HIV prevention, screening and management

A handbook for pharmacists

2022

FIP Development Goals

International Pharmaceutical Federation

Colophon

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Recommended citation
International Pharmaceutical Federation (FIP). HIV prevention, screening and management. A handbook for pharmacists. The Hague: International Pharmaceutical Federation; 2022

Cover image
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Acknowledgements

FIP thanks the authors and reviewers for their contributions to this publication.

FIP and the authors acknowledge those that contributed to this publication and all the members of the expert advisory group whose names are listed below for their valuable review, comments and suggestions to this handbook:

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Executive summary

The human immunodeficiency virus (HIV) epidemic has burdened the world for decades and, while immense progress has been made in terms of prevention, testing, treatment and quality of life for people living with HIV, the virus remains both a major global health threat and a burden for individuals, health systems and societies. Concerted efforts by all stakeholders and healthcare providers are essential to control this epidemic, and pharmacists certainly have an important role to play.

As the role of pharmacists evolves and expands to meet the changing needs of communities, their knowledge and skills continue to underpin a range of services that deliver value to patients and healthcare systems. This handbook for pharmacists describes a variety of professional services and activities in four main areas: prevention, screening and testing, management and treatment optimisation, and public health and education.

Preventing new HIV infections is one of the most important steps towards curbing the HIV epidemic, with the ambition to eventually bring it to an end. Pharmacists are ideally placed to support patients with prevention strategies that can reduce the risk of transmission, including advice on safer sex practices, supporting the use of pre- or post-exposure prophylaxis (PrEP/PEP) and supporting harm reduction strategies for intravenous drug users. PrEP and PEP are highly effective pharmacological approaches to prevention that can benefit from the expertise and accessibility of pharmacists to ensure access and optimal outcomes.

Pharmacists also contribute to screening and testing strategies that help identifying cases that need to receive treatment and care, and to prevent further transmission. Pharmacists' role in screening and testing for HIV has expanded in several ways: not only do they have a role in clinical biology laboratories in some countries, but also in increasing access to testing by conducting point-of-care tests at community pharmacies and by dispensing self-tests, offering support to individuals to perform and interpret test results, and acting upon those results.

Managing and optimising HIV treatments is another important way in which pharmacists can contribute to the response to the HIV epidemic and supporting people living with HIV to achieve optimal outcomes from their treatment and the best possible quality of life. Through their expertise in medicines, pharmacists can evaluate different antiretroviral treatment plans and improve safety by identifying and acting upon medicines interactions, assessing patients for adverse effects, and improving adherence and treatment efficacy by monitoring patients' viral load and CD_4 counts.

Finally, pharmacists play a significant public health education role by engaging in campaigns and providing individualised counselling and support to the community about safer behaviours, ending stigma and preventing sexual violence, which are often associated with HIV and other sexually transmitted infections, as well as supporting its victims. Pharmacists can also provide other important resources regarding sexual violence and how victims can be affected by HIV and where they can seek additional care.

This handbook aims to provide pharmacists and their teams with valuable information on all the above roles. It offers concise information, examples and additional resources for easy access.

Foreword

By the president of the International Pharmaceutical Federation, FIP

Every year on 1 December, the world comes together to show support to those living with the human immunodeficiency virus (HIV) or acquired immunodeficiency syndrome (AIDS). The overarching goals are to raise global attention to this important global health problem and encourage action towards ending the HIV epidemic that has burdened the world for decades. FIP is happy to join World Aids Day efforts and continue to collaborate with other stakeholders on the fight against this epidemic.

As with many prevention strategies, pharmacists are ideally placed to support patients with strategies that can reduce the risk of transmission, including advice on safer sex practices, supporting the use of pre- or post-exposure prophylaxis (PrEP/PEP) and supporting harm reduction strategies for intravenous drug users. Pharmacists also contribute to screening and testing strategies that help identify cases that need to receive treatment and care. And they further support people living with HIV who are taking antiretroviral therapy to achieve optimal outcomes from their treatment and the best possible quality of life. Pharmacists also provide education and support to the community towards ending the stigma and sexual violence that are often associated with different sexually transmitted infections.

HIV prevention, screening and management are closely linked with the FIP Development Goals 16 (Communicable diseases) and 18 (Access to medicines, devices and services). Pharmacists are key players in supporting the early identification of these transmissible diseases and provide adequate services in this area to the communities they serve. Furthermore, they are linked to FIP DG 19 (Patient safety) and DG 14 (Medicines expertise) as pharmacists can support patients in the responsible use of different medicines that can prevent or support the management of HIV, as such treatments are life-long and can be associated with a variety of adverse effects.

These FIP DGs provide the driver for this handbook to support the expansion of the role of pharmacists in areas where we can really make a difference, and the development of our knowledge and skills in the area of HIV.

This publication provides pharmacists with valuable guidance on the various ways they can impact HIV prevention and management. I hope you find this resource useful and will join hands with FIP in continuing to support the fight against HIV globally.

Dominique Jordan
FIP president

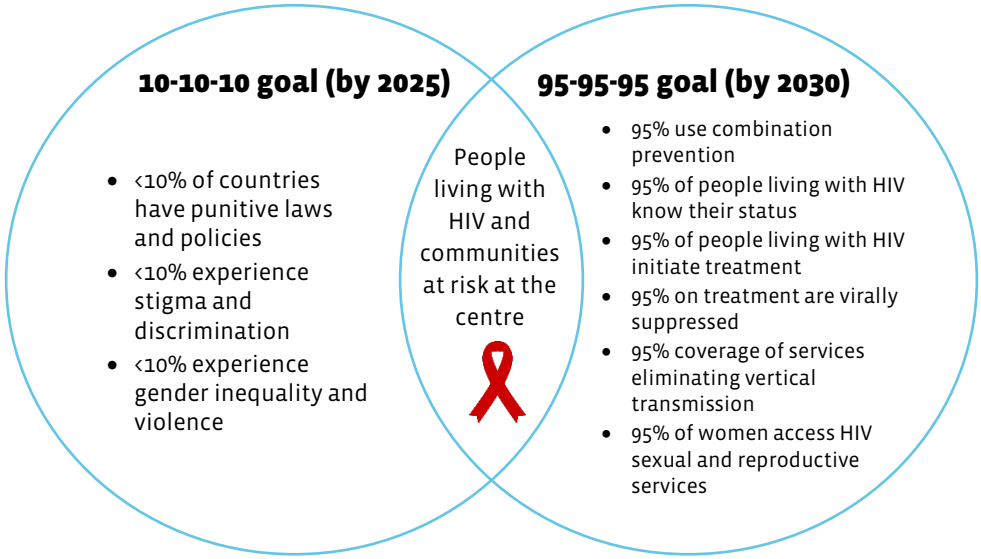
1 Introduction

The human immunodeficiency virus (HIV) weakens the body's defence mechanisms by targeting the immune system. The virus activity impairs healthy cells and lowers their capacity to function normally.[1] Acquired Immunodeficiency Syndrome (AIDS) is the most advanced stage of the condition and is characterised by severe long-term clinical manifestations known as AIDS-defining illnesses. This includes opportunistic infections or the development of AIDS-associated cancers and autoimmune diseases. The main cells affected in the immune system are the CD4 lymphocytes, one of the main indicators of understanding disease severity.[1]

The HIV epidemic is a global public health issue, with over 84.2 million infections and 41 million HIV infection-related deaths since the first reported incident in 1981.[2,3] However, significant progress is being made in HIV management, as there was a 43% decrease in annual death rates between 2010 (1.2 million deaths) and 2020 (680,000 deaths). HIV continues to burden the world and, as of 2021, the number of infected individuals was 37.7 million worldwide. Of those, 36 million are adults and 1.7 million are children up to 14 years old, with 53% of the total being women and girls.[4,5] Globally, the biggest impact of disease reduction is seen in sub-Saharan African countries, with a 5.9% reduction in new infections from 2007 to 2017, and an 11% reduction in the number of deaths in the same period,[6] where global treatment coverage is expected to reach 72% instead of the 59% observed in 2017.[7] Although HIV treatment improves both longevity and quality of life, the disease still burdens populations in many countries around the world.[8] In 2021, 650,000 people died from HIV-related causes and 1.5 million people acquired HIV globally.[4]

