

# Women and Viral Load <sup>[1]</sup>

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## What Is Viral Load?

HIV attacks immune system cells called [CD4](#) <sup>[2]</sup> cells. HIV enters these cells and turns them into virus factories that produce thousands of copies of HIV. As the virus grows, it damages or kills CD4 cells, weakening your [immune system](#) <sup>[3]</sup>.

Viral load is the amount of HIV (number of copies) in your bloodstream. The higher the amount of HIV, the more your immune system becomes damaged.

Viral load can be measured by several different lab tests: a polymerase chain reaction (PCR) test, a branched DNA (bDNA) test, or a nucleic acid sequence-based assay (NASBA). All these tests are accurate, but each has a different way to measure the amount of virus. It is best to stick with the same kind of test and not switch among them, or it will be difficult to compare results over time.

Viral load results are reported as the number of copies of HIV in one milliliter (ml) of blood. The lower the number, the less virus there is in your blood. Numbers can range from several million copies to as few as 20 copies. If you have fewer than 50 or 20 copies, your health care provider may tell you that your results are "undetectable."

Being undetectable is a great result because it means your virus is under control. However, undetectable does **not** mean that you have been cured of HIV or that you cannot pass it to others. It just means that there is not enough HIV in your bloodstream for the test to measure. It is also important to know that labs that test viral load have different cut-offs below which they cannot detect HIV. For example: you could have 35 copies of HIV in your blood, and in lab #1, which cannot detect any HIV below 50 copies, your viral load would be considered 'undetectable.' However, in lab #2, which cannot detect any HIV below 20 copies, your viral load would be considered detectable.

## How Are Viral Load Results Used?

Viral load tests are an important tool to:

- **Check HIV progression**

While CD4 cell counts measure how healthy your immune system is today, viral load tests can help figure out whether you are at risk for more immune damage in the near future. A viral load test tells you how active HIV is in your body. When compared over time, viral load results show if the amount of HIV in your bloodstream is higher or lower than it was before. The higher your viral load, the more actively HIV is reproducing and the more likely you are to lose CD4 cells in the future.

- **Measure how well HIV drugs are working**

HIV drugs prevent the virus from making copies of itself (reproducing). When a combination of HIV drugs (your drug regimen) is working, the viral load usually goes down within weeks of starting the drugs. If your viral load goes up while taking HIV drugs, your drugs may not be working as well as they should. It is important to talk to your health care provider about the best next step, and to tell her or him if you are having any problems taking your HIV drugs on schedule. If you do not take your drugs correctly, it can cause problems that may increase your viral load. Your health care provider may ask to re-test your viral load at that time or after another few weeks. Your provider may also suggest that you change some or all of your drugs.

One goal of HIV treatment is to keep viral load levels as low as possible for as long as possible. This gives you the best chance of staying healthy. With effective HIV treatment regimens, viral load can be reduced to undetectable in many people. This is a great result. It means that your HIV drugs are working and you are doing a great job taking them. However, HIV is still in your body. If you stop taking your HIV drugs, the virus usually starts reproducing and your viral load will increase.

While a lower viral load generally means you are less likely to pass HIV to others, it is important to know that even with an undetectable viral load you might infect someone else with HIV if you share needles or have unprotected sex. Researchers recently found that, in heterosexual ('straight') serodiscordant couples (one person is living with HIV, or HIV+, and the other person is HIV-negative), having an undetectable viral load greatly reduces the chance of spreading HIV to the uninfected partner. By combining the results of several studies, researchers calculated that, in 1,000 serodiscordant couples who had sex for one year, if the HIV+ partner was taking HIV drugs and had an undetectable load, then only one or two HIV-negative partners would become HIV+.

## When Should You Be Tested?

The US treatment guidelines also provide recommendations on when to have viral load tests:

- **If you are not on HIV treatment, have a viral load test**
  - When you start receiving HIV care
  - Repeat test every three to four months
- **When you start treatment, have a viral load test**
  - When starting and two to eight weeks after treatment was started
  - Repeat test every one to two months until viral load becomes undetectable
- **Once you are on a stable treatment regimen and undetectable, have a viral load test**
  - Every three to six months
- **When you change HIV drugs, have a viral load test**
  - When changing and two to eight weeks after treatment was changed
  - Repeat test every one to two months until viral load becomes undetectable

The World Health Organization (WHO)'s treatment guidelines recommend that you get a viral load test six months after you begin treatment, again at 12 months after beginning treatment, and then once every year thereafter.

If your drug regimen is working, your viral load should become undetectable within six months of starting treatment. If this does not happen, if your viral load stays detectable on stable therapy, or if your viral load keeps increasing, this can mean that your regimen is not controlling HIV as well as it should. It is important that you and your health care provider discuss all possible reasons (e.g., problems with drug absorption, [adherence](#) [4], [drug resistance](#) [5], [drug interaction with other drugs](#) [6]) and take steps to correct the problem. These steps may include additional testing and considering changing HIV drugs.

## Women and Viral Load

Our understanding of viral load has grown since 1996, when the first viral load test was approved and began to be widely used. Most early [clinical trials](#) [7] that studied the role of viral load looked primarily at groups of men. Women were not enrolled in enough numbers in these trials for anyone to know whether there were sex-based differences in viral load.

Since 1996, a number of studies have compared viral load levels between groups of men and women. Some of these studies have found sex differences in viral load. At similar [CD4 cell counts](#) [2], women tend to have lower viral load levels than men. The differences seem

greatest during the early course of HIV infection.

However, this difference early on does not result in any overall difference between women and men in the speed at which HIV advances and health declines. Studies have also shown that when taking HIV drugs, men and women are equally likely to achieve viral suppression. Most differences in the effectiveness of treatment appear related to which HIV drugs are taken, and not to being female or male. The strongest single factor to predict the health of HIV+ people ? women or men ? is taking HIV drugs. Studies have not found that pregnancy causes HIV to become more advanced.

One study (March 2013) found that HIV lives and multiplies more often in the fluids in the female genital tract than in semen (cum), even when the person is on effective HIV drugs that show an undetectable viral load in the blood. The authors of the study thought that the female genital tract might be a 'reservoir' or place where HIV continues to live and reproduce despite effective HIV therapy. Researchers are not sure yet why this is, or what consequences it has, but the good news is that it does not seem to affect the chances of spreading HIV. Staying on your HIV drugs and maintaining an undetectable viral load is still the best way to stay healthy and prevent spreading HIV to others.

If you are thinking about starting or switching treatment, it is important to take into account your viral load, CD4 cell count, other labs results, and how you are feeling. Talk to your health care provider about the best treatment plan for you.

## Areas of Future Viral Load Research

Researchers have noticed that viral load and the level of certain HIV drugs go up and down during the course of a single menstrual cycle [8]. This could have an impact on drug dosing and the timing of viral load tests in women.

Understanding more about sex differences in viral load will lead to better care for HIV+ women. In the meantime, following the treatment guidelines for viral load testing is an important way for you and your health care provider to check your HIV infection, see how you are responding to HIV treatment, and work together to keep you healthy.

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## Additional Resources

Select the links below for additional material related to viral load.

[Viral Load Test \(AIDSmeds\)](#) [14]

[HIV Viral Load Testing \(CATIE\)](#) [15]

[Viral Load Tests \(AIDS InfoNet\)](#) [16]

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