



CLINICAL GUIDELINES PROGRAM

NEW YORK STATE DEPARTMENT OF HEALTH AIDS INSTITUTE | HIV · HCV · SUBSTANCE USE · LGBT HEALTH

U=U Guidance for Implementation in Clinical Settings

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What Is U=U?

People who achieve and maintain an undetectable HIV viral load do not sexually transmit HIV.

This scientific finding, called “Undetectable = Untransmittable,” or “U=U,” has been promoted as a health equity initiative by the [Prevention Access Campaign](#) since 2016 and has been endorsed by the [U.S. Centers for Disease Control and Prevention](#), the [New York City Health Department](#), the [New York State Department of Health \(NYSDOH\)](#), and many other health departments and experts. U=U asserts that individuals who keep their viral load below the level of assay detection (typically HIV RNA <20 copies/mL) do not pass HIV through sex. Leading scientists have assessed the evidence base as “scientifically sound” [Eisinger, et al. 2019].

As emphasized in the [NYSDOH U=U Policy Statement](#), the U=U concept is a “driving force to accelerate the achievement of New York State’s Ending the Epidemic goals.” Specifically, U=U aligns with numerous efforts to dismantle HIV-related stigma and improve the health, well-being, and self-esteem of all people living with HIV, particularly by removing fear from their sexual and romantic relationships and combating the isolation they may experience. The statement further elaborates: “Endorsing U=U opens a new and hopeful chapter in New York State’s HIV epidemic, creating unprecedented opportunities for New Yorkers living with HIV and the institutions that serve them.”

Evidence Base Supporting U=U

Evidence from the last 3 decades has established that adherence to HIV antiretroviral therapy (ART) suppresses viral replication, improves the health of people with HIV, and reduces the risk of sexual transmission. These data have accumulated from a randomized clinical trial, observational cohort studies, and ecological studies correlating incidence and viral suppression rates in communities.

There is an overwhelming body of evidence indicating that people who achieve and maintain viral suppression (HIV RNA <200 copies/mL) do not transmit HIV through sex [Eisinger, et al. 2019]. The HPTN 052 randomized clinical trial and 3 observational cohort studies, PARTNER, PARTNER 2, and Opposites Attract, evaluated the effect of viral suppression in preventing HIV transmission [Rodger, et al. 2019; Bavinton, et al. 2018; Cohen, et al. 2016; Rodger, et al. 2016]. The studies followed

thousands of male and heterosexual couples in which one partner had HIV and the other did not (i.e., serodifferent couples) and documented no genetically linked HIV transmissions when the partner with HIV was taking ART and was virally suppressed. In the [PARTNER2](#) and [Opposites Attract](#) studies, anal sex without condoms was reported more than 88,000 times among serodifferent couples of men who have sex with men, and vaginal or anal sex without condoms was reported 36,000 times among heterosexual serodifferent couples—all without any linked transmissions.

These studies provide robust evidence that individuals *do not* sexually transmit HIV if they are virally suppressed (HIV RNA <200 copies/mL) or have an undetectable viral load (typically HIV RNA <20 copies/mL).

Glossary

- **Viral load suppression:** A measured quantitative HIV RNA level <200 copies/mL in blood
- **Undetectable viral load:** An HIV viral load that is below the level of detection on a specific assay, typically HIV RNA <20 copies/mL to 50 copies/mL
- **Durably undetectable:** An undetectable viral load maintained for at least 6 months. This indicates that an individual's undetectable HIV viral load is stable and *they will not transmit HIV* through sex if they continue to adhere to treatment.
- **Untransmittable:** As established by various clinical trials and observational studies, individuals who maintain an undetectable viral load have so little HIV in their blood and other secretions that they have [no risk](#) of passing HIV to others through sex.
- **Virologic blip:** When an individual's HIV is initially undetectable on a viral load test, then is at a low but detectable level on a repeat viral load test (usually HIV RNA of 20 to 200 copies/mL, but can be higher), and is again measured at an undetectable level shortly thereafter.

Application to Clinical Practice

The concept of U=U is grounded in the following principles [Eisinger, et al. 2019]:

Adherence: For HIV treatment to provide maximum benefit, it is essential that ART is taken as prescribed; the goal is to achieve an undetectable viral load. Achieving an undetectable viral load can require ART for up to 6 months. Once an undetectable viral load is achieved, continued adherence to ART is required to ensure that the virus remains suppressed so it is not transmitted through sex.

