

# cd4 t-cell counts

T-cells (or T-lymphocytes) are white blood cells that play important roles in the immune system. There are two main types of T-cells. One type has molecules called CD4 on its surface; these 'helper' cells orchestrate the body's response to certain micro-organisms such as viruses. The other T-cells, which have a molecule called CD8, destroy cells that are infected and produce antiviral substances.

HIV is able to attach itself to the CD4 molecule, allowing the virus to enter and infect these cells. Even while a person with HIV feels well and has no symptoms, billions of CD4 T-cells are infected by HIV and are destroyed each day, and billions more CD4 T-cells are produced to replace them.

## Uses of CD4 counts

Doctors use a test that 'counts' the number of CD4 cells in a cubic millimetre of blood. A normal count in a healthy, HIV-negative adult can vary but is usually between 600 and 1200 CD4 cells/mm<sup>3</sup> (though it may be lower in some people).

In some cases, in order to help understand changes in your absolute CD4 count, your doctor may also assess what proportion of all lymphocytes are CD4 cells. This is called the CD4 percentage. In HIV-negative people a normal result is around 40%. A CD4 percentage which falls below about 15% is understood to reflect a risk of serious infections.

Most people with HIV find that their CD4 count falls over time. This often happens at a variable rate, so the count can still be quite stable for long periods. It is useful to have your CD4 count measured regularly for two reasons:

- To monitor your immune system and help you decide whether and when to take anti-HIV drugs and treatments to prevent infections.
- To help monitor the effectiveness of any anti-HIV drugs you are taking.

If your CD4 count is persistently below 350, your immune system is slightly weakened and you are at a gradually increasing risk of infections the further it falls. If it drops below 200-250 you are at increased risk from serious infections. At this point your doctor should offer drugs to try to prevent such infections, such as co-trimoxazole for PCP pneumonia. If your CD4 count starts to drop rapidly or falls below 350, particularly if your viral load is high, you may

wish to consider starting anti-HIV treatments. If your CD4 count falls below 250-200 you are recommended to start treatments with anti-HIV drugs.

One effect of anti-HIV drugs may be to improve the state of your immune system. This is crudely reflected in an increase in your CD4 count. Evidence suggests that the cells' ability to fight infections is also improved. For example, people taking anti-HIV drugs who find their CD4 count rises and stays above 250 cells may no longer need to take additional treatments which may have been prescribed to prevent PCP pneumonia.

Monitoring the changes in your CD4 count while you are taking anti-HIV drugs can help you and your doctor to decide whether your treatment is working, or whether it is time to try different options. A fall in CD4 count would be a sign that your treatment is not working and you should consider switching to a new regimen. However, the CD4 count isn't the only consideration when making these decisions; you should also take account of your viral load results, how well you feel, whether you have any symptoms, which treatments you've used before and therefore which options remain. (Viral load is the subject of which was last updated in June 2002).

## Understanding the results

Factors other than HIV can affect your CD4 count including infections, time of day, smoking, stress and which lab tests the blood sample. So it's very important to watch the trend in your CD4 count over time, rather than to place too much emphasis on a single test which may be misleading.

Only about 2% of the body's CD4 T-cells are in the blood; the rest are in tissues such as lymph nodes. Changes in your CD4 cell count (which looks only at the blood) may reflect the movement of cells into and out of the blood, rather than changes in the total number of CD4 cells in your body.

Doctors will normally suggest measuring your CD4 count every three to six months if you have a relatively high count, no symptoms and are not taking anti-HIV drugs. They may suggest more frequent counts if you are facing decisions such as starting treatments, if you develop HIV-related symptoms, or if the decline in CD4 cells seems to be speeding up.

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**for details write to NAM**  
Freepost LON 17995  
London SW9 6BR

**tel**  
+44 (0) 207840 0050  
**web**  
www.aidsmap.com