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Understanding CD4 Cells and CD4 Cell Tests [1]

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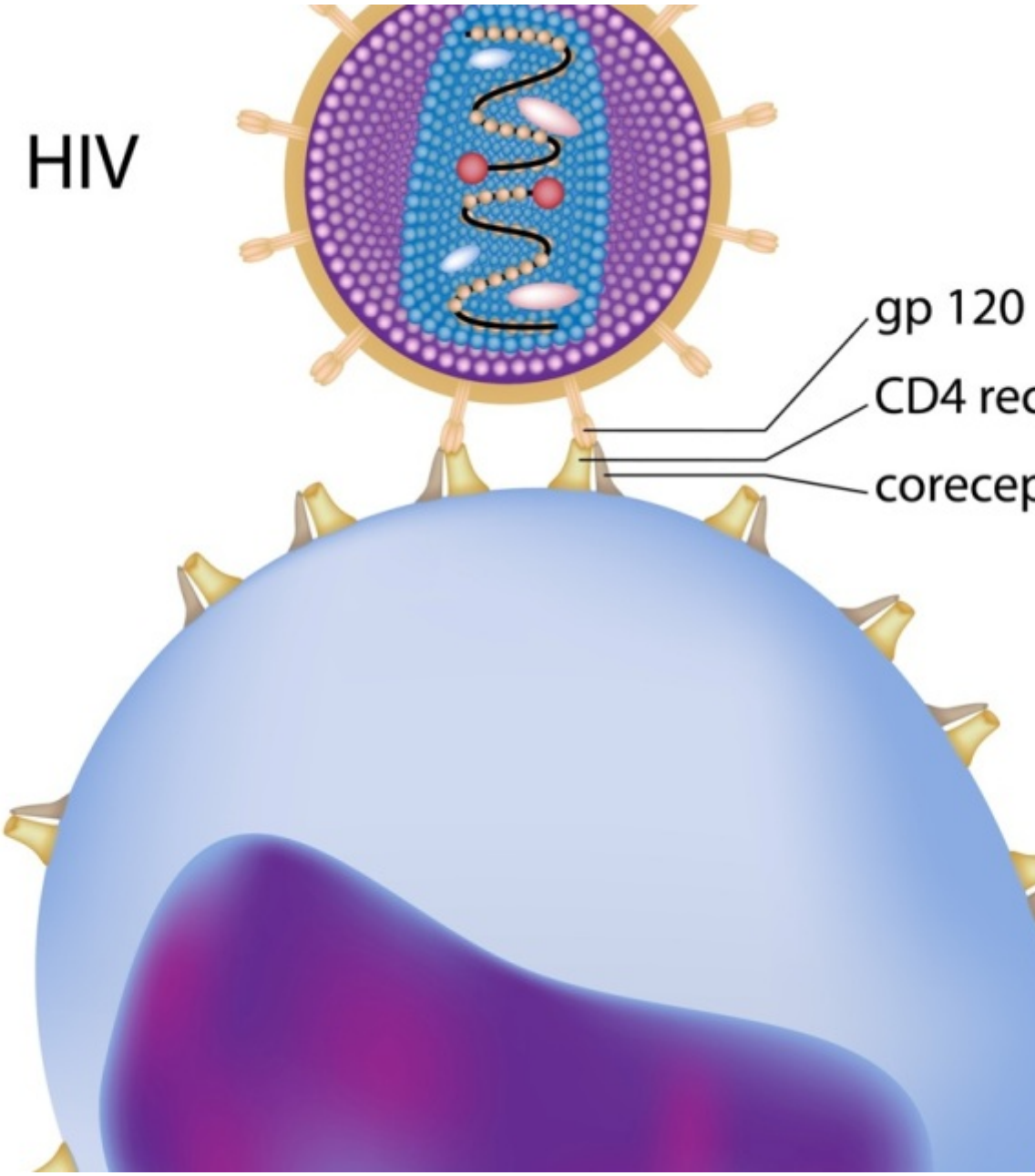

Table of Contents

- The Basics
- CD4 Count and HIV
- CD4 Count and HIV Treatment
- CD4 Cell Test
- The Bottom Line

The Basics

Your immune system protects your body by fighting germs and infections. White blood cells are an important part of your immune system [2]. HIV infects and destroys a type of white blood cell called a CD4 cell (sometimes called a T-cell).