Because *maintaining* an [undetectable](#) viral load is foundational to the U=U strategy and may be functionally challenging for many individuals with HIV, it is recommended that consistent adherence to ART is demonstrated before relying on U=U as a sole, effective HIV prevention strategy. Consistent adherence may be confirmed with:

- Two consecutive undetectable viral load test results separated in time (e.g., by at least several weeks or more); *or*
- A full 6-month period during which all viral load test results are undetectable (more conservative)

If an individual stops or is inconsistent in taking ART, they may no longer have an undetectable viral load or may be at high risk of recrudescence. In this scenario, transmission is possible; viral load must be undetectable for U=U to be an effective HIV prevention strategy.

Monitoring: Per [NYSDOH AI guidelines](#), viral load testing should be performed every 4 months after an individual achieves an undetectable viral load. If viral suppression and stable immunologic status are maintained for >1 year, then viral load testing can be extended to every 6 months in select patients thereafter.

Best Practices

Adherence: U=U assumes that an individual is adherent to HIV treatment and is consistently taking antiretroviral medications as prescribed, which is the only way to maintain an undetectable viral load. Suspension of ART adherence or intermittent adherence may lead to a viral rebound, negating the effectiveness of U=U as a stand-alone HIV prevention strategy. Care providers should ask patients if anything might make it difficult for them to consistently take their medicines and address any likely barriers to adherence, which may include poverty, housing instability, and other key social factors, and offer all available support, referrals for assistance, and other interventions, along with HIV prevention strategies that do not rely on viral suppression (see NYSDOH [Retention and Adherence Programs in Medical Settings](#)).

Viral load monitoring: Care providers should follow existing [NYSDOH AI guidelines for monitoring viral load](#) in patients on treatment.

Screening and treatment for sexually transmitted infections (STIs) other than HIV: The use of effective alternatives to condoms to prevent HIV—including pre-exposure prophylaxis (PrEP) and HIV treatment—may reduce condom use and may require more careful monitoring of other STIs, including at extragenital sites.

- Care providers should already be encouraging all patients to get tested for STIs; using U=U as a strategy to prevent HIV transmission provides an additional opportunity to remind patients of the importance of regular screening for other STIs.
- Care providers should consider offering STI screening every 3 months for all individuals with HIV who rely on U=U as a sole strategy to prevent the sexual transmission of HIV; this is the same screening frequency recommended for those taking PrEP.

Special Topics

Virologic blips and U=U: Patients on previously suppressive ART may occasionally experience low-level transient viremia (a “blip”; see definition in [Glossary](#)). Isolated blips are not considered a sign of virologic failure.

Virologic blips likely occurred in individuals participating in the HPTN 052, PARTNER, PARTNER 2, and Opposites Attract studies, yet there was no transmission from people whose measured HIV viral load was consistently suppressed. This demonstrates that people with HIV whose tested viral load levels remain undetectable or suppressed do not sexually transmit HIV, even if they have temporarily detectable but low levels of HIV during virologic blips while adherent to their medications.

HIV RNA in genital secretions and U=U: In research studies, 8% to 16% of semen samples from men with HIV had detectable virus despite undetectable HIV RNA in blood plasma [Kantor, et al. 2014; Sheth, et al. 2009]. A similar dynamic holds for residual virus in vaginal secretions [Olesen, et al. 2016]. There is no evidence that detectable virus in genital secretions while plasma viral load is undetectable is associated with transmission. Detectable virus in genital secretions likely occurred in HPTN 052, PARTNER, PARTNER 2, and Opposites Attract; however, there was no transmission from people whose measured HIV load was consistently suppressed.

U=U and HIV transmission through breastfeeding: Studies demonstrate that ART *greatly reduces* the risk of HIV transmission from individuals who breastfeed their infants [Gartland, et al. 2013]. However, research *has not* established that people whose HIV is undetectable do not transmit HIV during breastfeeding.

U=U and HIV transmission through sharing of injection drug equipment: Studies demonstrate that ART *greatly reduces* the risk of HIV transmission through sharing of injection drug use equipment [Wood, et al. 2009]. However, research *has not* established that people with an undetectable HIV viral load do not transmit HIV through needle sharing.

U=U and needlestick injuries: Research *has not* established that people with an undetectable HIV viral load do not transmit HIV to people who are stuck by a needle containing their blood. HIV post-exposure prophylaxis (PEP) may be indicated.

Ensuring equitable access to knowledge about U=U: Research has established that certain groups, including sexual and racial or ethnic minority groups, report decreased awareness of or are less likely to be counseled on U=U [Card, et al. 2022; Grace, et al. 2022; Carneiro, et al. 2021; Rivera, et al. 2021]. Care providers are encouraged to make an extra effort to ensure that all patients with HIV are made aware of the importance of U=U and its implications.

Counseling Individuals About U=U

Care providers should inform all patients of the following: “People who keep their HIV viral load at an undetectable level by consistently taking HIV medications will not pass HIV to others through sex.”

