

HIV: How It Is Being Prevented

29 slides / 17:35 approximate spoken target

01 HIV

- We will look at how HIV is transmitted, how infection can be prevented, and how testing and treatment contribute to prevention. We will use both international evidence and examples relevant to Estonia.

02 What is HIV?

- HIV stands for human immunodeficiency virus. It targets cells of the immune system, particularly CD4 T cells, which help coordinate immune responses.
- Without treatment, progressive immune damage can lead to AIDS, acquired immunodeficiency syndrome. HIV is the virus; AIDS is the advanced stage of the disease, not an inevitable outcome for someone receiving effective treatment.
- The main transmission routes shown here are sexual contact, shared injecting equipment and transmission during pregnancy, birth or breastfeeding.

03 Why does prevention matter?

- Preventing HIV avoids a lifelong infection and the risk of severe immune damage if that infection is not treated. It also reduces the need for continuing clinical care and the financial burden on individuals and health systems.
- The impact is not only physical. Stigma and anxiety can affect relationships, mental health and willingness to seek care. Treatment has transformed the outlook, but prevention still matters.

04 How HIV is and is not transmitted

- HIV transmission requires an exposure to infectious body fluids through a suitable route. The important routes here are sex without effective prevention, shared injecting equipment and transmission to a child.
- Everyday social contact is different. Hugging, sharing utensils or using the same toilet does not transmit HIV. Correcting these myths matters because fear of ordinary contact contributes to stigma.
- The figures show the continuing global scale: 1.2 million new infections in 2025, about 5 million people unaware of their HIV status, and 93,000 children newly infected.

05 Risk per exposure differs hugely by route

- These estimates compare different exposures to a source with HIV when effective prevention is not taken into account. The numbers are expressed per 10,000 exposures, so 138 corresponds to about 1.38 percent per exposure.
- Receptive anal intercourse has the highest estimated risk among the routes displayed. Needle sharing is also an important route. The key point is that risk depends on the exposure, not simply on being near someone who has HIV.
- These are population estimates, not a personal prediction. They should not be applied to sexual contact with someone who maintains an undetectable viral load on treatment.

06 Routes of transmission: EU/EEA vs Estonia

- The reported mix of transmission routes differs between settings. Sexual transmission makes up most of the known-route diagnoses shown here, with a different balance between the EU/EEA figures and the Estonian figures.
- These are not directly equivalent samples: the European data are from 2024 and the Estonian data from 2023. In Estonia, the route was recorded for only about one third of the cases. We should therefore use the comparison to understand local prevention needs, not to make a precise ranking between countries.

07 Misconceptions persist, even in a high-income country

- This Swiss survey illustrates that misconceptions can remain even when people have access to healthcare and information. Some respondents incorrectly identified kissing, insect bites or shared objects as transmission routes.
- Only 22 percent accepted the U=U message in the survey. This matters because an incorrect understanding of transmission can influence attitudes towards relationships and everyday contact.
- The survey was conducted in Switzerland in 2023. It is an example, not an estimate of what people in Estonia believe.

08 Stigma keeps key populations away from care

- Stigma is not only a problem of attitudes. It can change whether someone uses a health service. The figures here describe avoidance of healthcare because of fear of stigma and discrimination.
- They are medians across countries with survey data, not a single global rate and not Estonian estimates. They show why the way a service treats people matters alongside the medicines it offers.

09 Preventing exposure: what works

- Prevention works through several approaches together: condoms, sterile injecting equipment, treatment for opioid dependence, and prevention of transmission to children.
- The slide also makes a distinction between an intervention being effective and people being able to obtain it. Supply, funding and access determine whether these methods reach the people who need them.
- The child-infection estimate illustrates the large effect of programmes that combine testing with treatment and ongoing care.

10 Condoms: effective when used consistently

- Condoms provide a physical barrier that reduces exposure to infectious fluids. The evidence on this slide shows that consistent use is associated with a substantial reduction in HIV acquisition.
- The estimates differ by route and study. The 72 to 91 percent figure represents different study estimates, not one universally applicable value.
- The older cohort example compares people who reported consistent and inconsistent use over follow-up. Those percentages are not the risk from one sexual act. The practical message is consistent, correct use.