The global strategic focus on ending the HIV epidemic has changed over the years as more literature on the disease and treatment has become available. The most notable achievement in the past decade was the attainment of the United Nations Millennium Development Goals for 2015,[9] six months before the set timeline. Those goals are adapted to the Sustainable Development Goals, where HIV's impact on communities can be related to all of the 17 goals.[10] Looking forward to 2025, there is the 10-10-10 goal — less than 10% of countries with punitive laws and policies, less than 10% of people experiencing stigma and discrimination and less than 10% of people experiencing gender inequality and violence — which aims to eliminate inequalities and attain the 2030 goal of complete HIV eradication. In addition to the 10-10-10 plan, the Joint United Nations Programme on HIV/AIDS (UNAIDS) 95-95-95 targets aim to increase to over 95% the use of combination prevention, the awareness of HIV status, the rate of treatment initiation, the percentage of people who are virally supressed, the percentage of coverage of services eliminating vertical transmission and the percentage of women with access to HIV care by 2030[11] (Figure 1). UNAIDS also developed the Global AIDS Strategy 2021–2026 to end inequalities by maximising equitable and equal access to HIV services and solutions, thus opening an opportunity to position pharmacists as strategic resources to attain these goals.[12]

Figure 1 – UNAIDS HIV global goals*



Adapted from 2025 UNAIDS[13]

There are many risk factors and vulnerabilities that contribute to the prevalence of the virus, including sexual practices and behaviours, use of needles and syringes in the context of illicit injectable drugs, and social, programmatic and individual vulnerabilities that people living with HIV and key population groups face worldwide, such as LGBT phobia, racism and poverty, among others.[14] It is important to remember that individuals cannot become infected through ordinary day-to-day contact such as kissing, hugging or shaking hands, as there is still stigma and discrimination associated with the disease.[15] A useful infographic containing this information can be found here.

In the early stages of the disease, an individual might be unaware of their status until later stages of infection. It is important to use a combination of preventive measures such as safer sex practices, harm reduction strategies and antiretroviral therapies (ARTs) as key approaches to reducing HIV transmission.[16] Tools such as HIV risk reduction allow access to tailored information about the risk of HIV transmission.

An HIV prevention global challenge is to reduce the transmission between key populations, which include sex workers, men who have sex with men (MSM), intravenous drug users and transgender people. The risk of HIV transmission in these groups is:[17]

- 35 times higher among people who inject drugs than among adults who do not inject drugs;
- 30 times higher for female sex workers than for other adult women;
- 28 times higher among MSM than among other adult men; and
- 14 times higher for transgender women than for other adult women.

MSM are considered a key population for HIV due to higher prevalence, social vulnerabilities, day-to-day prejudices like homophobia, lack of knowledge on HIV status, sexual behaviours and low PrEP (pre-exposure prophylaxis) utilisation.[18] In 2019, roughly 1.2 million individuals contracted HIV, and 754,000 of them were MSM. For every 100 individuals who are MSM, on average, only 85 knew their HIV status and only 68 were virally suppressed. More information can be found in this infographic factsheet.

Sex workers are another key population that continues to have a disproportionately high burden of HIV infections. Challenges in this group include the lack of data and research, socio-economic factors such as homelessness and drug use, low PrEP use, and sexual risk factors such as lack of condom usage, “chemsex” (using drugs as part of your sex life) and having multiple partners.[19]

Sharing syringes, needles and other injection equipment is the second riskiest behaviour for acquiring HIV after unsafe sexual practices.[20] In addition to HIV, there are other health concerns, including other infections and accidental drug overdose, that can occur. There is also the concern of chemsex, which increases the rates of HIV transmission due to an increase in risky sexual behaviours while under the influence of drugs.[20]

Transgender individuals made up around 37,000 of the new HIV diagnosis in the US in 2019. This group is another key population due to the high prevalence of transphobia, racism, HIV stigma and lack of knowledge similarly seen as with previously mentioned subgroups. Additionally, there is an unmet need for gender affirmation that prevents such individuals from feeling comfortable in seeking the care they need.[21]

With advancements in technology, it is now easier to use screening tests that provide quick results. This is essential to provide earlier diagnosis and initiate treatment in the early stages of the condition.[15] As pharmacists are expanding their role in direct patient care, this allows for the integration of new HIV-related services to be provided in community pharmacies, increasing access to care for patients. Some services on the rise include the ability for community pharmacists to prescribe and dispense PrEP, as happens in some states in the United States,[22] providing easier and rapid access to antiretroviral medicines (ARVs) in community pharmacies like in France,[23] or the ability to provide point-of-care (POC) testing as seen in Portugal, to name three examples.[24] The opportunity for pharmacists to work as part of an interprofessional network to identify and support people living with HIV in their communities continues to grow to allow for easier and better patient-centred care.[25]

Pharmacological management of HIV has significantly improved over time, from a limited therapeutic arsenal to the introduction of highly effective fixed-dose combinations to reduce pill burden while achieving and maintaining an undetectable viral load. Additionally, changes to HIV prevention greatly focus on lifestyle interventions and pharmacotherapeutic options such as safe sexual practices, pre-exposure prophylaxis

(PrEP) and post-exposure prophylaxis (PEP).[26] Despite recent advances, numerous issues remain, including treatment accessibility, low adherence, drug toxicity and therapeutic drug monitoring, among others.[27]

As experts in medicines and as one of the most accessible healthcare professionals at the heart of communities, pharmacists play a variety of important roles in the prevention of and screening for HIV infections, as well as in providing care and support to people living with HIV, namely through medication management. Other roles for pharmacists include HIV prevention through dispensing and providing support with PrEP or PEP use, HIV testing, harm reduction strategies for IV drug users, and providing education to their patients and their communities on HIV (i.e., transmission, prevention and general information).[28]

There is still a great load of social stigma and discrimination surrounding people living with HIV, which comes from negative views on the disease since it was discovered.[29] Pharmacists should aim to be inclusive in their approach and understand the privacy and sensitivity this topic might have for some people living with HIV. In cases where pharmacists are involved in testing, they need to be up to date with their country's rules and regulations regarding the interpretation of results and ways of communicating these results with their patients.[30]

