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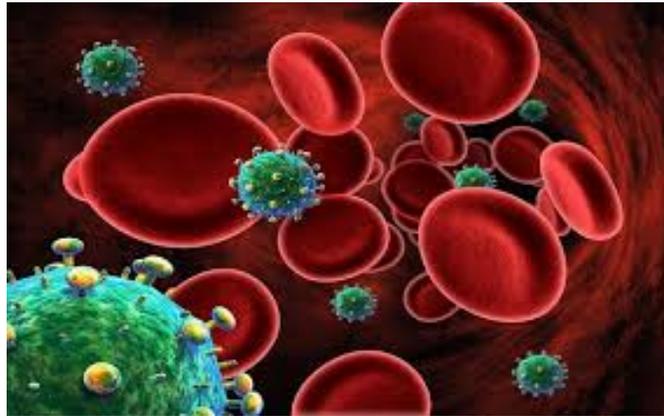
Directions: Read the following passage and answer the questions to follow.

What is HIV?

HIV stands for “**human immunodeficiency virus.**” It’s the virus that causes AIDS (acquired immunodeficiency syndrome). HIV is passed from person to person through sexual contact, blood exposure, childbirth, or breastfeeding.

It’s time to take a brief detour into the basic science of the **life cycle of HIV**— HIV is a **retrovirus**, a virus that contains enzymes (proteins) that can turn **RNA**, its genetic material, into DNA. It’s called a retrovirus because this is the converted (**transcribed**) into **RNA**. After infection, HIV RNA gets turned into DNA by the **reverse transcriptase** enzyme. The DNA is then inserted into the DNA of human cells. That DNA can then either be used to create new viruses, which infect new cells, or it can remain **latent** in long-lived cells, or **reservoirs**, such as **resting CD4 cells**. HIV’s ability to remain latent is what allows it to persist for life, even with effective treatment. It’s what has kept us from finding a cure.

When it’s not treated, HIV infection causes progressive damage to the **immune system** and is almost universally fatal. It is the world’s most serious **pandemic** (global **epidemic**), and there are no immediate prospects for either a cure or a preventive **vaccine**. Fortunately, treatment today is highly effective, and deaths from HIV disease are now mostly preventable in countries where therapy is available and affordable.



1. What is HIV and what type of virus is it?
2. What has kept us from finding a cure for HIV?

What are the stages of HIV infection?

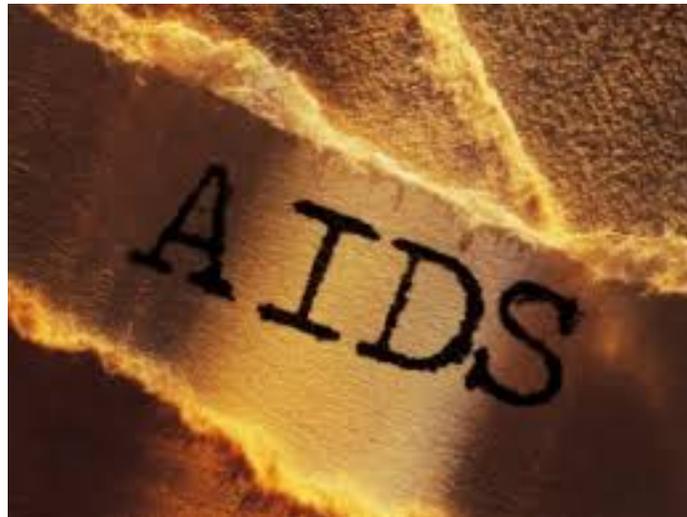
The first stage of HIV infection, occurring a few weeks after transmission, is primary HIV infection or acute retroviral syndrome (ARS). During ARS, the standard HIV test (serology) may be negative, but the amount of virus in the blood (measured by the viral load) is extremely high, making it easy to transmit HIV to others.

ARS resolves on its own and is followed by a latent stage usually called asymptomatic HIV infection. People generally feel fine during that stage, although their lymph nodes may be enlarged (lymphadenopathy), and some common conditions can occur more often or be more severe, including vaginal yeast infections, herpes, or shingles.