11 Harm reduction: Latvia vs Lithuania vs target

- Sterile injecting equipment reduces opportunities for blood-borne transmission. Opioid agonist treatment addresses opioid dependence and can reduce risky injecting.
- The slide compares Latvia and Lithuania using the historical figures in the supplied source. The overall message is the gap between service coverage and the displayed targets.
- This is a historical neighbouring-country comparison, not a statement about current Estonian coverage.

12 Mother-to-child transmission is largely preventable

- Prevention of transmission to children combines antenatal testing, treatment during pregnancy and ongoing care for the mother and infant.
- The global estimates shown here fall from 300,000 newly infected children in 2010 to 93,000 in 2025, a decline of 69 percent. That is substantial progress, although transmission has not been eliminated.
- The European and Estonian figures are diagnoses reported in particular years; they should not automatically be interpreted as infections acquired locally during those same years.

13 PrEP and PEP

- PrEP is taken before a possible exposure by someone who does not have HIV. Its purpose is to prevent infection from becoming established.
- PEP is an emergency measure after a possible exposure. It should start as soon as possible, ideally within 24 hours and no later than 72 hours, and the usual course lasts 28 days.
- In Estonia, PrEP involves medical assessment and regular HIV testing. Neither PrEP nor PEP replaces protection against other sexually transmitted infections.

14 Medicines and targets

- One oral PrEP option combines tenofovir disoproxil fumarate and emtricitabine, abbreviated TDF and FTC. Both act at the reverse-transcription step, when HIV makes a DNA copy of its RNA.
- A PEP example adds dolutegravir, which acts at a second step: integration of viral DNA into the host cell genome. The exact regimen is selected clinically; this is an example rather than the only possible combination.
- These drugs act on the virus inside cells. They are not vaccines and they do not work by producing antibodies.

15 How the medicines work

- HIV first needs to turn its RNA into DNA. Reverse transcriptase normally joins DNA building blocks together to make that copy.
- After activation inside the cell, tenofovir and emtricitabine resemble those building blocks. Reverse transcriptase can incorporate them into the growing viral DNA, but the chain cannot continue from that point. This is chain termination.
- Dolutegravir blocks the next target shown here: integrase. Viral DNA that has been made still needs to be inserted into the cell's DNA. Blocking that insertion prevents a key step in establishing productive infection.
- The diagram shows the untreated sequence. The drug labels mark where that sequence is interrupted.

16 Testing and treatment as prevention

- HIV can be present without obvious symptoms, so testing is important even when someone feels well. In Estonia, HIV counselling and testing centres offer free anonymous testing, including for people without health insurance.
- An early diagnosis allows treatment to start before major immune damage. Treatment suppresses viral replication and protects CD4 T cells.
- U=U means undetectable equals untransmittable. Someone who maintains an undetectable viral load on effective treatment does not transmit HIV through sex. The conditions matter: ongoing treatment and maintained suppression. It does not mean the infection has been cured.

17 Why treatment continues

- Suppressing replication allows the immune system to recover, but it does not remove all HIV from the body.
- Some long-lived infected CD4 T cells contain integrated HIV DNA without actively producing new virus. They form a latent reservoir. With little viral protein being expressed, these cells are difficult for the immune system to recognise as infected.
- Treatment blocks further replication but does not eliminate this reservoir. If treatment stops, some of these cells can reactivate and virus production can return. This is why undetectable does not mean cured.

18 Why prevention does not reach everyone

- Fear of judgement. People avoid testing or hide their risks to avoid being labelled.
- Confidentiality concerns. Worry that results will reach family, employer or community keeps people away.
- Cost. Fees for tests, PrEP or care put services out of reach.
- Inconvenient services. Distant clinics, short opening hours and long waits make testing hard to fit in.
- Discrimination. Bad experiences with providers lead to late diagnosis and people leaving care.

