PrEP scale-up [13]. Across Kenya, there are ~ 6500 registered private pharmacies, most of which are owned and operated by licensed pharmaceutical technologists [48]. Starting in 2020, the MOH began granting special permissions to test pharmacy-based PrEP delivery models via research.

Co-located Model

From October 2020 to March 2021, a pilot study at three private pharmacies in Western Kenya tested a co-located model whereby PrEP-trained nurses (who are legally allowed to initiate clients on PrEP under remote physician supervision) were stationed at the pharmacies to offer PrEP to adolescent

girls and young women (AGYW) purchasing contraception [21••]. The nurses delivered counseling, assessed HIV risk behaviors, completed HIV testing, and dispensed PrEP to all eligible AGYW. Participants received PrEP services for free, with the study covering the cost of the HIV testing kits, PrEP drug, and nurses' time. An ongoing cluster-randomized controlled trial (cRCT; NCT05467306), launched in May 2023, is testing the effect of this co-located model compared to a standalone model (described below) on PrEP initiation and continuation outcomes among AGYW, with services available at no cost to clients [58].

Partially and Fully Task-Shifted Models

From November 2020 to December 2021, partially and fully task-shifted models were simultaneously pilot tested in five private pharmacies in Central and Western Kenya. In both models, trained pharmacy providers were given special privileges to deliver PrEP services using a prescribing checklist with remote physician oversight [59]. The checklist helped pharmacy providers determine clients' eligibility to initiate PrEP (fully task-shifted model only) or continue PrEP (both models) and prompted providers to refer clients to clinic-based services if they tested HIV-positive or reported medical conditions that might contraindicate PrEP safety (e.g., history of kidney disease). At the time, the legality of pharmacy providers performing HIV rapid diagnostic testing was in dispute, so the Kenya MOH allowed the study to use provider-assisted HIVST as a workaround [59]. If clients met all checklist criteria, the pharmacy provider dispensed an initial or refill supply of PrEP (depending on the model) for a client fee of ~ $3 USD. The PrEP drug came from national stocks, with study pharmacies procuring it from nearby public clinics and submitting routine commodity reports in return. In both models, a remote physician was available for consultations and referrals.

In the partially task-shifted model, which was piloted at two public clinics, clients were initiated on PrEP by physicians at the clinics and given the option to refill PrEP at study pharmacies. In the fully task-shifted model, trained pharmacy providers provided same-day PrEP initiation and refills. Instead of undergoing creatinine clearance and hepatitis B and C testing, clients were screened for preexisting conditions that could contraindicate PrEP safety—a demedicalized approach to PrEP initiation supported by evidence from several PrEP studies which demonstrated that such testing leads to few exclusions [60, 61].

The fully task-shifted model was further tested in a 6-month extension that additionally offered PEP and removed the client fee [62••]. An ongoing cRCT (NCT05842122), launched in June 2023, is testing three variations of this standalone model compared to pharmacy referral to clinic-based PrEP services [63]. In addition to quantifying the effect of pharmacy-based PrEP delivery on PrEP initiation and continuation compared to referral, this study will also assess the effect of a client fee (free vs. ~ $2.50 USD) and pharmacy staffing (presence/absence of an HIV testing services counselor to assist with select components of PrEP delivery).

Key Findings to Date

Table 3 summarizes key outcomes related to PrEP uptake, continuation, and acceptability of pharmacy-based PrEP delivery from the above-described examples. Additional examples and studies that are beyond the scope of this commentary are detailed in four recently published reviews [64•, 65•, 66•, 67•]. Below, we summarize five key takeaways.