Some people develop symptoms of HIV infection before actually developing SIDS. This stage is referred to as symptomatic HIV infection (formerly AIDS-related complex, or ARC). Symptoms include weight loss, oral thrush (a yeast infection in the mouth), persistent diarrhea, night sweats, and fatigue.

You have AIDS if your CD4 count falls below 200 (whether or not you have symptoms) or when an AIDS-indicator condition has diagnosed. Most people reach a CD4 count of 200 before developing complications, so a low CD4 count is the most common reason for an AIDS diagnosis. As the CD4 count declines further, the list of possible complications grows. We sometimes refer to someone with a CD4 count below 50 as having advanced HIV infection.

If it is not diagnosed and treated, HIV infection almost always progresses from early stages to late stages. Treatment can move you from early stages to an early stage. Having AIDS or advanced HIV infection is not a good thing, but HIV infection is treatable at any stage.



3. What is the stage after the first few weeks of transmission?

4. How do you find out if you have AIDS?

Where did HIV come from?

Research now shows that **HIV-1**, the most common kind of HIV worldwide, first infected humans in sub-Saharan Africa at some point in the first half of the twentieth century. It was transmitted from chimpanzees, probably when people came into contact with chimp's blood while hunting or butchering. HIV probably remained confined to Africa for many years, in part because travel within and from Africa was uncommon. We have definite proof of human infection with HIV in Africa dating back to 1959.

The virus eventually spread beyond Africa, probably entering the United States in the mid- to late- 70s. Unusual cases of rare infections and cancers began to be seen in gay and bisexual men between 1979 and 1981, and the AIDS epidemic is said to have begun in 1981, when these reports first appeared in medical journals, making it clear that there was an emerging epidemic. HIV was discovered in 1983, leading to a blood test and eventually to treatment.

The disease was originally reported in gay and bisexual men, but the "risk groups" were later expanded to include injection drug users, hemophiliacs, and Haitians. It eventually became clear that "risk behaviors" were more important than "risk groups." People could be infected through unprotected sex, exposure to infected blood, or through labor or breast feeding. It's now estimated that more than 40 million children and adults are infected with HIV worldwide.

5. What is the most common HIV? Where were the first humans infected? What highway (The Hot Zone)?

6. When did the virus enter the United States? When did the AIDS epidemic begin?

7. Who were the “risk groups” to contract HIV?

8. How can someone contract HIV?

What’s the difference between HIV and AIDS?

Everyone who has AIDS has HIV infection, but not everyone with HIV infection has AIDS. AIDS stands for acquired immunodeficiency syndrome. It’s “acquired” because you only get it by being infected with HIV from someone else who has got it. “Immunodeficiency” means it causes damage to the immune system. It’s called a “**syndrome**” because in the years before HIV was discovered and identified as the cause of AIDS, we recognized a collection of symptoms and complications, including infections and cancers that occurred in people who had common risk factors.

The term AIDS was coined in 1982. HIV hadn’t been discovered yet, so there was no way to know whether people were sick until they were truly sick. Someone was said to have AIDS if he (and it was mostly men back then) developed one of a long list of opportunistic infections and cancers that don’t occur in people with healthy immune systems. After HIV was discovered and a test became available, being HIV-positive was added to the definition of AIDS. In 1993, the **Centers for Disease Control and Prevention (CDC)** expanded the definition of AIDS to include people with CD4 counts of less than 200.

Avoid the term “full-blown AIDS.” It’s old-fashioned, unnecessarily scary, and doesn’t mean anything other than AIDS. In fact, the word AIDS isn’t all that useful either. If you’re HIV-positive, the disease you have is HIV infection or HIV disease. AIDS just refers to a more advanced stage of that disease. Treatment can prevent HIV infection from turning into AIDS, and it can restore the health of people with AIDS. In the eyes of organizations and scientists who keep track of the epidemic, once you have AIDS, you’ll always have AIDS. But what matters more to your provider—and should matter more to you—is how you’re doing now.

9. What does AIDS stand for? Why is it acquired?

10. What is the difference between HIV and AIDS?

How does HIV cause illness?