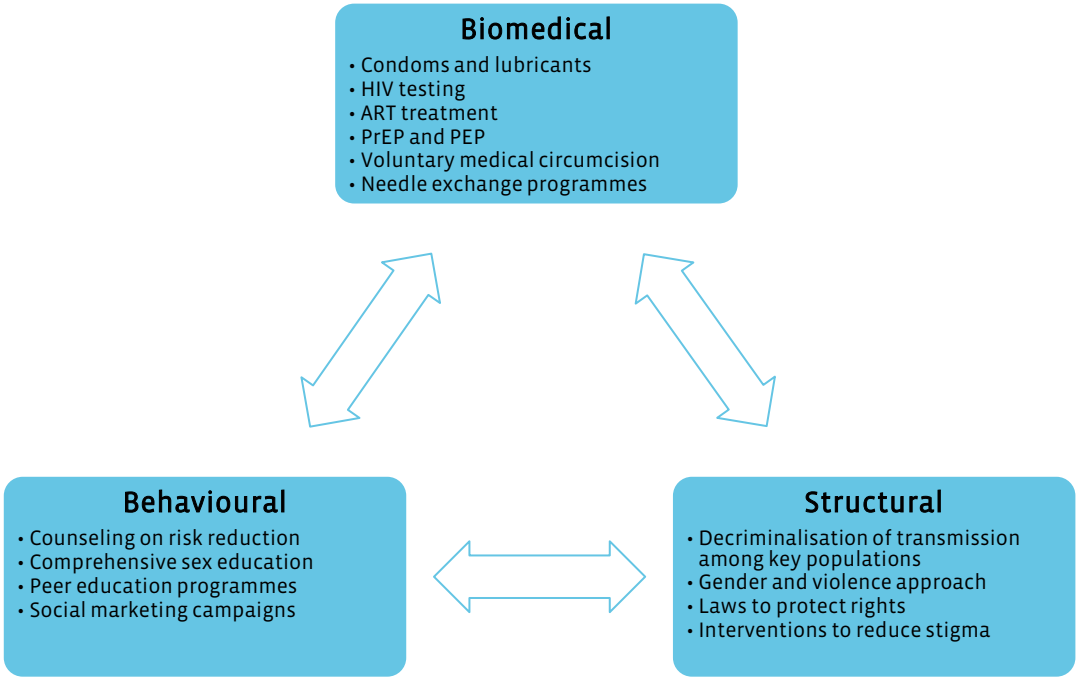
This handbook will therefore describe the roles and areas of HIV prevention where pharmacists can have a direct impact on the reduction of HIV transmission. It will focus on the screening activities that are available in community pharmacies and how pharmacists can be further included in HIV testing in their communities. A chapter on HIV management will highlight the main therapeutic options for HIV management and how pharmacists can provide support to people taking medicines. A final important note on the impact pharmacists make in their communities is presented in the last chapter.

2 Prevention

HIV prevention consists of a variety of methods (i.e., biomedical, structural and behavioural) that are typically used in combination and should always be people-centred. Pharmacists should include the patient by asking and exploring questions that are commonly seen, or by following up on any medicines patients may already be taking.

The risk factors vary according to region, socio-economic status and other cultural and political differences. According to the WHO, a comprehensive package of health services for HIV prevention is recommended to prevent and reduce the spread of the disease.[31] All decisions should focus on the individual and help empower patients for being part of the solution. In this chapter, some of the preventive measures that pharmacists can provide include education, support, and services and are further explained in this chapter. The three major categories of prevention interventions — behavioural, biomedical and structural — are presented in Figure 2. For a comprehensive review of the different combination HIV prevention approaches, you can refer to the Pan American Health Organization website.

Figure 2 — Combination HIV prevention approaches



Adapted from UNAIDS[31]

2.1 Sexual health

Some patients and members of the public might not realise that their sexual practices and behaviours are not the safest when it comes to preventing sexually transmitted infections (STIs), and they can benefit from conversations with their pharmacist on how to reduce their risk of HIV transmission. This approach can improve people's understanding of the benefits to their own health of safer sex practices and behaviours.[32, 33] Pharmacists can use such opportunities to engage in different strategies, for example, providing condoms and education.[34] Examples of a few different prevention strategies where pharmacists can get involved or can provide further education are described below.

2.1.1 Safer sexual practices

Safer sexual practices refer to the prevention of STIs infecting partners during sexual contact. These include vaginal, anal and oral sex for people having sex with opposite- or same-sex partners.[35] There are many ways to practise safer sex and help prevent the spread of HIV, including proper condom usage, choosing less risky sexual practices, and using PrEP and PEP.

Choosing less risky sexual practices, such as oral sex or sexual activities that do not involve contact with bodily fluids, can decrease the chances of HIV transmission compared with receptive anal or vaginal sex, which carry a higher risk of HIV infection.[36]

Condoms — both external (male) and internal (female) condoms — are an essential part of safer sexual practices and are one of the most accessible methods for HIV prevention. They improve the safety of all sexual activities and should not be perceived as an interruption or a barrier to a pleasant sexual experience.[37] Although condoms can be an effective method to prevent HIV and other STIs, education needs to be provided to ensure they are being used correctly. It is estimated that three-quarters of individuals use them incorrectly.[37] Common mistakes seen with condom use include not checking for damaged packages, not checking expiration dates and using oil-based lubricants, among others. Pharmacists can use their position as the most accessible healthcare provider to provide education on condom use to community members and refer them to appropriate evidence-based resources.

2.1.2 STI prevention

There is a wide range of STIs that differ in severity: there are those that are curable (i.e., chlamydia, gonorrhoea, syphilis and trichomoniasis) and those that are incurable (i.e., hepatitis B, herpes simplex virus, human papilloma virus [HPV] and HIV). If an STI is not treated appropriately and quickly it can allow for easier access of HIV into one's body through untreated sores or breaks in the skin. Reducing the risk of STIs is important for reducing the transmission of HIV.[38]

Pharmacists play an essential role in providing education to patients on STI risk reduction (i.e., less risky sexual behaviours, correctly using condoms and vaccination where available, for example, against HPV). Additionally, pharmacists work together with providers in their communities to ensure routine STI testing is done and, where treatment is needed, that appropriate treatments are selected based on disease states, drug interactions, contraindications and other influencing factors. As always, therapy selections need to include patients and address any concerns or complications that may be present. Further information on the different STIs can be found here..

2.1.3 Voluntary medical male circumcision

Voluntary medical male circumcision (VMMC) is one method that reduces the transmission rates of HIV by approximately 60% during penetrative sexual contact in settings with generalised HIV epidemics.[39] Possible mechanisms for this prevention method to reduce HIV transmission include the removal of cells in the foreskin that are more vulnerable to HIV and also the reduction of the risk of genital ulcers that can increase HIV transmission.[40] Although this method can be cost effective as because it a one-time intervention, male circumcision only provides partial protection and might not be available everywhere, therefore pharmacists must provide comprehensive education on HIV prevention using different strategies.[41]

Since 2007 the WHO and UNAIDS have recommended VMMC as an important strategy for the prevention of heterosexually acquired HIV in men in settings where the prevalence of heterosexually transmitted HIV is high. Over 25 million men and adolescent boys in East and Southern Africa have undergone VMMC.[41]

2.2 Pre-exposure prophylaxis (PrEP)

PrEP is a biomedical prevention strategy using antiretroviral (ARV) medicines to prevent acquiring HIV in non-infected individuals who are at higher risk of infection. The use of PrEP does not protect against other STIs or pregnancy,[42] but it does provide high levels of protection for HIV-negative individuals who are at higher risk of acquiring HIV when it is taken correctly. However, when starting PrEP medicines, some time is needed in order to achieve full efficacy, and this time is dependent on the type of sexual behaviour. It takes seven days of continual therapy to have maximum protection for receptive anal sex and it takes up to 21 days of continual

use to have maximum protection for receptive vaginal sex and for individuals who use injected drugs.[43] Due to the delay in efficacy, additional HIV prevention methods should be used during those timeframes.

PrEP is indicated for people at higher risk who have had no HIV exposure in the past 30 days, including key populations such as MSM, transgender people, sex workers, IV drug users, and people in sero-discordant relationships. For the last group, PrEP may provide further protection if:[43]

- The HIV-positive partner has recently started ART, as this treatment can take up to six months to suppress the viral load;
- There are doubts about the effectiveness of that partner's ART;
- The HIV-negative partner(s) has/have other partners besides the HIV-positive partner(s) on treatment;
- The HIV-positive partner(s) has/have gaps in ART adherence.