1. **The demand for PrEP in pharmacies already exists, especially at pharmacies located near HIV hotspots, such as bars/nightclubs, transactional sex venues, and universities**. None of the models detailed in Table 3 featured mass media or demand creation campaigns; yet, word spread, and a considerable number of clients sought PrEP at the pharmacy and agreed to undergo PrEP screening. Notably, in two studies that charged clients a fee for PrEP services [23•, 25••], participants were willing to pay some amount, despite these same services being available free in the public sector.
2. **Pharmacies reach individuals who could benefit from PrEP, including those underserved by traditional health clinics, making them well-positioned to increase overall PrEP coverage**. In the handful of studies that report on number of clients screened for PrEP eligibility, few clients (< 15%) were found ineligible (e.g., due to testing HIV-positive) [25••, 62••, 68••]. This high eligibility rate may be attributable, in part, to pharmacies being a common resort for SRH products and services, with some clients possibly more willing to report behaviors associated with HIV risk when—by virtue of their purchases—the pharmacy provider already has some awareness of their sexual activity. The drive to turn a profit might also make pharmacy providers more inclined to offer PrEP screening broadly, and less inclined to turn away clients seeking PrEP due to their personal biases or sexual mores (e.g., related to pre- or extra-marital sex)—both of which are known barriers to PrEP delivery in clinic settings [69–71].

   Additionally, studies in the USA and Kenya have found that pharmacies may reach populations that do not often use clinic-based PrEP services. For example, several studies in the USA [72–74] have found that pharmacies have high potential to reach Black MSM—a population disproportionately burdened by HIV/AIDS with

Table 3 Published findings about select pharmacy-based PrEP delivery models in the USA, South Africa, and Kenya

		Population	Reporting period	PrEP uptake[a]	PrEP continuation[b]	Implementation outcomes[c]	Willingness to pay
Co-located model (i.e., no task shifting)							
Kenya	Pintye et al. (2023)[21]	Confirmed HIV-negative AGYW (≥ 15–24 years)	Oct. 2020–Mar. 2021 (5 months)	85% (200/235)	*Not assessed*	Acceptability – Clients: High (assessed via interviews) [79•]	After 1 month: 69% (107/155) Median (IQR) amount: 150 (100–200) KES (~ $1 [$0.70–$1.40] USD) per follow-up visit
Partially task-shifted model[d]							
South Africa	Shipp et al. (2023) [23•]	General population age ≥ 18	Aug. 2019–Dec. 2020 (15 months)	*Not reported*	*Not yet published*	Acceptability – Clients: High (assessed via interviews)	*Not yet published*[e]
Kenya	Mogere et al. (2023) [22••]	Adults (≥ 18) initiated on PrEP at a clinic	Nov. 2020–Oct. 2021 (11 months)	*Not applicable*	At 1 month: 39% (41/106), with only 1% (3/106) opting to refill at a pharmacy	Acceptability – Clients: Low (assessed via interviews) [79•]	*Not yet published*[e]
Fully task-shifted model (i.e., standalone model)							
USA	Tung et al. (2018) [68••]	General population age ≥ 18	Mar. 2015–Feb. 2018 (35 months)	97% (695/714)	Still "active in the service" at end of study period:[f] 54% (372/695)	*None assessed*	*Not assessed*
Kenya	Ortblad et al. (2023) [25••]	General population age ≥ 18	Nov. 2020–Oct. 2021 (11 months)	60% (287/476)	At 1 month: 53% (153/287); At 4 months: 36% (103/287); At 7 months: 21% (51/242)	Acceptability – Clients & providers: High (assessed via survey) [80] Appropriateness – Clients: High (assessed via survey)[h] Cost: Financial cost per initiation visit: $1.52 USD; per continuation visit: $1.38 USD [77] Fidelity: High (assessed via standardized client actors) [78••] Feasibility: *Not yet published*[e]	After 1 month: 98% (150/153) Median (IQR) amount: 300 (200–375) KES (~ $2.71 [$1.81-$3.39] USD) per follow-up visit
	Roche et al. (2023) [62••]	General population age ≥ 18	Jan.–Jul. 2022 (6 months)	97% (684/704)	At 1 month: 71% (484/684)		At enrollment: 83% (575/684) Median (IQR) amount: $3.30 ($1.60–4.10 USD) per follow-up visit [77]