As the immune system loses CD4 cells, it becomes weaker and is less able to fight off germs. When it loses a large number of CD4 cells, people living with HIV (HIV+) are at risk of getting AIDS-related opportunistic infections [3] (OIs), which are infections that can cause serious illness or death.

The number of CD4 cells you have gives a picture of the health of your immune system. A normal CD4 cell count is about 500 to 1,500 cells per cubic millimeter of blood (a cubic millimeter is a very small amount, about one drop). The number of CD4 cells a person has ? their "CD4 count" ? usually decreases as HIV disease gets worse. Your CD4 cell count can help your health care provider tell if your HIV disease is getting worse, if you should start HIV treatment, and if the treatment you are taking is working well.

CD4 Count and HIV

Without HIV treatment, HIV infects and destroys more and more CD4 cells. As the CD4 count goes down, an HIV+ person becomes more likely to develop OIs and cancers [4].

- CD4 count > 500: People with CD4 counts above 500 cells usually have a fairly normal immune system and are at low risk for OIs
- CD4 count < 200: People with CD4 counts below 200 cells are diagnosed as having AIDS and are at risk for developing serious OIs such as Pneumocystis pneumonia (PCP), *Mycobacterium avium* complex (MAC), and cytomegalovirus (CMV). If your CD4 count drops below 200, your health care provider will likely recommend that you take medications to prevent these infections.

CD4 Count and HIV Treatment

There are several different organizations and institutions that make recommendations about when to start HIV treatment. The British HIV Association suggests that treatment begin when people?s CD4 count drops below 350. The World Health Organization recommends treatment for all those with CD4 counts at or below 500. The US Department of Health and Human Services (DHHS) treatment guidelines [5] now recommend treatment for all people living with HIV, no matter what their CD4 count.

The DHHS treatment guidelines [5] state:

- HIV treatment is recommended for anyone who is HIV+, no matter what their CD4 count
- HIV treatment is also strongly recommended if you are in one or more of the following situations, no matter what your CD4 count:
    - You have or had symptoms of AIDS (such as opportunistic infections)
    - You are a pregnant [6] woman
    - You have HIV-related kidney disease
    - You need treatment for hepatitis B (HBV) [7]
- The guidelines also point to several conditions that increase the need for treatment, such as rapidly declining CD4 count (more than 100 cells per year) or higher viral load (more than 100,000 copies)
- HIV drugs should be offered to people who are at risk of spreading HIV to their sexual partners

Many people see their CD4 counts increase when they start effective HIV treatment. If the drugs succeed in slowing or stopping HIV, fewer new CD4 cells will be infected and your CD4 count may go up. However, your CD4 count can also go down again if you stop taking your HIV drugs correctly, or if your HIV becomes resistant [8] to the drugs. Along with your viral load [9], your CD4 count is a very valuable tool for monitoring your HIV disease and how well your HIV drugs are working.

CD4 Cell Test

The CD4 cell test is a simple blood test ordered by your health care provider. When you first start receiving care for HIV, you should get a "baseline" CD4 cell test. This baseline test gives a picture of your immune system when you first enter into care. Later tests can be compared against this first result to see how things are changing over time and with treatment.

It is important to get your CD4 count checked about every three to six months ? or as often as your health care provider recommends. You will need more frequent CD4 cell tests if your count is low or falling, or if you are starting or changing treatment. If you have been on HIV drugs for over two years, are virally suppressed and have a CD4 count over 300, your provider may suggest that you only need to get your CD4 count checked once a year.

Many factors can affect your CD4 count, including the time of day, level of stress, your menstrual cycle, and infections such as the flu. If you get a result back that surprises you or your health care provider, he or she will probably want you to get a second test. The second test would confirm any unexpected results or show that the first test's results were random ? the result of lab error or an unimportant occurrence. Try not to worry too much about a single abnormal test result; trends over time are usually more important.

