



HEPATITIS C VIRAL LOAD

WHAT IS VIRAL LOAD?

There are two main types of HCV viral load tests:

Qualitative viral load tests determine the presence of HCV RNA (genetic code) in the blood. This type of test is usually used to confirm chronic infection with HCV. If viral RNA is detected, a positive result is reported. If viral RNA is not detected, the test result is negative. Up to 15% of people infected with HCV clear the infection without treatment. These people have a positive antibody test and a negative viral load test.

Quantitative viral load tests measure the amount of virus in one milliliter of blood. They are often used to assess whether or not treatment with interferon or interferon plus ribavirin is likely to be successful and, later, if treatment is working.

There are different techniques for counting HCV virus:

- **Polymerase chain reaction (PCR).** This test measures copies of HCV genetic code. The PCR test is very sensitive.
- **Branched-chain DNA (bDNA).** This test is less sensitive than the PCR test. However, it is less expensive.
- **Transcription-mediated amplification (TMA).** This technology is extremely sensitive. It is becoming faster and less expensive.

Different tests can give different results for the same sample. Because the tests are different, you should use the same kind of test to measure your viral load over time.

HOW IS VIRAL LOAD REPORTED?

Viral loads are usually reported as copies of virus in one milliliter (mL) of blood. However, because the different test technologies gave different viral load results, HCV viral loads are reported as International Units (IU) per mL

The best viral load test result is “undetectable.” This is **not** a guarantee that there is no virus in your blood; it might mean that there is not enough for the test to find and count. Viral loads below 800,000 IU/mL are considered low; above 800,000 are considered high.

HCV is physically much smaller than HIV and it multiplies much faster. HCV viral loads can be in the millions. But with successful treatment, HCV can be cured.

Viral load changes are often described as “log” changes. This refers to scientific notation, which uses powers of 10. For example, a 2-log drop is a drop of 10^2 or 100 times. A drop from 600,000 to 6,000 would be a 2-log drop.

HOW IS THE TEST USED?

The viral load is helpful in several areas:

- **Diagnosis.** The test can detect the presence of HCV a few days after HCV infection, before an antibody test becomes positive.
- **Confirming chronic infection.** As noted above, up to 15% of people infected with HCV clear the infection. This process may take up to 6 months. But antibody tests on these people will still show a positive result. A viral load test is used to determine if they have chronic infection.
- **Predicting treatment success.** People with viral loads below 400,000 before they start treatment generally have better treatment results.
- **Managing therapy.** The test shows if treatment is controlling the virus. There are several viral load measures of treatment response. These are described below.

HCV viral load cannot be used the same way as the HIV viral load (see fact sheet 125).

It is not a good indicator of how serious the hepatitis is, or how fast it will progress. It is also more complicated to

use in evaluating response to treatment.

In the past, lower viral loads are associated with better response to HCV therapy, but this is no longer the case with modern HCV drugs. Also, higher viral loads are linked to higher risk of transmission of HCV, at least from pregnant mothers to their newborns.

VIRAL LOAD RESPONSE TO TREATMENT

There are several types of HCV viral load response to treatment:

ETR (end-of-treatment response): This means having an undetectable HCV viral load at the end of HCV treatment.

EVR (early virologic response): This is a drop in viral load by 99% (2 logs, known as partial EVR), or to an undetectable level (complete EVR,) after 12 weeks of treatment. Patients who do not have an EVR have a very low chance of achieving a Sustained Virologic Response (see below.) Most doctors will stop HCV treatment if a patient does not have an EVR.

RVR (rapid virologic response): This means that HCV viral load becomes undetectable within 4 weeks of starting treatment.

SVR (sustained virologic response) means that HCV viral load remains undetectable 6 months after completing treatment. Most experts think of SVR as a cure.

Viral Breakthrough: HCV viral load, after becoming undetectable, becomes detectable again during treatment.

Viral Relapse: This refers to a viral load that became undetectable during treatment, but became detectable again after treatment was finished.

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