AGYW adolescent girls and young women, *IQR* interquartile range, *PrEP* pre-exposure prophylaxis, *KES* Kenyan shillings, *USD* US dollars

[a]Among those determined to be eligible to receive PrEP. Example conditions that would render a client ineligible to continue PrEP at a pharmacy include testing positive for HIV and severe PrEP side effects

[b]Denominators exclude clients who did not return for follow-up and those deemed ineligible to continue PrEP at the pharmacy (e.g., due to severe PrEP side effects requiring referral or testing HIV-positive)

[c]As defined in Proctor et al.'s taxonomy of implementation outcomes (Proctor et al. Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda. Adm Policy Ment Health. 2011; 38(2): 65–76. doi:https://doi.org/10.1007/s10488-010-0319-7). Since client uptake is indicated in the "PrEP uptake" and "PrEP continuation" columns, "adoption" in this column refers to uptake of PrEP delivery by the target provider

[d]Exact task(s) shifted to pharmacy providers varies by model

[e]Not reported in these abstracts but will be reported on in main outcomes paper, currently under review

[f]135 clients were lost to follow-up. Remaining 188 clients transferred to a primary care physician ($n = 135$), relocated out of the area ($n = 34$), and/or decided to stop PrEP due to change in perceived HIV risk ($n = 40$)

[g]Assessed via 5-point Likert-type statements assessing dimensions of acceptability (e.g., burden, affective attitude) from the Theoretical Framework of Acceptability

[h]Assessed using a modified version of the Intervention Appropriateness Measure (Weiner et al. Psychometric assessment of three newly developed implementation outcome measures. Implement Sci. 2017;12(1):108. doi: https://doi.org/10.1186/s13012-017–0635-3)

a long history of marginalization from the US medical system. These studies also pointed out that, in addition to being more physically accessible, pharmacies offer a disease-neutral, non-stigmatizing environment and often have strong rapport with the surrounding community, making them a trusted healthcare resource. Perhaps for similar reasons, the fully task-shifted model in Kenya [25••] was able to engage a considerable number of unmarried men—a demographic notably underrepresented in public-sector PrEP programs. Moreover, when comparing the sexual behaviors of clients who initiated PrEP in pharmacy-based versus clinic-based studies in Kenya, we saw notable differences. Specifically, the percent of clients who reported sex with partners of unknown HIV status and multiple concurrent sex partners was considerably higher at pharmacies, while reports of sex with partners known to be living with HIV was considerably lower (Table 4).

Further evidence that clients who are inclined to initiate PrEP at pharmacies may be disinterested in clinic-based PrEP services and vice versa comes from Kenya. The pilot of the partially task-shifted model for PrEP refills found that, among 41 clients who initiated PrEP at a clinic and refilled their prescription at least once, very few ($n=3$) opted to refill at a pharmacy [22••]. Moreover, in the pilot of the fully task-shifted model, PrEP clients at their last study visit were referred to nearby public health facilities where they could continue getting PrEP services for free; however, a follow-up survey with 492 clients 3 months following study completion found that 59% (291/492) had stopped using PrEP and, of these, 60% (175/291) said they did so because they did not want to get PrEP from a clinic [75•].

3. **When PrEP is made available in pharmacies, uptake and continuation often matches or exceeds that commonly seen in clinics**. In Kenya, the private pharmacies that participated in pilot studies achieved levels of PrEP initiation and continuation comparable to those of clinics offering PrEP as part of routine service delivery (Table 4). The comparability of these utilization metrics is compelling because it suggests that pharmacies can "perform" just as well as clinics but among a client population that clinics (especially those in the public sector) are less likely to capture.
4. **Most clients and providers who obtain or deliver PrEP services via pharmacies find this delivery setting acceptable; additional evidence on other implementation outcomes (e.g., feasibility, cost) is needed.** In survey and interview studies, pharmacy-based PrEP delivery has generally been perceived by clients as convenient and private and by providers as not overly burdensome to deliver [23•, 25••, 62••]. However, a given model's acceptability will likely vary based on a number of factors, especially how much clients are charged and the amount of time pharmacies have (or make) available to serve PrEP clients, with the former likely influenced by how profitable PrEP delivery is to pharmacies [23•, 76].

