

Undetectable viral load & treatment as prevention

Undetectable viral load and transmission – information for HIV-negative people

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Key points

- People with HIV who are on treatment and have an undetectable viral load cannot pass HIV on.
- This is what is meant by the slogan 'Undetectable equals Untransmittable' ('U=U').
- Not everyone taking HIV treatment has an undetectable viral load.

When people with HIV take effective treatment, the amount of HIV in their body fluids falls drastically, to the point where there is not enough HIV to pass on to someone else.

People living with HIV regularly have the quantity of virus in their blood measured – this is called their '**viral load**'. When a person has very little virus, they are said to have an 'undetectable' viral load.

Viral load is measured in units called 'copies'. The standard blood tests used in UK clinics can measure viral load down to 20 or 50 copies per millilitre of blood. Anything less than this is called 'undetectable'.

If someone has an **undetectable viral load**, it does not mean they are cured of HIV. If they stop taking HIV treatment, their viral load will increase and become detectable again.

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

When a person has an undetectable viral load, their 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 who don't have HIV. This topic is also covered in [a page written for people who are living with 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. Specifically, BHIVA says there is no risk of onward transmission of HIV from people who have maintained an undetectable viral load for at least six months and have good **adherence** (take their treatment without missing doses).

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?

If you have a partner with HIV who is on treatment and has an undetectable viral load, they will not pass HIV on to you – even if you don't use condoms.

However, if you have other sexual partners, you could still contract HIV outside the relationship, possibly from someone who does not know that they have HIV. In these instances, prevention methods such as **condoms** or **PrEP** may still be important.

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.

What about sexually transmitted infections (STIs)?

It is important to remember that while a sexual partner's HIV treatment will protect you from HIV, it will not protect you or them 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 make HIV transmission more likely.

This is the case if you – the HIV-negative partner – has an STI (especially syphilis). It will increase your risk of acquiring HIV from someone who is not taking treatment. In addition, some STIs can make HIV-positive people who are not on HIV treatment more infectious.

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.

Wouldn't it be safer to have sex with people who don't have HIV?

Instead of always using condoms, many people try to make sex safer by choosing partners with the same HIV status as them. This is sometimes called '**serosorting**'.

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This can work for people with HIV (if their HIV status is certain). But HIV-negative people's status is only certain up to the last time they took an **HIV test**. In casual situations especially, this may mean taking your partner's word for it or guessing their HIV status.

In a situation where a lot of people have HIV without realising it and where most people with diagnosed HIV are taking HIV treatment, having sex without a condom with partners who appear to be HIV negative is not a safe strategy.

It would be safer for HIV-negative people to have sex without a condom with partners who are HIV-positive and taking effective HIV treatment.

But it is important to remember that while HIV treatment will stop your partners from passing on HIV, it does not protect either of you from other STIs.

Does HIV treatment always mean people have an undetectable viral load?

Not everyone taking HIV treatment has an undetectable viral load. After starting HIV treatment, it can take as long as six months for a person’s viral load to become undetectable. Until then they may still be infectious. The British HIV Association recommends that you and your partner should not make any decisions about stopping using condoms until their viral load has been undetectable for at least six months.

When starting HIV treatment, some people find that the first prescribed drugs don’t work well for them. But nearly everyone finds a combination that works and the risk of treatment failing declines over time.

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 (for example, 120 copies/ml) before becoming undetectable again on the next test.

This should not be a cause for concern. 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.



Does U=U apply to all types of sex?

An undetectable viral load prevents HIV transmission during **oral sex**, vaginal sex and anal sex. Condoms are not needed to prevent HIV transmission when your partner’s 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 a woman with HIV maintains an undetectable viral load during pregnancy, the risk of HIV being passed on to their 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 for mothers living with HIV to feed their babies.

For people who 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.

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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.

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