A negative HIV result is needed to start PrEP and the test can be accompanied by other tests for STIs if needed. Other factors to consider are renal and liver functions, and the need to determine the safety of these medicines for people wishing to become pregnant [44] Despite the limited use in the initial rollout phases, as of 2019, more than 121 countries worldwide have adopted the WHO PrEP recommendations in their national guidelines. Table 1 shows the most used combinations for PrEP globally.[45]

Table 1 — Main medicines used in PrEP*

Active ingredients	Dosage	How to take	Precautions	Brand names and further information
Tenofovir disoproxil fumarate (TDF)/ emtricitabine (FTC)	Each tablet contains 300mg of TDF and 200mg of FTC.	For people over 35kg one tablet by mouth once daily. "On-demand" use follows the "2-1-1" approach. Two pills before the risky sexual behaviour and one pill each day after that for two days.	Use is not recommended with a creatinine clearance (CrCl) < 60ml/min.	Truvada
Tenofovir alafenamide (TAF)/ emtricitabine (FTC)	Each tablet contains 200mg of FTC and 25mg of TAF	For people over 35kg, one tablet by mouth once daily. Should not be used "on demand".	Use is not recommended with CrCl < 30ml/min.	Descovy
Cabotegravir (CAB)	Each injection contains 600mg of CAB	For people over 35kg, one injection IM every other month.	Does not need oral lead in. Requires two initiation injections four weeks apart for eight weeks.	Apretude
There is a newer agent under development that is a dapivirine vaginal ring, which could be a possible solution for the future.[46]				

*Medicines may not be available everywhere and should be taken according to the prescribed indications.

PrEP should be stopped if any of the following happens:[47]

- Diagnosis of HIV infection;
- Desire of the person to no longer use PrEP;
- Change in a life context, with a considerable decrease in the frequency of sexual practices with the potential risk of infection;
- Occurrence of relevant adverse events or their persistence; and
- Low adherence to PrEP, even after an individualised approach.

Regardless of the cause for stopping PrEP, a test for HIV is advised four weeks after stopping prophylaxis and it is essential to stress that the decision to stop PrEP must be the patient's alone. According to the WHO, pharmacists and pharmacy teams can play a crucial role in the provision and monitoring of PrEP.[47] The widespread distribution of community pharmacies provides an important way of reaching the at-risk groups mentioned above.

According to the WHO, pharmacists and pharmacy teams can play a crucial role in the provision and monitoring of PrEP.

In order for PrEP to be effective, users need to follow the recommended dosage frequencies according to the type of treatment selected: daily in the case of pills (TDF/TAF/FTC) and every two months for the injection (CAB). A pharmacist can provide advice and explain the different regimens, and monitor the frequency and adherence through monitoring refills. PrEP can also be used "on-demand" — also known "non-daily PrEP", "event-driven PrEP" or "2-1-1 PrEP". In this regimen, individuals take two pills before the risky sexual practice and one pill daily on the following two days.[48]

In Kenya, a collaborative stakeholder consultation identified pharmacies as potential facilities to bridge the PrEP access gap, especially among high-risk groups. Pharmacists in many resource-constrained settings play a vital role in the health ecosystem in providing urgent treatment and refilling prescriptions, as well as ensuring a continuum of care for many communicable and non-communicable diseases.[49] Stakeholders noted that pharmacy practice encompasses all aspects of PrEP management from HIV testing to medication counselling and refill, hence it is a viable option for expanding HIV prevention strategies.[50]

In the city of São Paulo, Brazil, pharmacists have been allowed to prescribe PrEP and PEP since 2020 in HIV-related public health services, thanks to a local regulation from the national system for public health safety.[51] The service allows pharmacists to be in a closer relationship with patients and improve their likelihood of adhering to their PrEP treatments. The Federal Council of Pharmacy of Brazil (CFF) developed professional regulations and guidelines for this service at national level, and this was initially approved. However, authorisation was revoked in 2022 and pharmacists lost the legal right to continue the service.[52] Nevertheless, the regulation applicable in the municipality of São Paulo remains in force, and pharmacists continue to offer the service at community pharmacies and at other specialised centres. The CFF continues to advocate the regulation of this service country-wide.

There are approximately 67,000 pharmacies in the USA that fill 85–90% of all PrEP prescriptions, as guided by collaborative practice agreements and state laws.[53] The main hindrance to plans for ending the HIV epidemic in the US by 2030 is the disparities in access to HIV care services, including PrEP, by minorities and high-risk groups. The practice of pharmacy is well developed and includes multilingual staff and drive-through and home-delivery services that can help bridge the gap in access to PrEP services.[54]

Furthermore, pharmacists can be involved in supporting the administration of IM cabotegravir as a PrEP strategy, in providing medication therapy management in the form of medication counselling on adverse reactions, and in supporting the identification of co-administration-related side effects that will help in promoting adherence to regimens. In the course of therapy, pharmacists can be involved in repeat diagnostic tests for HIV and other STIs, as well as kidney function tests for symptomatic patients.[43]

2.3 Post-exposure prophylaxis (PEP)

Post-exposure prophylaxis refers to HIV medication that is taken after a single high-risk event to stop the potential exposure to HIV and prevent infection. PEP is a biomedical prevention strategy and is not for regular use among high-risk individuals who are frequently exposed to HIV.[55]

Emergency situations that qualify for PEP administration include:[55, 56]

- Exposure to HIV at work (e.g., through needle stick injury);
- Being a victim of sexual assault;
- Exposure during consensual unprotected sex;
- Sharing needles or any non-sterile injection equipment; and
- Missed PrEP doses in days before risky sex.

PEP should be administered within 72 hours of exposure and is given as a daily dose for 28 days. The three PEP ARVs administered to adolescents and adults include tenofovir disoproxil fumarate (TDF) 300mg + emtricitabine (FTC) 200mg once daily, raltegravir (RAL) 400mg twice daily or dolutegravir (DTG) 50mg once daily (Table 2).

PEP should not be used in the circumstance of a positive HIV test. The convenience and ease of access to pharmacies without prior appointments allow patients to get medication and counselling within the 72-hour period during which PEP should be administered.

The undeniable merits of the involvement of pharmacists in the prescribing and dispensing of PEP have led to the adoption of policies that facilitate access to PEP, but also require appropriate remuneration models for pharmacists to ensure sustainability, as well as the inclusion of PEP in insurance covers.[57]

Table 2 — Main medicines used in PEP*

*Generic versions of these medicines may be available.

Active ingredients	Dosage	How to take	Precautions	Brand names and links for further information*
Tenofovir disoproxil fumarate (TDF)/ emtricitabine (FTC) PLUS	Each tablet contains 300mg of TDF and 200mg of FTC	For people over 35kg, one tablet by mouth once daily for 28 days.	If creatinine clearance < 50ml/min this medicine should be avoided.	Truvada
Raltegravir (RAL)	Each tablet contains 400mg of RAL	For people over 35kg, one tablet by mouth twice daily for 28 days.	Needs to be separated from antacids.	Isentress
Dolutegravir (DTG)	Each tablet contains 50 mg of DTG	For people over 35kg, one tablet by mouth daily for 28 days.	Can increase serum lipase.	Tivicay

2.4 Harm reduction practices

Harm reduction practices are behavioural interventions that reduce the risk of transmitting or acquiring HIV related to drug use and drug-related behaviours. Aside from unsafe sharing of needles and syringes, using drugs in a sexual context increases the chances of HIV transmission.[58] People who inject drugs account for 10% of new HIV infections and have particularly driven epidemics throughout Central and South East Asia, as well as Eastern Europe.[17] Globally, the prevalence of HIV among this population is 19%.[59] Almost one-third of global HIV infections outside sub-Saharan Africa have been seen in IV drug users, making harm reduction strategies crucial.[60]

Public health measures, such as providing access to sterile syringes and injection equipment through non-prescription sales, have been successful in different settings.[61] Needle exchange programmes (NEPs) are cost-effective and raise awareness of the need for sterile equipment as an HIV transmission prevention method, as well as prevention of other diseases like hepatitis, without increasing drug use.[62] Portugal saw success through studying a NEP in community pharmacies. Researchers estimated that on a five-year horizon, a 6.5% reduction in HIV infections could be achieved and over EUR 2 million could be saved.[63] This led to the NEP service by pharmacies being remunerated by the state in 2016, with an initial value of EUR 2.40 per kit exchanged.[64] Pharmacists in the USA are also working to expand their role in NEPs. There are currently 185 NEPs throughout the nation.[65]