HIV causes illness mainly by damaging the immune system. It can infect many human cells, but the most important target is the **CD4 lymphocyte (also known as the CD4 cell, T-helper cell, or helper cell)**. The CD4 cell is a type of white blood cell (WBC) that is responsible for controlling or preventing infection with many common viruses, bacteria, fungi, and parasites, as well as some cancers. HIV infection leads to destruction of CD4 cells. Over time, the number of CD4 cells (the **CD4 count**) declines. Although it may take years, the CD4 count eventually becomes so low that there aren’t enough cells to fight infection, which allows symptoms or complications to occur. The speed at which the CD4 count falls varies from person to person and depends on a number of factors, including genetic characteristics, characteristics of the viral strain, and the amount of virus in the blood (**viral load**).

The reason for the loss of CD4 cells still isn’t completely understood. It’s not simply a matter of HIV infecting and directly killing the cells, because the proportion of cells that are infected is small. Scientists now believe that HIV

infection may cause a chronic **immune activation** (stimulation of the immune system) that leads to a gradual reduction in the number of CD4 cells.

In addition to damaging the immune system, HIV can directly affect many of the body's organ, such as the nervous system and the kidneys. It can also cause weight loss, night sweats, and diarrhea. When deaths due to AIDS were common, it was often said that people didn't die of HIV itself, but one of its complications, such as a cancer or infection. While that may have been technically true in most cases, HIV infection was still the underlying problem that led to death from AIDS.

11. What is the CD4 cell? The speed of the declination of the CD4 depends on what?

Should I get tested?

If you're reading this asking this question, the answer is probably yes! Routine HIV testing is now recommended for all adults and adolescents, which means that almost everyone should know his or her HIV status. You could disregard this recommendation if you've never had sex or shared needles, but as a society we'd be a lot better off if we stopped worrying about "risk factors" and just tested everybody. We have a simple, cheap, highly accurate test for a disease that's spread from person to person, is highly treatable, and is fatal if untreated. It's a crime that so many people don't get diagnosed until they're sick with advanced HIV infection.

People sometimes get tested because they're afraid they might have been infected from a specific event. A negative test 3 months after exposure is highly reassuring. If you need to be 100% sure, get another test at 6 months. Better yet, if you're sexually active—and especially if you're having unsafe sex—it makes more sense to get tested every 6 to 12 months rather than try to time the test based on the exposure, which can drive you (and your medical provider) crazy.

Having just recommended that everyone get tested, it may seem redundant to list other reasons for testing, but here goes. Testing is especially recommended for people who've had **sexually transmitted diseases (STDs), viral hepatitis, tuberculosis, shingles**, or problems that could be caused by HIV infection, such as weight loss or chronic diarrhea. All pregnant women should be tested since treatment can prevent transmission to their infants.



12. Who should get tested for HIV?

Who should I tell if I test positive?

Telling people about HIV status is a big step, especially when you've just found out you're positive. Some people should be told right away; with others, you have time to think it over.

It's important to tell people you might have infected or who might have infected you—sex partners or people you've shared needles with. They need to find out so they can get tested. Your provider, counselor, or case manager may also be able to help you inform partners. If those don't seem like good options, health departments can notify your contacts and advise them to get tested without revealing your name.

Think about telling friends or family members you rely on for emotional support. It's critical to have a support system when dealing with HIV infection. Think about the important people in your life. Will they be there for you? Will they respect your confidentiality? If so, think about telling them. Family members don't need to know just because they're family members. You pose no risk to them, and you may outlive them anyway. You should tell them if they'll become part of your support network.

If you're not comfortable telling friends or family members, then you need to look elsewhere. Ask about support groups, counselors, peer advocates, or therapists in your community. Internet chat groups, while not the best source of reliable medical information, can be helpful places to share your experiences with others HIV-positive people in an anonymous setting.

You should also inform your health care providers including doctors, dentists, counselors, and therapists. They need to know your HIV status to be able to take care of you properly. If you have a provider you don't feel you can tell, then it may be time to change providers.

You don't have to tell to your boss, your co-workers, your plumber, or the guy sitting next to you on the bus.

Michael's comment: Sometimes I had to console the people I chose to tell. I found myself having to take on the supportive role, rather than feeling supported. I also found that no one kept my secret. Be prepared.