   To date, there is little published evidence on other implementation outcomes, such as feasibility, appropriateness, and cost. One exception is the Kenya-based pilot of the stand-alone model in which clients paid ~ $3 USD to initiate and/or continue PrEP, which found that most clients perceived the model to be highly appropriate and that the financial cost (i.e., cost of implementing the model, including the cost of pharmacy provider time but excluding the cost of the PrEP drugs and HIV test kits donated by the MOH) was $1.52 USD per PrEP initiation visit and $1.38 USD per PrEP continuation visit [77]. Additional research is needed to assess the implementation of pharmacy-based PrEP delivery models, identify context-specific factors that help or hinder implementation, and test strategies to enhance model implementation and sustainability. Such information is critical for informing whether it is worth pursuing pharmacy-based PrEP delivery in a given setting and, if so, how the model might be implemented to circumvent or mitigate potential barriers.
5. **With proper training and oversight, pharmacy providers are capable of safely initiating and managing clients on PrEP and maintaining their privacy**. Despite concerns raised by skeptics, the available evidence on pharmacy-based PrEP delivery indicates that trained pharmacy providers can educate clients about HIV and PrEP, assess clients' HIV risk, rule out medical conditions that may contraindicate safety, and conduct HIV testing and counseling while maintaining high levels of privacy [78••]. The published evidence also shows that pharmacy providers utilize remote clinicians appropriately, reaching out for consultations and referrals, when appropriate.

Potential Pitfalls and Future Directions

With only 6 years to reach the Sustainable Development Goal of zero new HIV infections by 2030 [81], health systems must creatively leverage both their authority and available resources to ensure that HIV prevention tools are available across a multitude of service delivery platforms. Whether it makes sense for a given country to involve private pharmacies in PrEP delivery—and, if so, which models to use—will be highly context-specific and depend not only on the state of the private pharmacy sector (e.g., how robust, organized, and utilized it is), but also on the extent to which the country can address key needs related to governance, financing, and regulation;

Table 4 Risk behaviors of clients initiating PrEP at different service locations in Kenya