Opioid substitution therapy is another approach aimed at harm reduction by decreasing dependency through prescriptions for methadone, naltrexone and buprenorphine. Pharmacists are key in managing the doses of opioids through monitoring and tapering doses while also educating patients in managing side effects during the transition thus reducing cases of relapse.[66] Biomedical approaches coupled with behavioural changes have demonstrated cost-effectiveness and general improvement of the quality of life by IV drug users and generally avoid HIV infections. This evidence can be harnessed to promote policy change to allow pharmacists to be more involved in these exercises, thereby preventing the spread of HIV.[67]

3 Screening

Undiagnosed HIV leads to a poor prognosis for the individual and increased spread of infection. In 2011, one in five HIV-positive individuals in a convenience sample of 2,805 clients from five pharmacies in New York City were unaware that they were seropositive; in 2015 research from the UK showed that one in eight HIV-positive people were unaware of their HIV status; and in 2018 in Kenya, a study showed 20% of HIV-positive people between the age of 15 and 59 years were unaware of their status.[68-70] The main challenge identified was access to testing kits, especially for marginalised groups, minorities and people who live in rural areas with limited access to traditional clinical facilities.

It is important to consider the virus incubation period when referring to testing options because no HIV test can detect an HIV infection immediately after it occurred. Different tests will have different "window periods", with antibody self-tests starting to detect 23–90 days after exposure; rapid antigen/antibody tests detecting positive cases after 18–90 days; antibody lab tests detecting HIV 18 days after exposure; and nucleic acid tests being able to detect it 10–33 days after exposure, as shown in detail in Table 3.[71] Self-conducted tests are a reliable method of HIV testing. Although these are more prone to sample collection errors compared with the tests done by healthcare professionals, their ease of access, discretion in use and their increase in rapid results make them a good option for patients.[72]

Table 3 — Types of HIV tests[73, 74]

Type of rapid test	How is the test done	Time period for result	Who does the testing?	Window period	Test sensitivity
Antibody self-test	Looks for antibodies in blood or oral fluid.	Results are provided within 20 minutes.	Self-administered	23–90 days	97%
Rapid antigen/ antibody test	Involves blood stick from a finger to detect antigens or antibodies in the blood.	Results are available within 30 minutes	Administered by a healthcare provider.	18–90 days	99%
Antigen/antibody tests	Involves drawing blood from a vein to detect antigens or antibodies.	Results are available within 30 minutes.	Administered by a healthcare provider.	18–45 days	99%
Nucleic acid tests	Involves drawing blood from a vein to see how much of the virus is in the blood.	May take several days before results are available.	Administered by a healthcare provider.	10–33 days	>99%

Depending on the test and its result, pharmacists can provide advice accordingly, as described in the "Understanding Your HIV Test Result" brochure by the US Centers for Diseases Control and Prevention (CDC). Pharmacists are able to do more than just help patients understand their results. They can also help provide testing. In the community setting, pharmacists are able to take an additional course with education requirements to be able to conduct a complete HIV testing session using a rapid test. Additionally, they can help patients navigate their self-administered tests as listed in the chapters below.

What can pharmacists do if the test result is negative?[75]

- They can advise patients to take another test at a later date, as the infection might be outside the "window period", the time during which the virus is detectable.
- They can continue to provide educational materials and advice on the prevention of HIV.

- They can advise the patient to contact their healthcare provider if they start developing symptoms.
- They can advise partners to get their HIV tests done as well.

What can pharmacists do if the test result is positive?[75]

- They can advise patients to have another follow-up test to confirm their positive test.
- They should advise patients to seek additional healthcare treatment for HIV and explain which options are available in their community.
- They should reassure patients that available treatments can reduce the viral load to undetectable (and untransmissible) levels, and enable excellent quality of life when used adequately.
- They can explain that there might be some symptoms associated with the disease or side effects of the treatments they might receive.
- They can advise partners to get their HIV tests done and share their HIV status.

3.1 HIV testing in pharmacies

Multiple investigations support HIV testing in pharmacies, citing easy access, prompt services, flexible work hours and their being non-stigmatising, acceptable venues for HIV tests as compared with other clinical settings and other targeted venue-based testing facilities such as gay bars, homeless shelters or public parks.[68, 76] A study in the USA reported a 72% acceptance rate for pharmacy-based HIV testing, including by minorities and at-risk populations. This highlights the importance of increasing access to tests, which otherwise might not have been done. Pharmacists are key partners in identifying new cases and linking HIV seropositive individuals to relevant care pathways in the community, thereby increasing the chance of better outcomes.

The main challenges to pharmacist-led interventions include the lack of referral protocols and pharmacy guidelines for testing, pharmacy logistics, pharmacists' specialised training on HIV, and space for private patient counselling sessions.[76] Government policies and increasing the confidence of pharmacists to provide these tests through proper education and training can bridge the gap and increase access to HIV testing.

Many barriers still exist keeping pharmacists from providing high-quality services in this area, including the lack of time to spend with patients to undergo adequate screening, testing and follow-up, the lack of a room at the pharmacy with adequate privacy for conducting tests and providing advice, and the lack of reimbursement or remuneration for their work.[77] Despite these barriers, there are significant opportunities for HIV testing in community pharmacies, which can play a valuable role in identifying positive cases and linking them with adequate care afterward.[78, 79]

An example from South Africa of standards for care for sexual and reproductive health services provided by pharmacists can be found here.

3.2 HIV self-testing

HIV self-testing refers to individuals collecting their own specimens, carrying out the test and interpreting the results on their own without the presence of a healthcare worker. Positive results can later be confirmed by a licensed healthcare provider through additional testing. The specimen used is a saliva or blood sample from a finger prick, and the results are obtained in 20 to 30 minutes or in a few days if mailed to a laboratory for analysis.[80] The WHO prequalification guidelines of testing kits, and reduction of the prices of testing products, have aided in the increased access and roll-out of self-test kits.[81]

As of June 2022, 98 countries in total have adopted an HIV self-testing policy.[82] In Brazil, mail-in-tests were approved by ANVISA, the Brazilian health regulatory agency, and the tests can be found in pharmacies over-the-counter or can be distributed by the ministry of health free of charge. The availability of these tests increases the access and frequency of HIV testing in Brazil, which is important for early detection.[83]

In 2018 in Kenya, 4.1% of people who had ever tested for HIV reported having used a home self-test, with most users being between the age of 20 and 40 years and with higher education.[70]

In some regions of Africa with lower socioeconomic demographics, test instructions can sometimes be challenging and this can compromise test accuracy. In some cases, the use of pictograms can be useful to overcome health literacy or communication barriers.[84] Pharmacists play an important role in creating awareness of the advantages and limitations of self-testing, the storage of testing kits, and in educating individuals on the proper specimen collection, testing and interpretation of results and proper shipping of kits where necessary.[85]

Bulgaria demonstrated success with a significant increase in the use of HIV self-tests through their availability in community pharmacies, when testing was not easily attainable in healthcare institutions during the COVID-19 pandemic.[86] A pilot project run by a local non-governmental organisation called the Single Step Foundation sent out over 900 free HIV self-testing kits to 120 locations in all 28 districts of the country. Questionnaires were completed before and after testing and the results show that 68% were unaware of their status, 31% had never been tested, and 71% preferred home HIV testing. This project helps show that self-testing can bridge gaps and expand testing services to reduce disparities in access to HIV testing.[86]

4 Management

Pharmacists can contribute to managing treatments and supporting therapeutic outcomes of people living with HIV. They are often in contact with patients who have a confirmed diagnosis of the condition and they are often the healthcare professionals that deliver antiretroviral medicines (ARVs) used in antiretroviral treatment (ART). Pharmacists' contributions to the management of HIV therapies and their roles in HIV management are discussed in this chapter.

