

Undetectable viral load & treatment as prevention

Undetectable viral load and transmission – information for people with HIV

Roger Pebody | November 2020



Image: Domizia Salusest | www.domiziasalusest.com

Key points

- Effective HIV treatment reduces the amount of HIV in your body fluids.
- Once the amount of HIV in your body fluids is reduced to an 'undetectable' level, you cannot pass on HIV during sex.
- This is what is meant by the slogan 'Undetectable equals Untransmittable' ('U=U').

The amount of HIV in your body fluids is called your **viral load**. Effective HIV treatment (antiretroviral therapy) suppresses the amount of HIV in your body fluids to the point where standard tests are unable to detect any HIV, or can only find a tiny trace.

Doctors call this ‘virological suppression’ but it is often known as ‘having an undetectable viral load’ or ‘being undetectable’.

Having an **undetectable viral load** does not mean you are cured of HIV. If you stopped taking treatment, your viral load would increase and once again be detectable.

Having an undetectable viral load *does* mean that there is not enough HIV in your body fluids to pass HIV on during sex. In other words, you are not infectious.

For as long as your viral load stays undetectable, your chance of passing on HIV to a sexual partner is zero. As the campaign slogan puts it, '**Undetectable equals Untransmittable**' or 'U=U'.

This factsheet is written for people living with HIV. This topic is also covered in [a page written for people who don't have HIV](#).

Viral load at different stages

During the first few weeks after someone gets HIV, viral load is usually very high – typically several million ‘viral copies per millilitre of blood’ (copies/ml). There is a considerable risk of passing on HIV at this point. In fact, many people acquire HIV from someone who has only recently acquired it themselves (and does not know it).

After this period of early infection, viral load usually drops. A typical viral load in someone not taking treatment may be 50,000 copies/ml. There is still a considerable risk of passing HIV on.

After starting HIV treatment, viral load usually falls rapidly. Within three to six months, most people's viral load has become undetectable.

Most clinics in the UK report a viral load as undetectable if it is below 20-50 copies/ml. However, if your viral load remains below 200 copies/ml (the cut-off used in all studies that provided evidence for U=U), there is no risk of passing HIV to your sexual partners. There is no need to worry if your viral load goes slightly above the detection limit of 20-50 copies/ml.

You are recommended to wait until you've had at least two undetectable results in a row, over a six-month period, before relying on it. If you have maintained an undetectable viral load for at least six months and continue to have good **adherence**, the British HIV Association says that there is no risk of onward transmission of HIV.

British HIV Association advice

The 'Undetectable equals Untransmittable' (U=U) campaign is supported by the British HIV Association (BHIVA), which is the professional association for doctors and other healthcare professionals working in HIV in the UK.

BHIVA says consistent use of HIV treatment to maintain an undetectable viral load is a highly effective way to prevent the sexual transmission of HIV.

BHIVA says healthcare professionals should share this information with all people living with HIV. It advises healthcare professionals to explain the scientific evidence behind U=U, emphasising the importance of excellent adherence to HIV treatment and highlighting that U=U is dependent on maintaining a sustained undetectable viral load.

The scientific evidence

The first large study indicating that people with low viral loads are not infectious came from a study of 415 heterosexual couples in the year 2000. This found that no HIV-positive partner with a viral load below 1500 copies/ml transmitted HIV.

In 2011, a large scientific trial called **HPTN 052** concluded that HIV treatment reduced the risk of passing on HIV to a regular heterosexual partner by 96%. The only reason it was not 100% is that one person in the trial did acquire HIV, but this happened within a few days of their partner starting treatment. **Over the course of the four-year study**, not a single person with an undetectable viral load passed HIV on to their partner.

The final results of the **PARTNER 1** and **PARTNER 2** studies were announced in 2016 and 2018, respectively. Between the two of them, they recruited 972 gay couples and 516 heterosexual couples in which one partner had HIV and the other did not. Over the course of the study, the gay couples had 77,000 acts of condomless penetrative sex and the heterosexual couples 36,000 acts. The PARTNER studies did not find a single HIV transmission from an HIV-positive partner who had an undetectable viral load (below 200 copies/ml).

In 2017, a similar study exclusively of 343 gay male couples, **Opposites Attract**, also found no transmissions from partners with an undetectable viral load in 17,000 acts of condomless anal sex.

Between the three studies, no transmission of HIV from a sexual partner with an undetectable viral load was seen in nearly 130,000 acts of condomless penetrative sex. This means the risk of transmission by a partner with an undetectable viral load is statistically equivalent to zero.

Some of the HIV-negative partners in these studies *did* acquire HIV. But, using genetic testing, the researchers were able to show that all these infections came from other people and not their main partner.

What does this mean for me?

'Undetectable equals Untransmittable' has been a life-changing finding for many people living with HIV. It means that if you are on effective treatment with an undetectable viral load, you do not have to worry about passing on HIV through sex, even if you do not use a condom.

This has helped many people living with HIV have more fulfilling sex lives and less anxiety around sex.

Knowing that 'Undetectable equals Untransmittable' is especially useful for **people wishing to have a child**. Couples in which one person has undetectable HIV and the other is HIV negative can have unprotected sex in order to conceive.

However, the law on HIV may not have caught up with the science. In some countries, condomless sex without disclosing your HIV status is a criminal offence, regardless of the likelihood of HIV transmission. For information on specific countries, **visit our page on criminalisation laws around the world**.



How do I explain this to a sexual partner?