19 What health promotion can do

- Confidential testing. Free or anonymous options, with clear privacy rules that people know about.
- Affordable prevention. Low-cost or free condoms, testing and access to PrEP.
- Outreach. Bring testing to communities and places where people already are.
- Non-judgemental healthcare. Train providers to offer respectful care without stigma.
- Clear information. Plain-language facts about PrEP, PEP and U=U.

20 Clear information: PrEP, PEP and U=U

- PrEP. Pre-exposure prophylaxis. Medication taken by HIV-negative people before possible exposure to greatly reduce the risk of getting HIV.
- PEP. Post-exposure prophylaxis. Emergency medication started as soon as possible, within 72 hours, after a possible exposure and taken for 28 days.
- U=U. Undetectable = Untransmittable. A person with HIV on effective treatment, with an undetectable viral load, cannot pass HIV on sexually.

21 Where to get tested in Estonia

- Anonymous testing sites. National network of free, anonymous HIV and hepatitis B/C counselling and testing for anyone aged 16+. Rapid tests available.
- Estonian Network of People Living with HIV. Rävala 8, Tallinn. Free HIV, hepatitis and STI testing, Mon–Fri 10:00–18:00.
- AHF Estonia. Free, confidential community testing points in Tallinn, plus services in Narva. Optional syphilis and hepatitis B/C screening.
- Sexual Health Clinic. Mardi 3, Tallinn. Free HIV test for all, by appointment, tel. 666 5123, Mon–Fri 8:00–16:00.
- Hours and services may have changed, so check before visiting.

22 Conclusion

- That is our group chat's conclusion.

23 Thank you

- Thank you. We are happy to take questions.

Short speaking cues

01 HIV

- HIV: transmission, prevention, testing and treatment. Global evidence and the Estonian context.

02 What is HIV?

- HIV targets CD4 T cells and weakens immune defence.
- Untreated infection can progress to AIDS; HIV and AIDS are not synonyms.
- Main routes: sex, shared injecting equipment and vertical transmission.

03 Why does prevention matter?

- Protect immunity and prevent advanced disease.
- Reduce lifelong treatment needs and financial, social and psychological burdens.

04 How HIV is and is not transmitted

- Sex, shared injecting equipment and vertical transmission can transmit HIV.
- Ordinary social contact does not.
- 2025: 1.2 million new infections; 5 million unaware of their status; 93,000 new infections in children.

05 Risk per exposure differs hugely by route

- Per 10,000 exposures: 138 means about 1.38%.
- Route and effective prevention strongly affect risk.
- Do not apply these estimates to U=U sexual exposures.

06 Routes of transmission: EU/EEA vs Estonia

- Different settings have different reported mixes of transmission routes.
- EU/EEA: 2024; Estonia: 2023. In Estonia, the route was known for about one third of cases.
- Use local surveillance to guide prevention.

07 Misconceptions persist, even in a high-income country

- Swiss survey, 2023; 1,015 respondents.
- Misconceptions included kissing, insect bites and everyday objects.
- Only 22% accepted the U=U message. Not Estonian survey data.

08 Stigma keeps key populations away from care

- Fear of stigma can discourage healthcare use.
- These are medians across reporting countries, not Estonia-specific rates.
- Respectful care is part of effective prevention.

09 Preventing exposure: what works

- Combine condoms, harm reduction and prevention of vertical transmission.
- Effectiveness alone is not enough: services and supplies must be accessible.
- Programmes can prevent infections on a large scale.

10 Condoms: effective when used consistently

- Condoms create a barrier to infectious fluids.
- Protection depends on consistent, correct use; estimates vary by route and study.
- The 2% versus 15% example is a follow-up comparison, not per-act risk.

11 Harm reduction: Latvia vs Lithuania vs target

- Sterile equipment reduces blood exposure.
- Opioid agonist treatment can reduce risky injecting.
- Historical comparison of Latvia and Lithuania; do not read it as current Estonian coverage.