4.1 HIV treatment options

HIV treatment options vary depending on the person, the situation and the viral load. The different categories of ARVs include:[87]

- Non-nucleoside reverse transcriptase inhibitors (NNRTIs);
- Nucleoside reverse transcriptase inhibitors (NRTIs);
- Protease inhibitors (PIs);
- Fusion inhibitors;
- CCR5 antagonists;
- Integrase strand transfer inhibitors (INSTIs); and
- Post-attachment inhibitors.

The recommended ARV regimen is triple combination therapy consisting of dual NRTIs with either an NNRTI, an INSTI or a PI in combination with a pharmacokinetic enhancer agent (i.e., ritonavir or cobicistat) for HIV treatment-naive patients.[88] This combination therapy on its own, with opportunistic infection medication or as prophylaxis poses a challenge of drug-drug interactions, especially with patients with co-morbidities. Among inpatients, medication errors associated with ART range between 21% and 72% from drug interactions, dosing, medication omissions and inappropriate drug administration. These errors are a result of incomplete medication reconciliations, institutional formulary restrictions, concomitant medication changes, swallowing difficulties and fluctuations in renal or hepatic function.[89]

The ART regimen does not cure HIV but maintains the viral load (VL) to undetectable levels (VL under 20 to 50 copies/ml, depending on the assay used) within three to six months of use, which at that point are considered non transmittable.

According to WHO guidelines, the selection of a treatment regimen depends on aspects such as:[90]

- Other diseases or conditions that the person with HIV may have, such as heart disease;
- Possible side effects of HIV medicines;
- Potential interactions between HIV medicines or between HIV medicines and other medicines the person with HIV is taking;
- Results of drug-resistance testing (and other tests). Drug-resistance testing identifies which, if any, HIV medicines will not be effective against a person's HIV; and
- Convenience of the treatment regimen. For example, a regimen that includes two or more HIV medicines combined in one pill is convenient to follow.

Any issues that can make it difficult to follow an HIV treatment regimen should be considered to avoid non-adherence and decrease the chance of resistance. For example, a lack of health insurance or an inability to pay for HIV medicines can make it difficult to stay adherent to an HIV regimen.

Different countries and regions have different guidelines on regimens available for naive patients or drug-resistant infections.[91] There are many reasons a patient may need to change their ART, including virologic failure (i.e., as two consecutive VLs over 1,000 copies/ml after six or more months on ART), new drug interactions present, tolerability, and many other patient-specific reasons. In such cases switching from first- to second-line ART is done to avert drug resistance, advanced immunosuppression, increased morbidity and mortality, and to reduce the risk of transmitting HIV to uninfected partners.[92]

4.2 Pharmacists' contribution to HIV medicines management

Pharmacists are qualified to participate in the many stages of HIV care, including prevention and treatment processes as their country's rules and regulations allow. Not only do they dispense the medicines, but they also perform other clinical activities such as pharmaceutical consultations, clinical analysis in laboratories, performing rapid or laboratory tests for HIV, STIs, hepatitis B and C, promoting PrEP and PEP usage, and providing educational opportunities to their patients. Pharmacists are medicines experts and can use their expertise to enhance and provide the safest and most efficacious patient-centred care to all patients. Patients managed by HIV experts, including pharmacists, have demonstrated better outcomes, improved adherence and lower mortality rates.[93]

Once a patient is formally diagnosed with HIV/AIDS, they will be on lifelong ART for viral load suppression, in addition to making lifestyle changes.[28] Management of HIV/AIDS requires patients to be closely monitored to ensure they are taking their medicines as directed, staying adherent to lifestyle modifications, reaching their goals for viral load control, and not experiencing complications due to the disease or medicines.[94] Pharmacists are expanding their services as regulators increase their authority to prescribe for these patients.. In South Africa, a pharmacist with a primary care drug therapy qualification or who has completed pharmacist-initiated antiretroviral therapy training is able to diagnose and treat patients accordingly.[95] In other countries, like the US, where there is no authority for pharmacists to diagnose or prescribe, they play an essential role in supporting the treatment plan outlined by the patient's primary care provider by identifying potential medicines-related issues and, where allowed by regulations, adjusting therapies as needed or ordering laboratory tests.[96]

One role that pharmacists play in supporting a patient's treatment plan is performing an assessment of the patient to identify, prevent and, where possible, address their concerns and needs. Comprehensively assessing people living with HIV is the foundation for ensuring proper management of HIV infection. A pharmacist's assessment should primarily focus on factors associated with the patient's current treatment regimen but can also include additional factors that, if pertinent, can be shared with the patient's primary care provider. Assessments may include formal comprehensive medication management sessions or informal counselling sessions. Regardless of the method, pharmacists should leverage their frequent contact with patients to identify potential problems interfering with their HIV treatment and share them with the provider as deemed necessary.

4.2.1 Medicines administration

Some patients may experience barriers to taking their medicines, such as having difficulty swallowing medicines, experiencing side effects, forgetting to take their medicines or not taking them at the appropriate time. Pharmacists should educate patients on proper administration of medicines. Many HIV medicines have specific administration requirements, including taking without food, taking with food, and sometimes having specific caloric requirements to ensure optimal absorption. Additionally, for patients who have trouble with complicated dosing schedules that require multiple doses throughout the day, pharmacists may be able to identify opportunities for them to switch to a different medicine or formulation of a current medicine (e.g., immediate release to extended release) that will decrease dosing frequency and increase ease of administration.

4.2.2 Adverse effects management

Some of the common adverse events for the different ARVs include[97] anorexia, nausea, vomiting, hepatoxicity, lipoatrophy, peripheral neuropathy, tubular injury, rash, hypersensitivity, anaemia, sleep disorders and psychological stress, osteoporosis, nephrolithiasis, alopecia, dry skin, diarrhoea, fatigue and headache.
Pharmacists should assess each medicine a patient is taking and determine if they are experiencing any related adverse effects. Pharmacists should be aware of the most common side effects of all ARVs and work to identify strategies to overcome these. Pharmacists can recommend changes in timing, dosage, formulation or treatment to the patient's primary care provider or recommend an appropriate over-the-counter medicine. Depending on regulations, pharmacists should also consider reporting adverse effects to their respective pharmacovigilance systems.

4.2.3 Medicines interactions

Pharmacists should always assess a patient's prescription medicines for interactions with other prescription medicines or with any over-the-counter medicines, herbals, supplements, vitamins, topicals, etc, the patient may be taking. Some patients may not think to tell their primary care provider about the over-the-counter medicines they are taking, so pharmacists can play a key role in identifying potentially dangerous interactions. Common medicine interactions seen are between strong CYP3A4 inhibitors (e.g., verapamil, ketoconazole and itraconazole) and inducers (e.g., carbamazepine, phenytoin and rifampicin) and boosters used with PIs (cobicistat and ritonavir). Additionally, certain medicine classes such as birth control, anticoagulants and statins interact frequently with the same HIV medicines.[97] Pharmacists should also assess if there are any medicine-food interactions present that could affect the efficacy of a patient's treatment or cause adverse effects. If such interactions are present, pharmacists can educate the patient about them and advise on strategies to overcome them, e.g., taking the medicine on an empty stomach and spacing out administration to appropriate intervals.

4.2.4 Managing a care plan

Pharmacists are the medicines experts of the healthcare team due to their vast knowledge of pharmacology, medicines interactions, and evidence-based care. There are many different disease states, each of which poses its own difficulties when managing HIV therapy. Some of these include pregnancy and postpartum, co-morbid conditions and opportunistic infections. Fortunately, there are many resources available to pharmacists to help tackle these complicated medication regimens.