		Pharmacy-delivered PrEP services		Clinic-delivered PrEP services		
		Fully task-shifted model (*N* = 287)	Co-located model (*N* = 235)	Partners Scale-Up; at HIV clinics (*N* = 4898)	PrIYA Program; at MCH clinics (*N* = 2030)	PrIYA Program; at FP clinics (*N* = 278)
Study description and demographics	Study duration	11 months (Nov. 2020–Oct. 2021)	5 months (Oct. 2020–Mar.2021)	30 months (Jan. 2017–Jun. 2019)	7 months (Nov. 2017–Jun. 2018)	7 months (Nov. 2017–Jun. 2018)
	Population of interest	*Anyone at risk of HIV infection (≥ 18 years)*	*AGYW seeking contraception services at private pharmacies (≥ 15 to 24 years)*	*Anyone at risk of HIV infection (≥ 18 years)*	*Women attending antenatal or postnatal care (≥ 15 years)*	*Women of reproductive age (15 to 45 years)*
	PrEP delivery location	*Private community pharmacies (n = 5)*	*Private community pharmacies (n = 3)*	*Public HIV care clinics (n = 25)*	*Public, faith-based, & private maternal & child health clinics (n = 16)*	*Public family planning clinics (n = 13)*
	Implementation strategy	*Pharmacy provider-led delivery*	*PrEP-dedicated nurse-led delivery*	*Healthcare provider-led delivery*[1]	*PrEP-dedicated nurse-led delivery*	*PrEP-dedicated nurse-led delivery*
	Men	*163/287 (57%)*	-	*2257/4898 (46%)*	-	-
	< 25 years	*127/287 (44%)*	*235/235 (100%)*	*969/4898 (20%)*	*999/2030 (49%)*	*87/278 (31%)*
	Unmarried	*178/287 (62%)*	*159/200 (80%)*	*432/4898 (9%)*	*399/2030 (19%)*	*213/278 (77%)*
Behaviors associated with HIV risk, past 6 months	***Men initiating PrEP services***					
	Partner(s) HIV status unknown	136/163 (83%)	-	236/2257 (11%)	-	-
	Partner(s) living with HIV	4/163 (2%)	-	1993/2257 (88%)	-	-
	Inconsistent or no condom use	111/163 (68%)	-	921/2257 (41%)	-	-
	Multiple sexual partners	118/163 (72%)	-	260/2257 (12%)	-	-
	Recurrent sex with alcohol	63/163 (39%)	-	67/2257 (3%)	-	-
	Transactional sex[2]	21/163 (13%)	-	23/2257 (1%)	-	-
	Women initiating PrEP services					
	Partner(s) HIV status unknown	96/124 (77%)	-	553/2640 (21%)	1178/2030 (58%)	151/278 (54%)
	Partner(s) living with HIV	7/124 (6%)	-	2098/2640 (80%)	153/2030 (8%)	62/278 (22%)
	Inconsistent or no condom use	92/124 (74%)	-	1150/2640 (44%)	1946/2030 (96%)	31/278 (11%)
	Multiple sexual partners	46/124 (37%)	-	305/2640 (12%)	-	18/278 (7%)
	Recurrent sex with alcohol	27/124 (22%)	-	44/2640 (2%)	-	4/278 (1%)
	Transactional sex[2]	9/124 (7%)	-	44/2640 (2%)	17/2030 (1%)	8/278 (3%)
	Adolescent girls and young women (15–24 years) initiating PrEP services					
	Partner(s) HIV status unknown	51/64 (80%)	116/193 (60%)	178/673 (26%)	648/1129 (57%)	64/106 (60%)
	Partner(s) living with HIV	2/64 (3%)	1/200 (< 1%)	478/673 (71%)	48/1129 (4%)	0/106 (0%)
	Inconsistent or no condom use	48/64 (75%)	199/200 (99.5%)	341/673 (51%)	1081/1129 (96%)	11/106 (10%)
	Multiple sexual partners	16/64 (25%)	72/200 (36%)	113/673 (17%)	-	6/106 (6%)
	Recurrent sex with alcohol	8/64 (13%)	30/200 (15%)	7/673 (1%)	-	1/106 (< 1%)
	Transactional sex[2]	7/64 (11%)	53/196 (27%)	21/673 (3%)	8/1129 (< 1%)	2/106 (2%)

Table 4 (continued)

		Pharmacy-delivered PrEP services		Clinic-delivered PrEP services		
		Fully task-shifted model (*N* = 287)	Co-located model (*N* = 235)	Partners Scale-Up; at HIV clinics (*N* = 4898)	PrIYA Program; at MCH clinics (*N* = 2030)	PrIYA Program; at FP clinics (*N* = 278)
Client outcomes	***PrEP initiation and continuation at different service locations in Kenya***[3]					
	PrEP initiation (/eligible participants)	287/575[4] (60%)	200/235 (85%)	4898/NR (N/A)	2030/9376 (22%)	278/1271 (22%)
	PrEP continuation (1 month)	153/287 (53%)	105/200[5] (53%)	2806/4898 (57%)	786/2030 (39%)	114/278[6] (41%)
	PrEP continuation (3 months)	106/287 (36%)	-	2135/4898 (44%)	441/2030 (22%)	68/278 (25%)
	PrEP continuation (6 months)	51/287 (21%)	-	1661/4898 (34%)	189/2030 (12%)	30/278 (11%)

PrEP pre-exposure prophylaxis, *PrIYA* PrEP implementation in young women and adolescents, *AGYW* adolescent girls and young women, *NR* not reported, *NA* not applicable