If you have sexual partners who are not living with HIV, explaining U=U to them is likely to be mutually beneficial. If you had previously relied on other means of preventing HIV transmission (such as using condoms or PrEP), you may jointly decide that these methods are no longer necessary because of U=U.

It may take some time for an HIV-negative partner to accept the U=U message and to rely on it as the sole method of preventing HIV. Some HIV-negative people may reject the message or deny its accuracy. It may be helpful to direct your partner to information resources that explain the accuracy and significance of U=U. **NAM has also produced a page for people who don't have HIV** to help them understand the impact of an undetectable viral load on HIV transmission.

Another option could be for your partner to hear about U=U from a healthcare worker or another reliable and trusted source.

"For as long as your viral load stays undetectable, your chance of passing on HIV to a sexual partner is zero."

Despite sharing this information, some people may still not accept that U=U. In this kind of situation, it is important to find a balance between providing your partners with information and taking care of yourself.

While remaining undetectable is one way you can ensure that you do not pass HIV on, your sexual partners may also have other sexual partners and it is important for them to be aware of how they could contract HIV outside of your relationship, possibly from someone who does not know that they have HIV. In these instances, prevention methods such as condoms or PrEP may still make the most sense for someone who is HIV-negative.

Many people find it difficult to talk about sex, even with the person who is closest to them. If this is the case, you might want to discuss your concerns with someone at your HIV clinic, sexual health clinic or a support organisation. This can help you clarify your thoughts and what you'd like to say.

What about sexually transmitted infections (STIs)?

It is important to remember that while HIV treatment will protect your partners from your HIV, it does not protect them or you from other **sexually transmitted infections (STIs)**. For this reason, regular **sexual health check-ups** are recommended. Using condoms will help prevent STIs.

Another concern is whether having a STI could lead to an increase in viral load. This does happen to people with HIV who are not taking treatment: for instance, syphilis can double your viral load. HIV-negative partners are also more likely to get HIV if they have an STI.

But it is not the case for people taking HIV treatment who have an undetectable viral load. In the PARTNER and Opposites Attract studies, there was not a single HIV transmission even though many people had STIs.

If you maintain good adherence to HIV treatment, catching an STI will not raise your viral load from 'undetectable' to 'detectable'. Effective treatment prevents sexual transmission of HIV even if there are other STIs present.

If I have a viral load 'blip', could I pass on HIV?

People with an undetectable viral load sometimes experience what are called 'blips' in their viral load. Their viral load increases from undetectable to a low but detectable level before becoming undetectable again on the next test.

For example, your viral load may temporarily rise to 60 copies/ml or 150 copies/ml. This should not be a cause for concern.

Remember that in the PARTNER and Opposites Attract studies, 'undetectable' was defined as below 200 copies/ml. These studies showed that transmission does not occur below this level.

However, a blip could indicate a problem if it happens around the same time as missed or late doses of your medication, or if your viral load stays above detectable on two consecutive tests.

Isn't the viral load in semen, vaginal fluids or rectum more important than viral load in blood?

Viral load in blood and in other body fluids is usually very similar – if HIV in your blood is undetectable, it's likely to be undetectable elsewhere. Occasionally people have undetectable HIV in blood and have low levels of HIV in other body fluids, but very rarely at infectious levels.

Does HIV treatment always work?

About one in six people on their first HIV treatment regimen either never have an undetectable viral load or their treatment stops working in the first year. During the second year on treatment, the chance of your therapy ceasing to work is about one in twenty and this declines further over the next decade to about a one-in-fifty chance of failure in any one year.

So, the longer you've been on a particular HIV therapy, the less likely it is to stop working. Almost everyone who goes on to a second or third regimen reduces their viral load to an undetectable level.

If someone's treatment does not result in viral load becoming undetectable, this is usually because they are having problems taking their treatment as prescribed, i.e. they don't take all their pills at the right time, without missing doses. Occasionally missing a dose of medication is unlikely to cause your viral load to become detectable again, but frequently missing doses may lead to a detectable viral load and should be avoided.

If you are having problems sticking with your treatment, talk to your doctor and they may be able to find a drug combination that suits you better.

Does U=U apply to all types of sex?

An undetectable viral load will prevent you from passing HIV on during **oral sex**, vaginal sex and anal sex. Condoms are not needed to prevent HIV transmission when your viral load is undetectable.

Does U=U apply to the non-sexual transmission of HIV?

This page is about HIV transmission during sex.

But an undetectable viral load is also crucial for conception, pregnancy and birth. If you maintain an undetectable viral load during **pregnancy**, the risk of HIV being passed on to your baby is just 0.1%, or one in a thousand.

During **breastfeeding**, an undetectable viral load greatly reduces the risk of passing HIV on, although it does not completely eliminate this possibility. In the UK and other countries where clean water and sterilising equipment are available, bottle feeding with formula milk is the safest way to feed your baby.

If you use injection drugs and **share needles** or other equipment, taking HIV treatment and having an undetectable viral load greatly reduces the risk of passing HIV on, but we don't know by how much.

NAM is a charity based in the United Kingdom. We work to change lives by sharing information about HIV & AIDS. We believe independent, clear and accurate information is vital in the fight against HIV & AIDS.

Our information is intended to support, rather than replace, consultation with a healthcare professional. Talk to your doctor or another member of your healthcare team for advice tailored to your situation.

This document was last reviewed in November 2020. It is due for review in November 2023.

©NAM Publications 2023. All rights reserved.

If you would like to support our work and help us to continue to provide resources like this one, please donate today at www.aidsmap.com/donate