



HIV & AIDS – sharing knowledge, changing lives

“The scientific evidence is clear. Someone whose HIV is undetectable does not pose an infection risk to their sexual partners.”

For information on HIV you can rely on: www.aidsmap.com

#UequalsU

U = U Undetectable
Equals Untransmittable

Undetectable viral load & treatment as prevention

Undetectable viral load and transmission – information for people with HIV

Roger Pebody | January 2019



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.

The latest news and research on undetectable viral load & treatment as prevention

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 (below 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.

The latest news and research on undetectable viral load & treatment as prevention

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.

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

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 is U=U? (Undetectable equals Untransmittable)



What does this mean for me?

A lot of people with HIV see not being infectious and the associated relief from anxiety about transmission as very important benefits of HIV treatment. Increasing public awareness of U=U may also reduce stigma towards people living with HIV.

If you want to stop using **condoms**, it is probably a good idea to discuss this with your partners and check that they are comfortable with the decision. Similarly, if your partner is using **PrEP** (**pre-exposure prophylaxis**) but you feel they may not need to any more, you'll need to discuss it with them.

Discussing what an undetectable viral load means with HIV-negative partners may help reduce their anxiety about HIV transmission. But this information will probably be new to most people who do not have HIV and it may take time for someone to understand and trust what you are saying.

“HIV treatment does not protect you or your partner from other sexually transmitted infections”

NAM has also produced a **factsheet for people who don't have HIV** to help them understand the impact of an undetectable viral load on HIV transmission.

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 criminalisation.gnpplus.net

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. 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.

“An undetectable viral load is also crucial for conception, pregnancy and birth.”

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

This document 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.

Undetectable viral load & treatment as prevention

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

Gus Cairns | January 2019



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 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](#).

“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.”

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.

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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.

“An undetectable viral load is also crucial for conception, pregnancy and birth.”

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. If you want to stop using **condoms**, or **PrEP (pre-exposure prophylaxis)** in your relationship, it is probably a good idea to discuss this with your partner and ensure you are both comfortable with the decision.

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'.

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.

The latest news and research on undetectable viral load & treatment as prevention

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 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.

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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.

What is U=U? (Undetectable equals Untransmittable)



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 January 2019. It is due for review in January 2022 .

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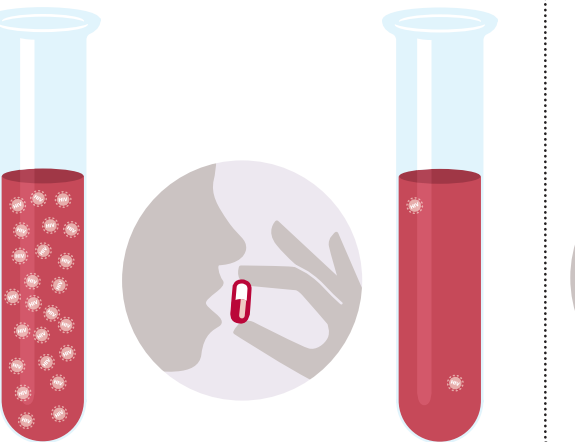
The basics

Undetectable viral load
and HIV transmission

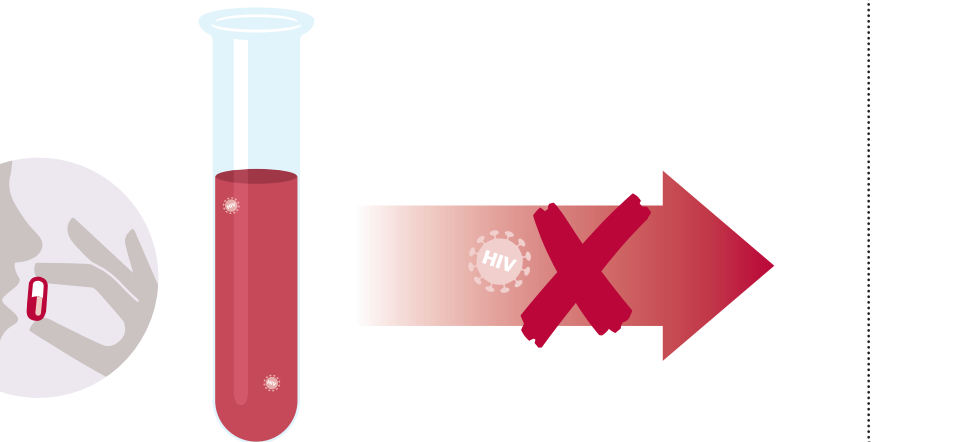


Effective HIV treatment stops HIV from being passed on during sex.

HIV treatment reduces the amount of HIV in the body. If you have an 'undetectable viral load', this means that there is not enough HIV to pass on to anybody else.



If you are taking HIV treatment and have an undetectable viral load, you will **not** pass HIV on during sex.



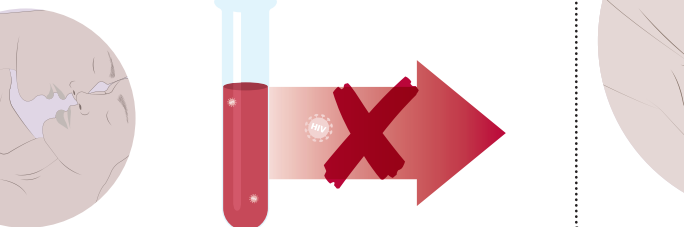
You can rely on an undetectable viral load if:

- your viral load has been undetectable for at least six months; and
- you don't miss doses of your treatment.



We know this from scientific studies of couples where one partner had HIV and the other did not.

- The couples had sex without a condom **130,000** times.
- There were **no cases** of HIV being passed on.



You do not need to use condoms to prevent HIV transmission when your viral load is undetectable. But condoms will help to prevent other sexually transmitted infections.



Important points

- **If you have had an undetectable viral load for at least six months, and you continue to take your treatment as prescribed, there is no risk of passing HIV on during sex.**
- **This is why people say 'undetectable = untransmittable' (U=U).**

Notes

Want to find out more?

For more information on this topic

- Read our 'Undetectable viral load' leaflet.
- Read 'Viral load and transmission' on our website.
- Read our 'HIV & sex' booklet.

For more information about HIV

- Visit our website at www.aidsmap.com.
- Speak to an adviser at THT Direct (phone: 0808 802 1221).

For information in other languages

- Visit www.aidsmap.com/translations.

Has this leaflet been useful to you?

Please let us know what you think. Your feedback helps us to improve the services we offer.

You can contact us to find out more about the scientific research and information we have used to produce this leaflet.

We recommend that you discuss the information in this leaflet with a doctor or other health worker.

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Thanks to all of the professionals and people with HIV who have helped us to develop this leaflet.

This leaflet is available in large format as a PDF.
Call NAM on 020 7837 6988.



First edition 2019
Due for review in 2022
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People with HIV who have
an undetectable viral load
cannot pass HIV on



U=U

Undetectable = Untransmittable

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