12 Mother-to-child transmission is largely preventable

- Testing and treatment during pregnancy, plus infant care, prevent vertical transmission.
- Global new infections in children: 300,000 in 2010 to 93,000 in 2025.
- Reported diagnoses do not necessarily equal locally acquired infections that year.

13 PrEP and PEP

- PrEP: prevention before possible exposure.
- PEP: emergency prevention after exposure; ideally within 24 hours, no later than 72 hours; 28-day course.
- Medical assessment and follow-up testing are essential. Neither protects against all other STIs.

14 Medicines and targets

- TDF = tenofovir disoproxil fumarate; FTC = emtricitabine.
- Oral PrEP example: TDF/FTC, targeting reverse transcription.
- PEP example: TDF/FTC plus dolutegravir, adding an integration block.

15 How the medicines work

- Reverse transcriptase copies viral RNA into DNA.
- Activated tenofovir and emtricitabine mimic DNA building blocks and terminate the growing chain.
- Dolutegravir blocks integrase-mediated insertion into host DNA.

16 Testing and treatment as prevention

- HIV may be asymptomatic. Testing connects people to treatment.
- Estonian HIV testing centres offer free anonymous testing, including without health insurance.
- U=U: maintained undetectable viral load on treatment means no sexual transmission. Not a cure.

17 Why treatment continues

- Integrated HIV DNA can persist in long-lived, inactive CD4 cells.
- This latent reservoir is not removed by routine treatment.
- Stopping treatment can allow viral rebound. Undetectable does not mean cured.

18 Why prevention does not reach everyone

- Fear of judgement. People avoid testing or hide their risks to avoid being labelled.
- Confidentiality concerns. Worry that results will reach family, employer or community keeps people away.
- Cost. Fees for tests, PrEP or care put services out of reach.
- Inconvenient services. Distant clinics, short opening hours and long waits make testing hard to fit in.
- Discrimination. Bad experiences with providers lead to late diagnosis and people leaving care.

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22 Conclusion

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23 Thank you

- Thank you.

Study notes

Slide 2: What is HIV?

- **CD4 T cells.** Helper T cells coordinate other immune cells. Losing their function weakens responses to infections.
- **Reading the pathway.** Entry is followed by reverse transcription, integration and production of new virus. The arrows show stages, not the physical route of a single molecule.

Slide 3: Why does prevention matter?

- **An important distinction.** Effective treatment can prevent progression to AIDS. The absence of a routine cure does not mean that HIV is untreatable or that an early death is inevitable.

Slide 4: How HIV is and is not transmitted

- **Exposure requires a route.** Blood, semen, vaginal and rectal fluids, and breast milk can transmit HIV. Contact must allow the virus to reach susceptible tissue or the bloodstream.
- **What the figures measure.** These are global estimates, not Estonian counts. New infections and people unaware of their status measure different things.

Slide 5: Risk per exposure differs hugely by route

- **Receptive and insertive.** Receptive describes the partner receiving penetration. Insertive describes the penetrating partner.
- **Why the denominator matters.** A risk per exposure is not a percentage of all diagnoses and is not a lifetime risk. Repeated exposures and prevention change the overall probability.

Slide 6: Routes of transmission: EU/EEA vs Estonia

- **Diagnoses are not new acquisitions.** An infection can be diagnosed long after it was acquired. Diagnosis-year surveillance therefore does not tell us when every infection occurred.
- **Missing information.** Unknown transmission routes limit interpretation. A percentage among recorded routes is not a percentage among all people living with HIV.

Slide 7: Misconceptions persist, even in a high-income country

- **U=U.** Undetectable equals untransmittable: maintaining an undetectable viral load on treatment prevents sexual transmission. It does not mean HIV has been cured.
- **What a survey can establish.** These results describe responses in the surveyed population. They do not establish the prevalence of the same beliefs in another country.

Slide 8: Stigma keeps key populations away from care

- **Stigma and discrimination.** Stigma means negative stereotypes or social judgement. Discrimination means unfair treatment based on that judgement.
- **A median.** The median is the middle value after the reported country values have been ordered. It is not a population-weighted global percentage.