[1]Health care providers include nurses, clinical officers, or HIV counselor

[2]Includes participants who bought or sold sex in exchange for money or goods

[3]In accordance with the reports of the implementation studies, we defined PrEP initiation as "documentation of having received a PrEP prescription in clinic records" and PrEP continuation as the "proportion of people initiating PrEP who had a documented PrEP refill within the visit window".[4]

[4]Among those identified as eligible for PrEP services at the pharmacy (*N* = 476)

[5]Participants that planned to continue PrEP at 1 month and were referred to the nearest PrEP-dispensing health clinic

[6]Returned to collect at least one PrEP refill within 45 days post-initiation

needs that if unaddressed, can severely delay or blunt the effectiveness of pharmacy-based PrEP delivery.

At the same time, since pharmacy-based PrEP delivery has yet to be widely implemented anywhere and some of the challenges to implementing it (e.g., provider time constraints) are likely to be universal, there is a prime opportunity to develop learning collaboratives whereby implementers from both high- and low-and-middle-income countries exchange experiences, insights, and innovations. Below, we offer general recommendations and research directions (summarized in Table 5), with the understanding that the path to pharmacy-based PrEP delivery will look different in each context.

Governance

In many countries, professional associations have strong influence over how healthcare is delivered [82] and, not surprisingly, tend to advocate for policies that further the interests of their specific cadre. In places where HIV services have historically been delivered by physicians and nurses, push-back against involving pharmacy providers (especially if this change could be perceived as a threat to earnings) should be expected and, where possible, preempted. In countries considering or actively pursuing pharmacy-based PrEP delivery, ministry leaders at the national and subnational level should convene professional associations of doctors, nurses, pharmacy providers, and ancillary service providers to understand the landscape of players, their views on potential implementation barriers (especially "deal-breakers"), and possible solutions, including adaptations to the intervention, modifications to the delivery model, and/or implementation strategies that may address the issues raised. Where appropriate, governments should also involve professional associations in the development and evaluation of curricula for pharmacy provider pre-service and in-service training so that concerns about pharmacy provider competency to deliver PrEP can be addressed proactively. Lastly, there needs to be a mechanism through which pharmacy providers delivering PrEP can access clinical support from HIV specialists.

Research that can help countries address these governance needs include stakeholder and intervention mapping exercises, surveys and interviews with representatives of professional associations, and studies testing model adaptations and/or implementation strategies to address concerns raised.

Financing

In recent years, global health authorities and donor agencies, including the WHO [83], PEPFAR [84], and USAID [85], have expressed a growing interest in engaging the private sector in HIV service delivery; however, there is currently

no global guidance around HIV service delivery via private pharmacies nor large-scale investments specific to this delivery venue. Getting pharmacy-based PrEP delivery to occur at scale—and at a price affordable to a meaningful portion of the target demographic—will likely require not only alignment of country, donor, and private sector priorities but also innovative financial strategies at multiple levels (e.g., at the client level, vouchers; at the clinic level, sliding scale payment schemes; at the national level, policies requiring national and private health insurers to cover PrEP services).

If a country seeks to scale up pharmacy-based PrEP delivery quickly, it should commit to financing, at a minimum, the cost of PrEP drugs at pharmacies, even if clients pay a service fee. In places where PrEP drugs are largely donor-supplied and donors (e.g., PEPFAR) have historically prohibited charging clients service fees, countries should advocate for this change. Bi- and multi-lateral donor agencies (e.g., Global Fund, PEPFAR) should also consider establishing commitments specifically for innovations related to pharmacy-based PrEP delivery—such as incorporating private pharmacies into government supply chains—and use their influence to facilitate enabling legislation or agreements, such as strategic purchasing partnerships between governments and private sector entities. In settings like the USA where most PrEP drugs are procured directly from suppliers, governments should use their power and influence to get private insurers to cover PrEP services (or enforce existing mandates) while also adequately funding state-sponsored PrEP assistance programs for uninsured clients.