What makes some subgroups particularly challenging to treat is that an increase in medicines use heightens the chances of medicines interactions, adverse effects and adherence problems. Comorbidities are common among people living with HIV, who are more likely to have tuberculosis, hepatitis B & C, mental issues, cardiovascular disease, hypertension, renal failure, osteoporosis, diabetes or certain cancers. Additionally, opportunistic infections contribute significantly to the morbidity and mortality of HIV-infected individuals. Although effective ART has reduced the incidence of opportunistic infections, prevention, recognition and treatment of those infections continue to be of utmost importance in this patient population.[98] It is imperative for pharmacists to be up to date on guidelines for these subgroups to ensure safe and efficacious care is provided.

For assistance in developing a care plan, pharmacists should first refer to national or regional guidelines specific to where they practise pharmacy. They can also refer to consolidated guidelines on HIV prevention, testing, treatment, service delivery and monitoring.[94] Examples of additional protocols that are more comprehensive and could be adapted for use include the Division of HIV Prevention (DHP) within the National Center for HIV, Viral Hepatitis, STD, and TB Prevention (NCHHSTP) at the US Centres for Disease Control and Prevention, the International AIDS Society (IAS) guidelines for utilizing ART medicines in those with HIV/AIDS and intensifying injectable therapies, or the British HIV Association guidelines for the management of HIV in pregnancy and postpartum.

4.2.5 Clinical monitoring

Pharmacists play an extremely important role in monitoring and evaluating a care plan for efficacy and ensuring the care plan is helping a patient reach their therapeutic goals. Pharmacists can conduct viral load testing and CD4 T lymphocyte testing to determine a patient's response to therapy.

Viral load monitoring is the gold standard for monitoring adherence and confirming treatment response.[94] Pharmacists should keep an eye on patient viral load levels if they have these data available on each visit. In cases where viral load test results are not available, they can encourage the patient to undergo a viral load test. Generally, at the entry to care and at therapy initiation, viral load should be obtained for a baseline reading. After initiation, the viral load should be obtained after four to eight weeks and repeated every three to four months. After a patient has reached viral suppression, the frequency can be pushed back to every six months.[99]

If viral load monitoring is not available, clinical monitoring and CD4 cell count monitoring could be considered. However, immunological and clinical criteria have poor sensitivity and specificity to detect treatment outcomes, especially at higher CD4 cell counts, and more accurate immunological criteria have not yet been identified. In the absence of better criteria to predict treatment failure, using CD4 cell count and clinical assessment is important to identify those at the highest risk of disease progression and mortality. Pharmacists

should continue to scale up viral load testing as the preferred treatment monitoring approach.[94] CD4 count should be obtained at the initial visit and therapy initiation followed by a repeat every three months. Once a patient is on maintenance therapy, a CD4 count should be obtained every three to six months thereafter.

4.3 Medication adherence

Linkage to HIV treatment, prevention, care, support and other relevant services is the primary responsibility of HIV testing services.[94] Multiple factors may hinder successful adherence to care, including distance from services, transport costs, long waiting times at the facility and, for those testing positive, stigma and disclosure-related concerns. As programmes expand access to HIV testing services, linkage to HIV care should be improved through interventions that support people in the initial steps in the continuum of care.

Post-test counselling messages remain key to increasing adherence. Counselling should be concise, addressing the needs of the patient and focusing on supporting linkage to care. Post-test counselling messages need to be patient-centred. Messages need to provide patients with the latest information, including:[100]

- The personal health benefits of early ART;
- That people living with HIV receiving ART who achieve and maintain viral suppression cannot transmit HIV to their partners; and
- The benefits of voluntary provider-assisted referral for people living with HIV.

ARV medication adherence (>85%) is critical during treatment for HIV/AIDS to achieve good disease control, minimise disease progression, prevent further transmission, and prevent the development of complications such as opportunistic infections and resistance.[100, 101] The WHO estimates that nearly half of all patients (not specifically people living with HIV) do not take their medicines correctly.[102] Specific to long-term therapy for chronic disease, it is estimated that, in high-income countries, adherence to treatment averages at 50%, with rates likely being much lower in low- and middle-income countries.[103] These low rates of adherence lead to poor health outcomes as well as increased costs to health systems.

As pharmacists work with patients to identify the underlying causes of their non-adherence, they must remember that promoting adherence requires engaging with the patient and understanding their concerns, beliefs, expectations and motivation. Adherence differentiates itself from compliance in that the patient plays an active role in the decision-making process and agrees to the plan that is developed in collaboration with their healthcare provider.[104, 105] Once the underlying cause of adherence is identified, pharmacists can work with the patient to determine a suitable solution that will support them in improving their adherence. Simple, but effective, strategies that pharmacists can recommend include pillboxes, blister packs, telephone reminders or printouts placed in a notable location for the patient. Additional strategies may include filling prescriptions with higher quantities of medicines (e.g., 90-day supply vs. 30-day supply) or synchronising their medicines so they can come to the pharmacy at one time to get all their refills.[97]

Community pharmacists are licensed health professionals who, according to the WHO, are the health professionals most accessible to the public and whose roles should be further expanded in HIV/AIDS care.[106, 107] Asieba *et al* developed a community pharmacy-based ART refill model for routine refills at a service fee, to promote private sector participation and sustainability of ART services.[108] This community pharmacy ART refill model of differentiated care is feasible and acceptable by clients and providers, and demonstrated excellent clinical outcomes of patient adherence, viral load control and viral suppression.[108]

One strategy that has been used to promote medication adherence in community pharmacies is counselling technique, which includes interactive components of counselling as opposed to pharmacists simply sharing information with the patient to help bridge knowledge gaps. This strategy resulted in 50% more patients with HIV, high cholesterol or hypertension achieving an adherence rate of at least 80%, which is generally considered an acceptable level of adherence.[101] Further, while this pharmaceutical care with behavioural counselling may take longer than traditional counselling, it has demonstrated significant improvements in memory recall among patients.[109-111] The main questions that guide this counselling strategy are:

- What did your doctor tell you this medicine was for?

- How did your doctor tell you to take this medicine?
- What did your doctor tell you to expect from this medicine?

Another method to ensure patients are retaining the information they are told is the teach-back method. Not only does this method help break up the information provided but it allows for the patient to be a part of the conversation. This strategy involves having patients explain the information that has been shared with them in their own words in order to assess their understanding. The Agency for Healthcare Research and Quality shares the following recommendations for implementing this practice:[112]

- **Plan your approach.** Think about how you will ask your patients to teach back the information.
- **Chunk and check.** Assess understanding several times during counselling sessions if a lot of information is conveyed.
- **Clarify and check again.** If there is a misunderstanding, explain the information again in a different way. If patients are copying your words exactly, it is possible they may not have understood.
- **Use show-me methods.** Ask patients to show you how well they will use a certain medicine or device.
- **Use handouts** along with teach-back, if possible, and provide patients with handouts for key information to help them remember instructions at home.

5 Pharmacists' impact in the community

5.1 Public health campaigns, community awareness and advocacy

Pharmacists play a key role in raising awareness of the healthcare needs of people living with HIV. They are placed at the centre of their communities and have thousands of visitors entering their pharmacies each year. Pharmacists are trusted to serve as the front cover of many engagement campaigns, linking patients to the community in some countries and serving as a direct part of multi-professional interventions in others.[113]

Pharmacists can develop a health education strategy to meet the healthcare needs of individuals, families and the community. The use of different educational strategies should integrate the knowledge (scientific and popular) in order to promote patient autonomy, with a more significant commitment of all involved (patients, community, professionals, managers, families and caregivers) in health promotion actions.[114]

Thus, the approach in communities needs to consider dimensions imbued with senses and meanings in unique contexts and situations based on ethical values, geographical and historical location, social groups to which they belong and people's life history.[115] Health professionals face many challenges today because it is not enough to have technical knowledge about the issues that permeate their specialty, as in the case of the pharmacist with issues related to medicines and health care. To communicate with the community through health education, it is necessary to favour significant learning, develop strategies with active participation, and encourage knowledge exchange between the professional and the community.