Slide 9: Preventing exposure: what works

- **Different kinds of numbers.** Risk reduction, service-coverage targets, funding changes and infections averted have different denominators. They should not be compared as if they measured the same outcome.
- **Infections averted.** This is an estimate of infections that would otherwise have occurred, based on modelling rather than a direct count of identifiable individuals.

Slide 10: Condoms: effective when used consistently

- **Relative risk reduction.** An 80 percent reduction means the observed risk is roughly one fifth of the comparison risk. It does not mean that 20 percent of users acquire HIV.
- **The older study.** The CDC MMWR example reports 3 of 171 consistent users and 8 of 55 inconsistent users. It predates modern treatment-as-prevention practice.

Slide 11: Harm reduction: Latvia vs Lithuania vs target

- **Opioid agonist treatment.** Medicines such as methadone or buprenorphine are used to treat opioid dependence under clinical supervision.
- **Coverage measures.** Syringes per person per year measure supply. The treatment percentage measures how much of a defined population receives treatment. They are separate indicators.

Slide 12: Mother-to-child transmission is largely preventable

- **Vertical transmission.** Transmission from a mother to her child during pregnancy, childbirth or breastfeeding.
- **A separate clinical context.** The U=U message discussed for sexual transmission should not be used as a blanket statement about breastfeeding. Pregnancy and infant feeding need specific clinical guidance.

Slide 13: PrEP and PEP

- **Why timing matters.** The aim is to interrupt early viral replication before infection becomes established. The 72-hour limit is a clinical treatment window, not an exact universal moment when viral DNA integrates.
- **Why test before PrEP?.** Oral TDF/FTC alone is not a complete treatment regimen for established HIV. Testing helps avoid inadequate treatment and selection of resistance.

Slide 14: Medicines and targets

- **Drug classes.** Tenofovir is a nucleotide analogue and emtricitabine a nucleoside analogue; both are grouped as NRTIs. Dolutegravir is an integrase strand transfer inhibitor.
- **Brand names are not mechanisms.** Truvada is a brand of TDF/FTC and Tivicay a brand of dolutegravir. Generic products may have other names. The active ingredients determine the mechanism.

Slide 15: How the medicines work

- **Activation.** TDF is a prodrug converted to tenofovir. Cellular enzymes form active tenofovir diphosphate and emtricitabine triphosphate.
- **Chain termination.** Their incorporation prevents the next nucleotide from being added normally. The result is an incomplete viral DNA product.
- **What they do not do.** These medicines do not physically remove HIV DNA that is already integrated into the genome.

Slide 16: Testing and treatment as prevention

- **Viral load versus CD4 count.** Viral load measures HIV RNA in blood and tracks suppression. CD4 count measures a component of immune status. They answer different clinical questions.
- **Anonymous versus confidential.** Anonymous testing does not require your name. Confidential testing may identify you, but protects the result. Confirmation and treatment use normal clinical identification.
- **Window period.** Very recent infection may not yet be detected by a particular test. Testing and repeat-testing advice depend on the test and the exposure.

Slide 17: Why treatment continues

- **Latent does not mean dead.** A latently infected cell is alive. Viral DNA remains present but transcription and production of virus are limited or absent.
- **Why medicines are continued.** Current routine antiretroviral treatment suppresses replication rather than removing every infected cell. Interrupting treatment can allow virus to rebound.

Slide 22: Conclusion

- **Context.** The screenshot is included as a joke, not as HIV-prevention advice.