Importantly, if any portion of pharmacy-delivered PrEP services is to be covered by a third-party payer—such as government, donor, or private insurer—then a mechanism

Table 5 Research gaps related to the governance, financing, and regulation of pharmacy-based PrEP delivery

Topic	Subtopic	Possible research directions
Governance	*Professional associations*	Assessing support and identifying potential implementation barriers and solutions to delivering PrEP via pharmacies
	Delivery model(s)	Developing and testing models/model modifications and generating data on the reach, utilization, acceptability, feasibility, and cost of different delivery models
Financing	*Public financing*	Conducting costing studies to understand the economic viability of different types of government support for private pharmacy-based PrEP delivery (e.g., government-supplied commodities and personnel)
		Developing and testing ways for private pharmacy providers to be incorporated into national health insurance schemes as PrEP providers
	Private financing	Conducting a landscape assessment of current or potential private insurer coverage of PrEP services delivered via private pharmacies (e.g., which PrEP modalities are/would be covered, for whom; client out-of-pocket expenses)
	Donor financing	Assessing donor willingness to allow donor-supplied commodities to be delivered in private pharmacies, including if clients charged a fee for provider's time; exploring other ways donors might be willing to subsidize PrEP services delivered via private pharmacies (e.g., vouchers for key populations)
	Billing	Designing and evaluating mechanisms for private pharmacies to request, track, and report on PrEP services rendered and/or commodities used
		Developing and/or testing billing mechanisms for private pharmacies to receive payment for PrEP services rendered (from governments, insurers, and/or donors)
	Other	Assessing willingness to pay among key populations and PrEP-eligible members of the general population and willingness to provide PrEP services among different types of private pharmacies (e.g., independent pharmacies, retail chains)
		Testing strategies to address cost barriers for priority PrEP populations (e.g., sliding scale payment systems)
		Conducting time-and-motion studies and unit-cost analyses to understand workflow burden and costs to pharmacies to deliver PrEP; conducting budget impact analyses to help inform governments about potential benefits of investing in pharmacy-delivered PrEP services
Regulation	*Regulations*	Working with regulatory bodies to think through regulations needed to ensure PrEP is delivered with high fidelity at pharmacies
	Monitoring	Defining and validating a set of measures for routine monitoring of pharmacy-delivered PrEP services
		Developing and testing strategies for providing feedback to private pharmacies on their adherence to regulations
		Designing and testing the effect of learning networks on pharmacy providers' PrEP delivery skills and ability to meet regulations

PrEP pre-exposure prophylaxis

for pharmacy providers to document and bill for their services must be established. Catalytic donor funding could support this by financing pharmacy integration into government health management information systems (HMIS) and/or the refinement of technology already in use at private pharmacies (e.g., point-of-sales systems) to allow relevant information to be fed directly into HMISs. Financial strategies should also be solicited directly from the private sector, especially social entrepreneurs, venture capitalists, and private philanthropic organizations with relevant expertise.

Lastly, when deciding which model(s) to pursue, countries should carefully consider human resource requirements. Both the partially and fully task-shifted models enable private pharmacies to deliver PrEP without significant additional human resources—an important advantage for countries that face chronically low workforce density, provided that pharmacy providers can be appropriately compensated for their time [83, 84].

Research that could inform decision-making related to financing includes assessments of willingness to pay among PrEP priority populations and willingness to provide among pharmacy providers, estimates of price elasticity (how supply and demand for PrEP change when the price of PrEP services change), cost effectiveness assessments, and time-and-motion studies and unit-cost analyses to understand the workflow burden and costs to pharmacies to deliver PrEP.

Regulation

Lastly, pharmacy-based PrEP delivery cannot go to scale without a clear plan for accreditation and regulation. Governments will need to not only establish standards that private pharmacies must meet to deliver PrEP but also set regulations and determine how compliance will be monitored and enforced.