Awareness inside the profession is also essential so pharmacists can be more engaged in talking about HIV in their daily practice. This should start at the undergraduate level and engage pharmacy students in discussing topics related to HIV.[116] Table 4 provides a glimpse of three HIV campaigns seen worldwide. Pharmacists can provide resources for campaigns in their area as well as worldwide campaigns to increase public knowledge and increase their presence in ending the HIV epidemic.

Table 4 — Examples of public health campaigns in the area of HIV

Public health campaign and link to the campaign site	Organisation/scope	Focus
World AIDS Day https://www.unaids.org/en/2022-world-aids-day	UNAIDS/global	This is the major annual global campaign that happens every year on 1 December. The theme for 2022 is "Equalise".
"Let's stop HIV together" campaign https://www.cdc.gov/stophivtogether/index.html	Centers for Disease Control and Prevention/USA	This is a group of campaigns (i.e., HIV screening, prevention, treatment and transgender health) that is aimed at providing resources for healthcare providers to increase their presence during each step of HIV management.
"#AIDS2020Engage" campaign https://aids2022.org/take-part/engage-campaign/	International Aids Society/global	Aimed at the public to share their stories and increase public knowledge on HIV and show support on all fronts.
Prevention Access Campaign https://preventionaccess.org/	Prevention Access Campaign/global	Focused on increasing community knowledge that "undetectable = untransmissible".

5.2 Stigma and mental health

HIV patients experience social stigma that may affect their health-seeking behaviours and ultimately the health outcomes and management of their disease. Social stigma refers to the disapproval of, or discrimination against, a person based on perceivable characteristics that distinguish them from the rest of

society.[117] Stigma has been associated with fear and misinformation on transmission and management of the disease as well as judgement towards groups of people affected by HIV.[118] This results in lower access and use of health and social services, treatment failure and lowered social support.[119]

Mental health disorders have resulted from the traumatic experiences faced by people living with HIV, including suicidal ideation (seven to 36 times more than the general public), shame, depression, emotional distress, poor psychological adjustments and anxiety. These disorders have been known to lead to abuse of alcohol and other drugs, which increases the risk of engagement in risky sexual behaviours, reduces CD4 count and reduces the likelihood of adherence to ARV medication by 50–60%.[120]

HIV stigma among healthcare providers has been defined as the irrational feeling and negative behaviour and attitude toward patients because of their HIV status.[121] Discrimination towards seropositive individuals in healthcare facilities includes forceful testing, breach of confidentiality, negative attitudes, denial of treatment and humiliation by healthcare workers.[122] The experience and level of knowledge in the management of HIV cases by pharmacists was a key factor in the stigmatisation of patients, with more experienced and more skilled professionals being less likely to stigmatise patients.[123]

As front-line workers in the provision of ARVs and preventive medicine for HIV, pharmacists can reduce the incidence of stigma through the use of appropriate language. The development of procedures and policies that prohibit discrimination and stigma on any social or economic basis can guide pharmacists to provide bias-free care. Continuous training and education for pharmacists can improve their service delivery to people living with HIV and help manage the different dynamics presented by HIV patients.[117]

5.3 Sexual violence

Sexual violence and HIV are interconnected global public health problems. Sexual violence increases the risk of victims contracting HIV. There are short- and long-term effects of sexual violence that can be both physically and psychologically debilitating to the individual. The social stigma around HIV and sexual violence alone, let alone together, prevents these individuals from seeking the care they need. Additionally, people from ethnic minorities, women and those in developing or poor areas are disproportionately affected by HIV and sexual violence.[124] Pharmacists should be aware of the resources in their area to be able to provide information and guidance to these individuals, as they can play a crucial role in identifying and referring victims of sexual violence. However, there is a need for ongoing training for pharmacists as well as support and funding to be able to fully provide this type of service.[125]

In London, UK, community pharmacies are being reviewed to have a better understanding of the support that may be needed to help those affected by sexual violence. In an interview, many said they wanted to provide support and resources as well as be more involved in public health programmes to gain the confidence and skills needed to identify those who may be struggling with sexual violence. Additionally, through such a service, pharmacists would be able to provide PEP services to help prevent the spread of HIV.[126]

Since pharmacists have an advantage over other healthcare providers due to their ease of access, their role in providing pharmaceutical care as well as sexual and reproductive care in their daily practice in the primary care setting and in the community setting is necessary. However, like in London, most pharmacists around the world are not prepared to offer this type of resource to those who have experienced sexual violence. There needs to be more education and resources for pharmacists so that they can provide such services to their communities.[127] It will be of the utmost importance until more education and training are provided for pharmacists to welcome victims of sexual violence through open communication with active listening and offer them a safe space. It will also be important to explain their health and legal rights as confidence and knowledge allows. If a pharmacist does not feel prepared to offer these education points, then they should be familiar with their region's available resources and send sexual violence victims to a provider who can help.

6 Additional resources for pharmacists

Below are links to useful resources. Click the selected link and a new page will open. Note that these pages are available at the time of publication but that availability may change in the future.

- ARV adverse effects
- ARV and food considerations
- ARV formulations for swallowing difficulties
- Canadian Clinical Guidelines HIV and Viral Hepatitis Pharmacists Network
- CDC HIV page
- EACS clinical guidelines
- Essential Medical Guidance
- Global HIV/AIDS organisations (multiple)
- Global network of people living with HIV
- HIV Drug Resistance Database
- HIV risk reduction tool
- HIV.gov clinical guidelines
- International AIDS Society
- Management of opportunistic infections and general symptoms of HIV/AIDS
- Monitoring guide and toolkit for HIV prevention, diagnosis, treatment and care programmes with key populations
- UNAIDS
- University of Liverpool HIV Interaction Checker
- WHO AIDS-free toolkit
- WHO global HIV programmes
- WHO HIV data and statistics
- WHO HIV module: Global competency and outcomes framework for universal health coverage
- WHO HIV/AIDS page
- WHO implementation tool for pre-exposure prophylaxis of HIV infection: module for pharmacists
- 2022 HIV Market Report

7 Conclusion

HIV is a complex disease that continues to spread due to lack of equitable access to care and resources. Pharmacists have an indispensable role in helping end the HIV endemic in more ways than ensuring medicines are safe and effective. In recent years, pharmacists have been integrated into more primary healthcare roles by providing PrEP services in many settings, including ambulatory clinics, and even more so in community pharmacies through collaborative practice agreements and other protocols. With many patients worldwide having easier access to pharmacists than other providers through local community pharmacies, having pharmacists provide these services is essential to ending the HIV endemic, which has been ongoing for decades.

This HIV handbook summarises the different areas that pharmacists can participate in when caring for people living with HIV from initial screening through medication and disease state management. Pharmacists also play a key role in advocating for their patients and communities, and educating them on HIV. The negative stigma that follows HIV prevents patients from seeking the care they need to live healthier lives and stop the spread of the virus. This handbook outlines current HIV trends and the most up-to-date treatment guidelines used worldwide. Furthermore, It provides resources for day-to-day use for pharmacists, as well as resources and guides for patients (i.e., safer sex practices and HIV self-testing).

Pharmacists are the medicines experts in health care and are the most easily accessible of the healthcare professionals, which makes them an important point of contact in ending the HIV epidemic. It is important that pharmacists continue to educate themselves on the constantly changing guidelines and resources to provide the highest quality of care to their patients and help to empower them.

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