

It does get in: The basics of HIV transmission

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Those of us who grew up in the 1970s owe our healthy teeth to an effervescent TV housewife called Mrs Marsh. Grabbing a stick of chalk and dipping it into a cup of coloured water, Mrs Marsh would explain that the fluoride in the toothpaste gets into our teeth – “just like this liquid gets into this chalk.”

The kids in the ad would “ooh” and “ah” as Mrs Marsh triumphantly snapped that stick of chalk in two, demonstrating the incontrovertible proof that fluoride is good for you. Or at least that chalk is porous.

Simplistic demonstrations like this used to be used to sell a whole host of products on prime-time TV in those simpler days. Whether it was Mrs Marsh’s chalk-destroying antics or the egg-in-a-milk-bottle science of Professor Julius Sumner-Miller (which was supposed to convince us to eat chocolate) these old-fashioned ads told us what we needed to know in straightforward, unvarnished ways.

Mrs Marsh had been retired for some years before HIV came along, but it’s not hard to imagine her being roped in to doing safe sex education for the same people she taught dental hygiene to as kids. She might even have been able to recycle her liquid-and-chalk routine to show us how HIV “really does get in” to our bodies. But while these simple messages have their place, the truth is of course more complex. If we take the time to understand how HIV is – and isn’t – transmitted, we are that much better armed to protect our partners.

HIV is found in many of the body fluids of people who are infected with the virus. It can be found at varying concentrations in blood, semen, vaginal fluid, breast milk, saliva, and tears. It cannot be found in sweat or urine. It can also be found in a few more obscure body fluids, such as cerebrospinal fluid, that you’re unlikely to come in contact with unless you work in a hospital.

A simple, Mrs Marsh-style, explanation would be to say that the virus can be transmitted if any of those infected body fluids pass from an infected person to an uninfected person. In practice, the risk of transmission varies depending on the circumstances.

To start with, there have been no cases recorded of HIV transmission from saliva or tears, so they can safely be crossed off the list. This is to be expected, as the quantities of virus which have been observed in these fluids are extremely low. This is good news for those of us with HIV because it means there’s absolutely zero risk of passing on the virus through casual contact including kissing, hugging, or sharing eating utensils.

That leaves blood, semen, vaginal fluid and breast milk as the remaining body fluids which have been significantly implicated in transmission of HIV. We know from both laboratory experiments and real-world observation that virtually all HIV transmissions can be attributed to one of these four.

Blood-to-blood

HIV can be transmitted by direct blood-to-blood contact – such as through sharing injecting equipment, through blood transfusions or other blood products, or in health-care settings such as hospitals. While this is the most efficient route for HIV to pass from one person to another, in Australia very relatively few cases of HIV transmission occur this way. Extensive needle and syringe programs, screening of donated blood and careful adherence to universal precautions in health-care settings have kept the numbers low.

? If you inject drugs, never share any injecting equipment, including needles, syringes, spoons and swabs. This will not only prevent transmission of HIV, but also other blood-borne [viruses](#) [1]A small infective organism which is incapable of reproducing outside a host cell. such as hepatitis C.

? Avoid sharing toothbrushes, razors or anything else which could convey blood between two people, although the risk of transmission in this way is really very low.

? There’s very little risk of transmission from blood spills, bleeding noses, accidental cuts or open sores, as the

blood from the HIV-positive person has to pass into the bloodstream of the negative person. Nonetheless, it's sensible for anyone who comes in contact with blood to wear latex gloves and wash their hands carefully to avoid any risk of infection.

Mother-to-child

HIV can be transmitted from mother to baby, both in the womb and via breast milk. This is called 'perinatal', 'mother-to-child' or 'vertical' transmission.

If nothing is done to prevent transmission, the risk of passing HIV from mother to baby is about 20 percent. But we have known for some time that this risk can be reduced. If you're pregnant or planning to become pregnant, following the recommended guidelines ensures the risk of transmitting HIV to your baby is minimised.

? Use of [antiretroviral](#) [2]A medication or other substance which is active against retroviruses such as HIV. treatment during pregnancy is strongly recommended (most HIV medications are safe for use during pregnancy, but discuss your treatments with your doctor if there's any chance you may become pregnant).

? The risk of transmission can also be cut by reducing the delivery time for the baby, usually by having a caesarean section. This is especially recommended if the mother has a [viral load](#) [3]A measurement of the quantity of HIV RNA in the blood. Viral load blood test results are expressed as the number of copies (of HIV) per milliliter of blood plasma. over 1000 at the time of birth.

? Don't breastfeed the baby. HIV can be transmitted via breast milk.

Sex

The vast majority of HIV transmissions in Australia happen through sexual contact. HIV is present in semen, pre-seminal fluid (pre-cum) and vaginal fluid, and can enter the bloodstream of a negative partner through mucous membranes such as those in the rectum and vagina, or through small breaks in the skin caused by intercourse.

We've known for a long time that condoms can prevent transmission of HIV via vaginal or anal sex. They're highly effective, cheap, easy to use and available just about everywhere. Short of total celibacy (which nobody outside the priesthood need contemplate) condoms are the most effective HIV prevention technology there is.

As an added bonus, using a condom also protects both partners from many sexually-transmitted infections other than HIV. People with HIV should know that these infections can play havoc with their health, so even if both partners are positive, condoms still have a valuable role.

If you choose not to use a condom, there are a number of strategies you can employ to reduce the risk of transmitting HIV to your partner.

? If both partners are HIV-positive, there is no risk of HIV infection, although there is a small risk of superinfection – infection with a second, slightly different [strain](#) [4][HIV strain] Any subgroup of the HIV species. Because HIV mutates very easily, there are many different strains (and may be multiple strains within a single person). of HIV. Superinfection appears to occur somewhat more often in people who've recently become HIV positive, so if you've been positive for less than a year it may be best to stick with the condoms.

? Finding a partner who is also HIV-positive (researchers call this *sero-sorting*) isn't always easy, and requires that both you and your partner disclose your HIV status – something that may be difficult or uncomfortable. If you'd rather not disclose your status, it's best to stick to safe sex.

? If you're HIV-positive, your risk of transmitting HIV is reduced if the amount of virus in your semen or vaginal fluid is lower. While there is a relationship between the viral load in the blood (plasma viral load) and that in the semen (seminal viral load) and vagina (cervicovaginal viral load), it's possible for the amount of virus to vary considerably. What this means is that while the risk of transmitting HIV is likely to be lower than when you have a lower plasma viral load, there's no way to be sure.

? The risk of transmission is also different for different sexual acts and positions. For gay men, you're more likely to transmit HIV during anal sex if you're the insertive partner (top) than if you're receptive (bottom). Choosing to take the less risky role, usually in combination with other risk-reduction practices, is called *strategic positioning*.

? Oral sex is considered very safe, regardless of role and HIV status, however there have been cases of people being infected this way. Some research has suggested that alcohol in the mouth and genital piercings can increase the risk of HIV transmission through oral sex.

- [disclosure](#)
- [HIV prevention](#)
- [HIV/AIDS basics](#)
- [Safe sex](#)
- [Sex and relationships](#)
- [superinfection/reinfection](#)

Links:

[1] <http://napwa.org.au/glossary/term/125>

[2] <http://napwa.org.au/glossary/term/122>

[3] <http://napwa.org.au/glossary/term/416>

[4] <http://napwa.org.au/glossary/term/190>