

Other common tests

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Viral load [1]A measurement of the quantity of HIV RNA in the blood. Viral load blood test results are expressed as the number of copies (of HIV) per milliliter of blood plasma. and CD4 cell count results are two of the main tests used to inform treatment decisions about starting or changing treatments. Usually every time you have regular blood tests a whole range of other tests are done. Some of these are useful in monitoring for possible drug side effects and potential organ damage. The results of these tests may also influence decisions to commence or change your HIV treatments.

Some of the common tests include:

Glucose, triglyceride [2]A type of fat in the blood. Elevated triglyceride levels may be a side effect of some anti-HIV drugs. and **cholesterol** [3]An essential component of cell membranes and nerve fibre insulation, cholesterol is important for the metabolism and transport of fatty acids and the production of hormones and Vitamin D. Cholesterol is manufactured by the liver, and is also present in certain foods. High blood cholesterol levels have been linked to heart disease and may be a side effect of some anti-HIV medications. The two major fats (lipids) in the blood are triglycerides and cholesterol. Glucose, triglyceride, and cholesterol levels are most reliably measured in the fasted state, that is, in the morning before eating. Certain anti-HIV therapies can increase cholesterol, triglyceride, and glucose levels in some people, which may increase the risk of

Liver [5]A large organ, located in the upper right abdomen, which assists in digestion by metabolising carbohydrates, fats and proteins, stores vitamins and minerals, produces amino acids, bile and cholesterol, and removes toxins from the blood. **function tests:**

There are a range of tests which taken together give an indication of the health of the liver. The liver can be damaged by hepatitis, alcohol and other drugs, being overweight, and by HIV **antiviral** [6]A medication or substance which is active against one or more viruses. May include anti-HIV drugs, but these are more accurately termed antiretrovirals. drugs directly – so it is important to keep a watch on liver function.

Kidney function:

Kidney function is normally measured by the blood levels of 'waste' products such as urea and creatinine. Some HIV antiviral drugs can affect the levels of these waste products because they compete with them for excretion in the kidney. Some HIV antiviral drugs may have an impact on kidney function.

Platelet count: Platelets are important in helping your blood clot in response to a cut or wound. Some HIV antiviral drugs – particularly **nucleoside analogues** [7]A type of anti-HIV drug that works by inhibiting a stage of the HIV life cycle called reverse transcription. Non-nucleosides work in a similar way, but are chemically different. (e.g. AZT, d4T) – can decrease the platelet count.

Haemoglobin and Haematocrit:

Haemoglobin measures the levels of the key protein which transports oxygen around the body. Haematocrit is a measure of the proportion of blood that is red blood cells. Low haemoglobin levels or a low haematocrit can be an indicator of **anaemia** [8]A lower than normal number of red blood cells. – a known **side effect** [9]Any undesired actions or effects of a drug or treatment. Negative or adverse effects may include headache, nausea, hair loss, skin irritation, or other physical problems. Experimental drugs must be evaluated for both immediate and long-term side effects. of some HIV antiviral drugs.

Other tests that may help inform treatments decisions

Resistance testing

The most common test to measure possible drug resistance is known as 'Genotyping'. The purpose of this test is to detect the presence of known **virus** [10]A small infective organism which is incapable of reproducing outside a host cell. mutations associated with drug resistance.

This test is called a 'genotypic resistance assay' or 'GRA'. It is used to compare the genetic code of the sample of HIV virus being tested against a 'wildtype' (the most common form of HIV virus). This test can only be

performed if you have a viral load over about 2000 copies per millilitre of blood.

Knowing which treatments you are potentially [resistant](#) [11] HIV which has mutated and is less susceptible to the effects of one or more anti-HIV drugs is said to be resistant. to and which treatments are effective against your virus is useful in determining your optimal treatment strategy. The current treatment guidelines suggest that this test should be performed:

- prior to commencing treatments;
- to assist in correctly selecting treatments when considering changing treatments;
- if there is indication of viral load change during treatment; and, less often,
- within 4 weeks after discontinuing or stopping treatments.

Another test used to measure resistance is known as 'phenotyping'.

This test is called a 'phenotypic assay'. It measures the virus's ability to grow in the presence of different combinations of [antiretroviral](#) [12] A medication or other substance which is active against retroviruses such as HIV.

The third approach to resistance testing is the 'virtual phenotype'. This test is really a genotype test that is interpreted with the aid of a large database of samples of known genotype and phenotype data. One drawback of this particular form of resistance testing is that the results are dependant on the number of known matches, but its main strength is that for people not on new drugs, as it is a simpler method of determining the likelihood of developing resistance.

Phenotyping is still relatively expensive compared to genotyping and virtual phenotyping, and is currently not available in Australia. As all of these tests are currently not covered under Medicare, the availability and cost of these tests varies. Your doctor or treatments officer will be able to provide more information as to the cost and availability in your area and what these tests may mean for you.

Abacavir Hypersensitivity

This test is rapidly becoming widespread and is a genetic test used to determine the likelihood of a possibly fatal side effect of Abacavir (an HIV antiviral drug) known as Abacavir hypersensitivity reaction. Wherever possible, it should be performed by your doctor prior to commencing Abacavir.

Therapeutic drug monitoring (TDM)

Therapeutic drug monitoring (TDM) is used to help individualize anti-HIV therapy by measuring the amount of drug in an individual's blood (plasma) or cerebral (spinal) fluid. This is important because different people absorb, process, and eliminate drugs at different rates, and blood and cerebral fluid levels may vary considerably among individuals taking the same doses of the same medications. Ideally, the lowest plasma drug concentration between doses (the trough level, or C_{min}) should still be high enough to inhibit HIV, but the highest concentration (the peak level, or C_{max}) should not cause intolerable side effects.

Some, but not all, studies have shown that using TDM to guide treatment decisions increases the chance of successful viral suppression and can assist in minimising side effects; however, drug level monitoring is not appropriate for all anti-HIV drugs.

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Links:

[1] <http://www.napwa.org.au/glossary/term/416>

[2] <http://www.napwa.org.au/glossary/term/114>

[3] <http://www.napwa.org.au/glossary/term/88>

[4] <http://www.napwa.org.au/glossary/term/103>

[5] <http://www.napwa.org.au/glossary/term/102>

[6] <http://www.napwa.org.au/glossary/term/123>

[7] <http://www.napwa.org.au/glossary/term/104>

[8] <http://www.napwa.org.au/glossary/term/402>

[9] <http://www.napwa.org.au/glossary/term/471>

[10] <http://www.napwa.org.au/glossary/term/125>

[11] <http://www.napwa.org.au/glossary/term/109>

[12] <http://www.napwa.org.au/glossary/term/122>

[13]

<http://www.napwa.org.au/resource/hiv-tests-and-treatments/viral-load/putting-it-all-together-using-test-results-to-inform-tr>

[14] <http://www.napwa.org.au/resource/hiv-tests-and-treatments/viral-load>

[15] <http://www.napwa.org.au/resource/hiv-tests-and-treatments/antiviral-treatments>