Terms

HIV and immunity

- **HIV.** A retrovirus that infects immune cells, especially CD4 T cells. Untreated infection can progressively damage immunity.
- **AIDS.** The advanced stage of HIV infection, with severe immune deficiency and associated illnesses. It is not synonymous with HIV.
- **CD4 T cells.** T lymphocytes that help coordinate immune responses. HIV targets these cells by binding CD4 together with a coreceptor.
- **immune system.** The cells, tissues and molecules that protect the body against infection and other threats.
- **immune deficiency.** Reduced ability of the immune system to protect against infection.
- **opportunistic infections.** Infections that become more likely or severe when immune defences are weakened.
- **antibodies.** Proteins made by B-cell-derived plasma cells that bind specific targets. PrEP and PEP medicines are not antibodies.
- **asymptomatic.** Without noticeable symptoms. An infection can be present even when the person feels well.
- **chronic infection.** An infection that persists over a long period rather than being rapidly cleared.
- **retrovirus.** A virus that uses reverse transcriptase to make DNA from an RNA genome.
- **T lymphocytes.** Immune cells involved in coordinating immune responses or killing infected cells. CD4 helper T cells are one important group.
- **coreceptor.** An additional cell-surface molecule used together with a main receptor. HIV uses CD4 and a coreceptor, usually CCR5 or CXCR4, to enter a cell.
- **protein.** A molecule made of amino acids folded into a particular shape. Proteins carry out many cellular jobs, including signalling, support and chemical reactions.

Transmission and evidence

- **transmission.** Passing an infectious agent from one person to another through a biologically suitable route.
- **exposure.** Contact that could allow infection. Exposure does not mean that infection necessarily occurs.
- **receptive.** In the sexual-exposure data, the partner receiving penetration.
- **insertive.** In the sexual-exposure data, the penetrating partner.
- **perinatal transmission.** Transmission around the time of birth; broader vertical transmission includes pregnancy, birth and breastfeeding.
- **vertical transmission.** Transmission from a mother to a child during pregnancy, birth or breastfeeding.

- **antenatal.** During pregnancy, before birth.
- **blood-borne.** Able to be transmitted through exposure to infected blood.
- **median.** The middle value after observations are put in order; not the same as a mean or pooled global percentage.
- **relative risk reduction.** The proportional decrease in risk compared with a reference group. An 80% reduction leaves one fifth of that comparison risk.
- **cohort.** A defined group followed over time to study exposures and outcomes.
- **denominator.** The population or number of observations used as the bottom part of a fraction or percentage.
- **surveillance.** Systematic collection and interpretation of health data to monitor disease patterns.
- **diagnoses.** Identification of a disease or infection. A diagnosis date may be much later than the infection date.
- **incidence.** New cases or infections occurring in a population over a defined time period.
- **EU/EEA.** European Union and European Economic Area; the reporting region used for these surveillance figures.
- **STIs.** Infections that can pass through sexual contact. HIV prevention medicines do not prevent every other STI.

Prevention and access

- **PrEP.** Medication taken before possible HIV exposure to prevent infection in a person without HIV.
- **PEP.** An urgent course of HIV prevention medicines started after a possible exposure.
- **prophylaxis.** Treatment given to prevent a disease or infection rather than to treat an established one.
- **harm reduction.** Measures that reduce health risks without requiring a person to stop a behaviour before receiving help.
- **opioid agonist treatment.** Treatment for opioid dependence using medicines such as methadone or buprenorphine.
- **opioid dependence.** A condition involving a strong drive to use opioids and difficulty controlling use, often with tolerance and withdrawal.
- **sterile.** Free of viable microorganisms. New sterile injecting equipment reduces infection risk.
- **stigma.** Negative social judgement or stereotyping associated with a characteristic such as HIV status.
- **discrimination.** Unfair treatment of people based on a characteristic such as HIV status.
- **key populations.** Groups disproportionately affected by HIV and often by barriers to prevention and care. It is a public-health term, not a judgement about individuals.
- **anonymous.** Not requiring your name or identity for the initial test.
- **confidential.** Personal information is protected and used within appropriate clinical and legal safeguards.
- **outreach.** Bringing information or services directly to communities instead of relying only on people visiting a clinic.