In addition to your CD4 cell count, your health care provider will want to check your CD4 percentage. This number tells you what percent of your total white blood cells are CD4 cells. A normal CD4 cell percentage is about 30 to 60 percent.

The CD4 percentage is sometimes a more reliable measurement than the CD4 count because it tends to change less between measurements. While the CD4 percentage gives information about the health of your immune system, the CD4 count is the preferred measurement for assessing progression of HIV disease. Currently, treatment guidelines for adults are based on

CD4 counts and not on CD4 percentage.

If you begin treatment when your CD4 count and percentage are low (CD4 count <200), it may take longer for your CD4 numbers to increase. However, if your viral load is below detectable levels, then you can be encouraged that the virus is not growing or spreading. Sometimes watching your CD4 cells and percentage increase can take lots of time and patience.

The Bottom Line

Because HIV infects and kills CD4 cells, CD4 counts usually drop as HIV disease gets worse. Taking effective combinations of HIV drugs may stop your CD4 count from dropping and your HIV disease from getting worse.

Your CD4 count is an important indicator of the health of your immune system [2]. Keeping track of the trends in your CD4 count can help you and your health care provider make decisions about starting and changing treatment. Getting regular CD4 cell tests?along with viral load tests and other blood tests to check for treatment side effects?is an important way to take charge of your health.

Tags:

- cd4 cell count and women [10]
- cd4 t cell and women [11]
- cd4 cell and women [12]
- cd4 cell count [13]
- cd4 t cell [14]
- cd4 cell [15]
- T cell count [16]
- T cells [17]
- CD4 Tests [18]
- CD4 and women [19]

Additional Resources

Select the links below for additional material related to understanding CD4 and CD8 cells.
CD4 Cell Test (AIDSmeds) [20]
CD4 Cell Tests (The AIDS InfoNet) [21]
US Government Treatment Guidelines (AIDSinfo) [22]
CD4 cell counts (NAM) [23]
Monitoring Your Health (CATIE) [24]
HIV/AIDS: CD4 Count (video from DHHS) [25]
CD4 Cell Counts (AIDSmap) [26]

- HIV Information
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- Partners
- Who We Are
- Terms
- Privacy
- Contact

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Links:
[1] http://www.thewellproject.org/hiv-information/understanding-cd4-cells-and-cd4-cell-tests
[2] http://www.thewellproject.org/hiv-information/understanding-immune-system
[3] http://www.thewellproject.org/hiv-information/what-are-opportunistic-infections
[4] http://www.thewellproject.org/hiv-information/cancers
[5] http://www.thewellproject.org/hiv-information/hiv-treatment-guidelines
[6] http://www.thewellproject.org/hiv-information/pregnancy-and-hiv
[7] http://www.thewellproject.org/hiv-information/hepatitis-b
[8] http://www.thewellproject.org/hiv-information/resistance
[9] http://www.thewellproject.org/hiv-information/women-and-viral-load
[10] http://www.thewellproject.org/tags/cd4-cell-count-and-women
[11] http://www.thewellproject.org/tags/cd4-t-cell-and-women
[12] http://www.thewellproject.org/tags/cd4-cell-and-women
[13] http://www.thewellproject.org/tags/cd4-cell-count
[14] http://www.thewellproject.org/tags/cd4-t-cell
[15] http://www.thewellproject.org/tags/cd4-cell
[16] http://www.thewellproject.org/tags/t-cell-count
[17] http://www.thewellproject.org/tags/t-cells
[18] http://www.thewellproject.org/tags/cd4-tests
[19] http://www.thewellproject.org/tags/cd4-and-women
[20] http://www.aidsmeds.com/articles/TCellTest_4727.shtml
[21] http://www.aidsinfonet.org/fact_sheets/view/124
[22] http://aidsinfo.nih.gov/guidelines
[23] http://www.aidsmap.com/CD4-cell-counts/page/1254931/
[24] http://www.catie.ca/en/practical-guides/hiv-drug-treatment/2-hiv-and-aids-basics/2-3
[25] http://www.healthyroadsmedia.org/titles/EngHIVAIDSCD4Count/enghivaidscd4count.htm
[26] http://www.aidsmap.com/CD4-cell-counts/page/1327484/