Sharing this message with *all* patients can help accomplish the following:

- Diminish stigma associated with having HIV
- Reduce barriers to HIV testing and treatment
- Increase HIV testing uptake

- Inform choices about whether or not to start or continue an HIV prevention method
- Increase interest in starting and staying on antiretroviral therapy (ART)
- Improve self-esteem by removing the fear of being contagious
- Support healthy sexuality regardless of HIV status
- Reduce sex partners' concerns

Providing this message is important regardless of the patient's current sexual activity, as many people living with HIV maintain celibacy because of the fear and anticipatory guilt of potentially transmitting HIV. This message is also important for all individuals, not only those living with HIV, to reduce overall stigma and increase uptake of HIV prevention methods and HIV testing.

Encourage patients newly diagnosed with HIV and those previously diagnosed but not taking ART to immediately start (or restart) treatment.

Explain that doing so will help them avoid damage to their body and immune system and will prevent transmission of HIV to their sex partners.

- The importance of ART should be framed primarily in terms of helping the individual with HIV maintain personal health. Prevention of transmission is a secondary, fortuitous effect of HIV self-care.
- Initiation of ART as soon as possible after diagnosis, even on the same day as diagnosis or at the first clinic visit, improves long-term outcomes, such as virologic suppression and engagement in care at 12 months [Ford, et al. 2018]. Extensive support is available to people living with HIV for adherence to treatment and engagement in care.

Provide the following information about U=U to patients (proposed language in italics):

- *Keeping your HIV undetectable helps you live a long and healthy life.*
- *To get your HIV to an undetectable level and to keep it undetectable, take antiretroviral medicines as prescribed.*
- *It may take up to 6 months of taking HIV treatment medicines to bring your HIV down to an undetectable level.*
- *If your HIV is undetectable and you are taking your medications as prescribed, you can be sure you will not pass HIV through sex.*
- *People who keep their HIV at an undetectable level will not pass HIV to others through sex.*
- *If you stop taking HIV medicines, your HIV can rebound to a detectable level within 1 to 2 weeks, and you may pass HIV to your sex partners.*
- *Keeping your HIV at an undetectable level helps you safely conceive a child with your partner.*

Counsel patients to share information about the research on U=U as follows (proposed language in italics):

In 4 research studies that involved thousands of couples, no one who was on HIV treatment and whose HIV was undetectable passed HIV to their HIV-negative sex partner.

Counsel patients with virologic blips that U=U still applies to them:

Reassure patients who may be worried or concerned about virologic blips. Explain that people who have virologic blips do not transmit HIV sexually as long as they continue to take ART consistently.

Advise patients that they can share the following personal information with current or potential sex partners:

- When they last had a viral load test and if their viral load was undetectable
- **Note:** Individuals should tell partners that their HIV is undetectable only if they have taken HIV medicines consistently since their last test with an undetectable viral load.

Care providers should encourage all sexually active patients and their partners, particularly those who do not use condoms consistently, to get tested regularly for bacterial sexually transmitted infections (STIs).

- Regular testing and prompt treatment can reduce transmission of bacterial STIs among individuals and throughout the population.
- It is also important to inform patients that common STIs may be asymptomatic.

Counseling Couples About U=U

Care providers should counsel *all* patients on strategies to maintain a healthy, fulfilling, and worry-free sex life, including the use of HIV treatment, condoms, [pre-exposure prophylaxis \(PrEP\)](#), and emergency [post-exposure prophylaxis \(PEP\)](#).

Counseling for couples in which one partner has HIV can include the following:

- **HIV treatment:** Couples may decide that antiretroviral therapy (ART) and an undetectable viral load for the partner with HIV provides sufficient protection against HIV transmission.
- **PrEP:** PrEP is a safe and effective daily pill or long-acting injection that prevents HIV infection. The partner without HIV may decide to take PrEP if they:
 - Are unsure that their partner’s HIV viral load is undetectable, especially if their partner has only recently started ART
 - Have more than 1 sex partner
 - Feel more secure with the added perception of protection provided by PrEP
- **PEP:** After a possible HIV exposure (e.g., if a sex partner with HIV has not consistently taken ART or is not virally suppressed), the immediate initiation of emergency PEP can prevent HIV infection.
- **Condom use:** Condoms protect against other STIs, such as gonorrhea, chlamydia, and syphilis, and help prevent pregnancy.

Counsel patients to find a prevention strategy that works for them.

- If an individual who does not have HIV is unsure if their partner has an undetectable level of virus or is anxious about acquiring HIV, care providers should encourage that individual to choose a prevention strategy that works for them, whether that is use of PrEP, emergency PEP, condoms, or a combination of these strategies.
- Care providers should emphasize that no one should ever be compelled to have sex without condoms.