Research directions include creating and validating a simple set of measures to include in regulations, such as measures for accrediting pharmacy providers who complete training and for assessing quality, including fidelity to the core components of PrEP delivery (e.g., HIV testing); assessing new technologies for providing feedback to private pharmacies on their adherence to regulations (e.g., artificial intelligence technology to verify that HIV testing is done consistently and accurately prior to prescribing [86]); and designing and testing the effect of in-person or virtual learning networks on pharmacy providers' ability to crowdsource knowledge (e.g., ways to efficiently meet regulatory requirements) and improve their PrEP delivery skills.

Conclusion

Early evidence from several countries provides proof of concept that private pharmacies can be leveraged in a variety of ways for PrEP delivery and that doing so may increase PrEP coverage and utilization, especially among populations not reached by clinic-based services; however, additional research and programmatic evidence is needed to understand how best to implement and finance these models to maximize impact. Importantly, pharmacy-based PrEP delivery is still nascent everywhere, thus presenting an opportunity for shared learning and innovation among high and low-and-middle income countries. Countries with robust private pharmacy sectors and high HIV burden should focus on aligning key areas related to governance, financing, and regulation that have proven critical to pharmacy-based PrEP delivery while, at the same time, pursuing an ambitious research agenda to generate information for decision-making. Without this parallel track, we may miss our opportunity to meet global HIV prevention goals and prevent thousands of unnecessary HIV infections.

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Author Contribution SR and KFO conceived the manuscript. SR wrote the first draft of this manuscript. KO provided senior author-level feedback on the first draft. All other authors (DW, NDC, AT, JP, EB, KN) provided additional feedback and insights and approved the final manuscript for publication.

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Declarations

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- • Of importance
- •• Of major importance

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21. •• Pintye J, Odoyo J, Nyerere B, et al. Nurse-facilitated preexposure prophylaxis delivery for adolescent girls and young women seeking contraception at retail pharmacies in Kisumu, Kenya. AIDS. 2023;37(4):617–623. https://doi.org/10.1097/QAD.0000000000003447. **This article reports on findings from a 5-month pilot study of PrEP delivery at three private pharmacies in Kisumu County, Kenya that were staffed with trained nurse navigators. The study targeted adolescent girls and young women (AGYW) age 15 to 24 purchasing contraception at the study pharmacies. Among 235 AGYW enrolled, 85% initiated PrEP (at no cost to them) and 69% indicated they would be willing to pay for PrEP at private pharmacies, despite PrEP being available for free in the public sector.**
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that clients who are willing to initiate PrEP at a public health facility may differ in their preferred PrEP delivery venue from clients who routinely purchase health-related products and services at private pharmacies in Kenya. As such, limiting private pharmacies to refilling PrEP (as opposed to also being able to initiate clients on PrEP) is unlikely to expand overall PrEP coverage in Kenya.

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75.• Omollo V, Roche SD, Mogere P, et al. HIV PrEP continuation among clients formerly engaged in PrEP services at private pharmacies participating in a pilot study in Kenya (Abstract MOPEC19). IAS 2023, the 12th IAS Conference on HIV Science. Brisbane, Australia. 2023. https://programme.ias2023.org/Abstract/Abstract/?abstractid=4589. Accessed 1 Sep 2023. **This conference abstract, presented at IAS 2023, reports on a survey conducted with participants of the above-described pilot study (reference #62) three months after the pilot ended to assess whether clients were still using PrEP and, if so, where they were accessing PrEP services. Among 492 PrEP clients who completed the survey, 291 (59%) were no longer using PrEP 3 months post-study end. When asked why they decided to stop taking PrEP, 175 (60%) said it was because they did not want to get PrEP from a clinic. This finding—combined with findings from a sister pilot of pharmacy-based PrEP refills only (references #22)—suggests that the population of PrEP-eligible clients reached by pharmacies may be unwilling or unable to get PrEP services at clinics and, as such, expanding PrEP services to private pharmacies might increase overall PrEP coverage in Kenya.**
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