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Welcome to this lesson on HIV and AIDS. Today, we will be talking about what HIV and AIDS is, how it's transmitted, and how it can be treated. So first of all HIV, which stands for Human Immunodeficiency Virus. Human immunodeficiency virus is a virus that causes the disease AIDS, and AIDS stands for Acquired Immune Deficiency Syndrome. So HIV is a virus that causes this specific disease.

In HIV, basically what it does is it attacks the immune system and kills lymphocytes, such as helper T cells, and also attacks macrophages and dendritic cells, which are another part of your body's immune system. So what this does, is it leaves your body vulnerable to infection and rare forms of cancer. So it's basically a virus that attacks and destroys your immune system so that your body can't fight off any other types of diseases or illnesses or cancers that you might come across.

HIV is also a retrovirus. And what this means, is that rather than its genetic information being in the form of DNA, it is in the form of RNA. So the HIV virus's genetic information is in the form of RNA. So what happens is that the virus will insert its genes into a person's DNA and replicate in that way, and we'll talk about that process a little bit more in just a moment here.

So what's going to happen then is that once a person becomes infected with the HIV virus, the immune system will first react normally. But this virus will replicate so quickly that eventually the body is not able to keep up with it. And the HIV virus actually produces billions of new viruses each day within your body's helper T cells.

So at first, the person will experience various minor infections as a result of the number of helper T cells dropping. But eventually, once that number of helper T cells gets too low, it leaves your body susceptible to more serious diseases. And those more serious diseases are oftentimes will end up killing a person who has HIV or AIDS.

So let's take a look at how HIV is affecting the cells within your body to cause this disease. So HIV is a virus that has these proteins all over its coat. OK, so these are all proteins.

Within the virus, within the inside, you have your viral RNA and you have a viral enzyme. And this viral enzyme it's called reverse transcriptase. So viral RNA, along with that enzyme, will produce viral DNA. And that viral DNA will then mix with the DNA of the host cell, and then will be transcribed to produce new viruses.

OK, so what happens, like I said, we're going to pretend that this-- this here is going to be a

lymphocyte. So that virus is going to enter into the lymphocyte. Here's the nucleus, and here's the DNA of that lymphocyte. So the DNA of the virus will mix with the DNA of the host cell, OK?

Then what's going to happen is that DNA is going to be transcribed. And once that DNA is transcribed, it's going to produce new virus particles. So then, these new virus particles are going to be produced. So these new virus particles will be assembled from viral RNA and proteins. So basically, the virus is infecting healthy cells using the cells DNA in order to produce more viruses.

So transmission of HIV is through bodily fluids, especially blood and semen, but other bodily fluids can also transmit this virus as well. So it can enter the body through any sort of cut or abrasion, and oftentimes it's spread by sharing needles or it's sexually transmitted. It can also be passed from mother to child through child birth or through breastfeeding.

So Africa right now is the country that has the highest population of infected people worldwide. So for the treatment of HIV, there is actually no cure for HIV and AIDS, but there is a treatment that can slow the process down. And it includes a cocktail of drugs.

So the reason that there's no treatment for HIV and AIDS, is because it mutates rapidly and develops resistance to drugs very easily. And also the reason for it, is that since it injects its own DNA into the host cell's DNA, you can't really remove the HIV genes from someone else's DNA. It's very difficult. So that's what makes it incurable right now.

So the treatment involves a cocktail. We call it a cocktail of drugs. So basically, this cocktail involves a protease inhibitor which blocks the action of HIV protease. And HIV protease is an enzyme that's required to make new viruses.

So we have a protease inhibitor. And also, this cocktail involves two anti-HIV drugs. So this cocktail of drugs, as I mentioned, doesn't cure HIV and AIDS, but it helps slow it down and gives the person a better chance for living longer. So this lesson has been an overview on HIV and AIDS.