References

- Bavinton BR, Pinto AN, Phanuphak N, et al. Viral suppression and HIV transmission in serodiscordant male couples: an international, prospective, observational, cohort study. *Lancet HIV* 2018;5(8):e438-47. [PMID: 30025681] <https://pubmed.ncbi.nlm.nih.gov/30025681>
- Card KG, St Denis F, Higgins R, et al. Who knows about U = U? Social positionality and knowledge about the (un)transmissibility of HIV from people with undetectable viral loads. *AIDS Care* 2022;34(6):753-61. [PMID: 33739198] <https://pubmed.ncbi.nlm.nih.gov/33739198>
- Carneiro PB, Westmoreland DA, Patel VV, et al. Awareness and acceptability of undetectable = untransmittable among a U.S. national sample of HIV-negative sexual and gender minorities. *AIDS Behav* 2021;25(2):634-44. [PMID: 32897485] <https://pubmed.ncbi.nlm.nih.gov/32897485>
- Cohen MS, Chen YQ, McCauley M, et al. Antiretroviral therapy for the prevention of HIV-1 transmission. *N Engl J Med* 2016;375(9):830-39. [PMID: 27424812] <https://pubmed.ncbi.nlm.nih.gov/27424812>
- Eisinger RW, Dieffenbach CW, Fauci AS. HIV viral load and transmissibility of HIV infection: undetectable equals untransmittable. *JAMA* 2019;321(5):451-52. [PMID: 30629090] <https://pubmed.ncbi.nlm.nih.gov/30629090>
- Ford N, Migone C, Calmy A, et al. Benefits and risks of rapid initiation of antiretroviral therapy. *AIDS* 2018;32(1):17-23. [PMID: 29112073] <https://pubmed.ncbi.nlm.nih.gov/29112073>
- Gartland MG, Chintu NT, Li MS, et al. Field effectiveness of combination antiretroviral prophylaxis for the prevention of mother-to-child HIV transmission in rural Zambia. *AIDS* 2013;27(8):1253-62. [PMID: 23324656] <https://pubmed.ncbi.nlm.nih.gov/23324656>
- Grace D, Stewart M, Blaque E, et al. Challenges to communicating the Undetectable equals Untransmittable (U=U) HIV prevention message: healthcare provider perspectives. *PLoS One* 2022;17(7):e0271607. [PMID: 35862361] <https://pubmed.ncbi.nlm.nih.gov/35862361>

- Kantor R, Bettendorf D, Bosch RJ, et al. HIV-1 RNA levels and antiretroviral drug resistance in blood and non-blood compartments from HIV-1-infected men and women enrolled in AIDS clinical trials group study A5077. *PLoS One* 2014;9(4):e93537. [PMID: 24699474] <https://pubmed.ncbi.nlm.nih.gov/24699474>
- Olesen R, Swanson MD, Kovarova M, et al. ART influences HIV persistence in the female reproductive tract and cervicovaginal secretions. *J Clin Invest* 2016;126(3):892-904. [PMID: 26854925] <https://pubmed.ncbi.nlm.nih.gov/26854925>
- Rivera AV, Carrillo SA, Braunstein SL. Prevalence of U = U awareness and Its association with anticipated HIV stigma among low-income heterosexually active black and latino adults in New York City, 2019. *AIDS Patient Care STDS* 2021;35(9):370-76. [PMID: 34463141] <https://pubmed.ncbi.nlm.nih.gov/34463141>
- Rodger AJ, Cambiano V, Bruun T, et al. Risk of HIV transmission through condomless sex in serodifferent gay couples with the HIV-positive partner taking suppressive antiretroviral therapy (PARTNER): final results of a multicentre, prospective, observational study. *Lancet* 2019;393(10189):2428-38. [PMID: 31056293] <https://pubmed.ncbi.nlm.nih.gov/31056293>
- Rodger AJ, Cambiano V, Bruun T, et al. Sexual activity without condoms and risk of HIV transmission in serodifferent couples when the HIV-positive partner is using suppressive antiretroviral therapy. *JAMA* 2016;316(2):171-81. [PMID: 27404185] <https://pubmed.ncbi.nlm.nih.gov/27404185>
- Sheth PM, Kovacs C, Kemal KS, et al. Persistent HIV RNA shedding in semen despite effective antiretroviral therapy. *AIDS* 2009;23(15):2050-54. [PMID: 19710596] <https://pubmed.ncbi.nlm.nih.gov/19710596>
- Wood E, Kerr T, Marshall BD, et al. Longitudinal community plasma HIV-1 RNA concentrations and incidence of HIV-1 among injecting drug users: prospective cohort study. *BMJ* 2009;338:b1649. [PMID: 19406887] <https://pubmed.ncbi.nlm.nih.gov/19406887>