Rose's comment: Be careful who you tell, and tell them carefully. When I was first diagnosed 20 years ago, I told my mother and one of my sisters. They gave me a lot of support in the beginning, but they were afraid to let anyone else find out. My sister told people I would be dead from a brain tumor in 6 months. My mom would only invite me and my kids over when no else was around. We had to drink out of paper cups, eat off paper plates, and take out our own garbage. When I didn't die in 6 months, my sister stating telling people that my daughter and I were positive thinking she was protecting community.

Things got better for me when I started speaking publicly about HIV. I talked about the discrimination I faced within my mom family. As my family got educated, they became more supportive. They apologized for the way they treated me, but I still felt angry.

What is prognosis?

Your prognosis is excellent! HIV infection is not the progressive, fatal illness it was in the '80s and early '90s. The memory of those horrible times, together with the stigma that still surrounds HIV infection, can make learning you're positive harder than it has to be. With the right treatment, HIV infection is now chronic, manageable disease. If it didn't come with so much emotional, social, and historical baggage, people would react to the diagnosis the way they might if they learned that they had diabetes or rheumatoid arthritis. Granted, these aren't perfect analogies, since you can't transmit diabetes or rheumatoid arthritis to others. On the other hand, treatment for HIV is now easier and more effective than treatment for either of those diseases.

Antiretroviral therapy (ART) is the term we use to describe the combination drug therapy-sometimes referred to as a "**cocktail**"-that's been in use since the mid-90s. It's also been called **highly active antiretroviral therapy (HAART)** because it essentially stops the virus from replicating (multiplying or reproducing). This keeps the immune system-the system in the body that fights infections and cancers-from being damaged further and allows it to recover. The development of ART is up there with the discovery of penicillin as one of the most important and effective medical achievements of the twentieth century, and treatment keeps getting better in the twenty-first century.

ART has completely changed the outlook for people with HIV infection. There appears to be no time limit to the benefits of the therapy once you start. If you take your medications faithfully, you can keep HIV in check indefinitely, having to change therapy only because of side effects or because better drugs have come along. If you've just been diagnosed, you should plan on sticking around for a long time, living long enough to die of old age. Don't quit your job and max out your credit cards or you may be in a rude awakening!

ART hasn't been around long enough for me to promise that your lifespan will be exactly the same as it would have been if you weren't positive, but I do feel comfortable telling my newly diagnosed patients that, together, we can almost eliminate the possibility that they'll ever die of **AIDS**.

Rose's comment: When I was first diagnosed, I thought my life was over, and I would never live to see my kids grew up. I became self-destructive because I thought I had no future. I knew nothing about HIV except what I heard from people in the community. In the news I heard about people facing discrimination and stigma and struggling to stay alive I assumed that that's how life was going to be for me. It took 8 years before I was ready to learn about the disease. I also had to learn to respect myself, rather than accepting the image that people in the community had of people like me. I live a normal life now. I work, and I have a wonderful family. I'm open now about my HIV status, and I help other HIV-positive people as a peer counselor.

13. What is antiretroviral therapy? Why is it also called highly active antiretroviral therapy?

14. Why has ART completely changed the outlook for people with HIV?

Can I live a normal life? What about sex and relationships?

You can have a normal life if infected... with some adjustments. Compared to someone without any chronic medical conditions, you'll have more medical visits and will take more medications. However, treatment for HIV infection has become much easier than it was in the past. Many of my patients now take just one or two pills once a day and see me for 20 minutes two to four times per year. They're busy with work or school, are able to travel, to stay physically active, and to maintain relationships.

The biggest adjustments are often the ones that have to do with your relationships with others. Friends and family members may have to be educated before they can treat you like they did before. Sexual relationships present a special challenge. Current partners, if they're negative, will have to face their own fear of infection, a fear not all relationships survive. Entering into new relationship involves the complex issues of disclosure and the fear of rejection or loss of confidentiality.

It may be hard to believe now, but in time HIV infection may be low on your list of daily concerns, having little impact on the life you lead and the decisions you make. Getting to that point takes time, support, and sometimes counseling. You may not be there yet, but stick with it.

15. Could someone live a normal life with a positive test result?