- **health promotion.** Helping people gain more control over their health, including through information, supportive services and conditions.
- **providers.** The healthcare professionals or organisations delivering a service.
- **non-judgemental.** Treating someone respectfully without blaming or shaming them for their circumstances or behaviour.
- **screening.** Testing people for a possible health condition, often before they notice symptoms. A screening result may need confirmation.
- **rapid tests.** Tests that return a result quickly, often during the same visit. A reactive HIV screening test needs confirmation.
- **hepatitis B/C.** Hepatitis means inflammation of the liver. B and C refer to two different viruses that can cause it.
- **syphilis.** A sexually transmitted infection caused by the bacterium *Treponema pallidum*.
- **window period.** The interval after infection during which a particular test may not yet detect it.
- **seroconversion.** Development of detectable antibodies after infection; the timing varies.
- **adherence.** Taking medicine according to the prescribed schedule.

Medicines and persistence

- **TDF.** Tenofovir disoproxil fumarate, a prodrug that delivers tenofovir; used in some HIV prevention and treatment regimens.
- **FTC.** The standard abbreviation for emtricitabine, an HIV medicine that blocks reverse transcription.
- **tenofovir.** An antiretroviral nucleotide analogue. Its activated form competes with normal DNA building blocks and terminates viral DNA synthesis.
- **emtricitabine.** A nucleoside analogue whose active triphosphate form can terminate the DNA chain made by HIV reverse transcriptase.
- **dolutegravir.** An HIV integrase strand transfer inhibitor; it blocks insertion of viral DNA into host DNA.
- **NRTIs.** Nucleoside/nucleotide reverse transcriptase inhibitors: drugs whose active forms interfere with synthesis of HIV DNA.
- **integrase inhibitors.** A class of HIV medicines that prevents integrase-mediated insertion of viral DNA into host DNA.
- **reverse transcriptase.** The viral enzyme that builds a DNA copy using HIV RNA as the template.
- **reverse transcription.** The synthesis of DNA from an RNA template.
- **integrase.** The HIV enzyme that inserts viral DNA into the infected cell's DNA.
- **integration.** Insertion of viral DNA into the host-cell genome, where it can persist.
- **DNA.** Deoxyribonucleic acid: the molecule that stores genetic information in human cells.
- **RNA.** Ribonucleic acid: HIV carries its genome as RNA; cells also use RNA to express genes.
- **genome.** The genetic information of a cell or organism.
- **nucleotide.** A building block of DNA or RNA, consisting of a base, sugar and phosphate.

- **nucleoside.** A base joined to a sugar without a phosphate group.
- **prodrug.** A medicine administered in a form that is converted into its active drug in the body.
- **chain termination.** Stopping the extension of a DNA chain after a drug analogue is incorporated.
- **replication.** Production of more copies of a virus through processes that use an infected cell.
- **ART.** Antiretroviral means acting against a retrovirus. ART uses a combination of medicines that suppress HIV replication.
- **viral load.** The amount of HIV RNA measured in a blood sample, usually expressed as copies per millilitre.
- **U=U.** Maintaining an undetectable viral load on effective treatment prevents sexual transmission of HIV. It does not mean a cure.
- **viral suppression.** Reduction of HIV replication and viral load by effective treatment.
- **latent reservoir.** Long-lived cells containing persistent HIV that can later reactivate despite suppression of virus in blood.
- **latent.** Present but inactive or minimally active; latent HIV is not necessarily producing new virus.
- **viral rebound.** A rise in the amount of virus after it was suppressed, for example after treatment interruption.
- **resistance.** Reduced susceptibility of the virus to a medicine, usually due to genetic changes.
- **transcription.** The production of RNA using DNA as a template.
- **enzyme.** A biological catalyst, usually a protein, that speeds up a particular chemical reaction. HIV reverse transcriptase and integrase are enzymes.
- **analogue.** A molecule resembling another molecule. These drug analogues resemble natural DNA building blocks but interrupt the process in which they are used.
- **diphosphate.** Containing two phosphate groups. Tenofovir diphosphate is the active intracellular form of tenofovir.
- **triphosphate.** Containing three phosphate groups. Emtricitabine triphosphate is the active intracellular form of emtricitabine.
- **host cell.** A cell that a virus infects and uses to carry out parts of its replication.

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Exposure prevention

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Prevention programmes

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