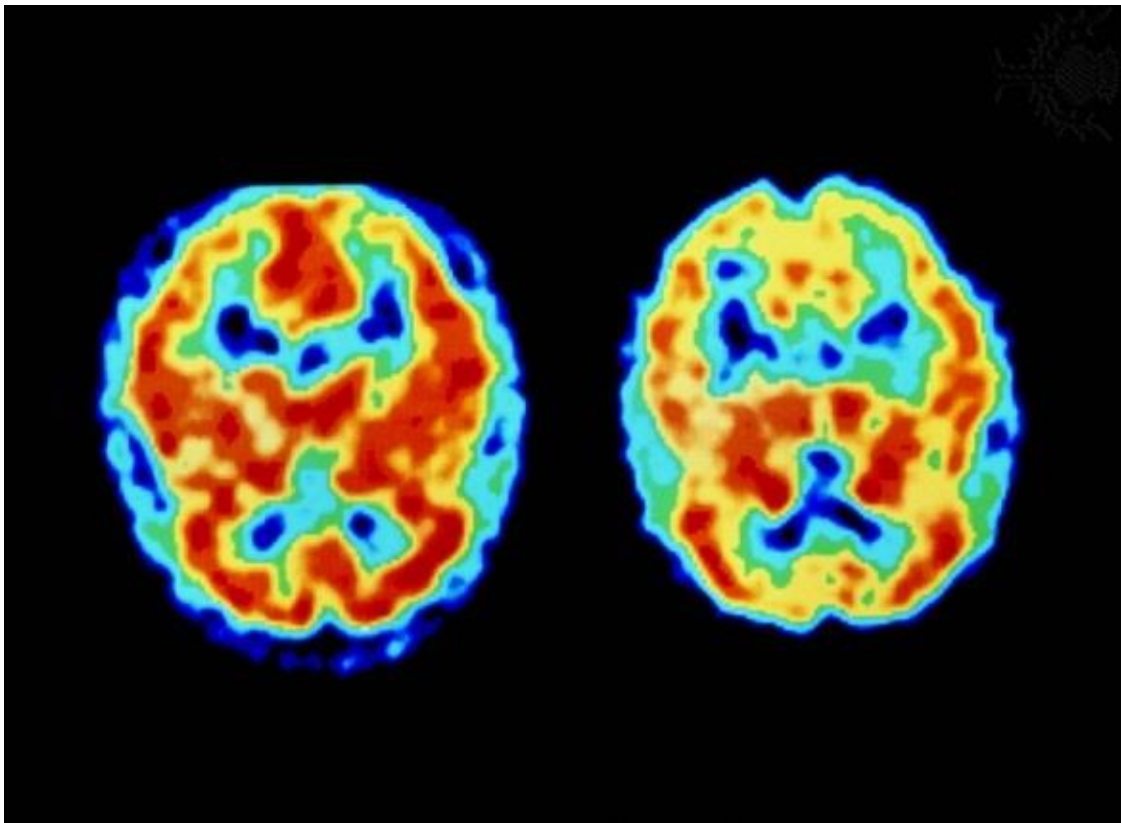

Learning Unit 4: HIV-associated symptoms and diseases

**BOTH
TRACKS**



Brain scan of patient with AIDS dementia

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Learning Unit 4 – HIV-associated symptoms and diseases

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Introduction

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After reading Learning Units 2 and 3, it should be clear to you that Aids is an *immune deficiency syndrome*. In this learning unit we will elaborate on all the different infections and diseases that can attack a person with a broken-down immune system. We will also look at that very fine balance between the immune system (in the form of CD4 cells) and HIV to determine the progress of an infected person's disease.

Key questions

Use the following questions as pointers to ensure that you retain your focus on the important issues in this learning unit:

- What is the relationship between the immune system, the virus and disease progression?
- What are the symptoms of HIV infection? How can opportunistic infections be prevented?
- What does tuberculosis have to do with Aids?
- Why are STIs and Aids such a deadly combination?

[\[NEXT\]](#)

Key concepts

While working your way through this learning unit, look out for the following key concepts. Make sure that, after you have completed this learning unit, you know what they refer to and how they are used (or look up their definitions in the glossary):

<u>CD4 cell count</u>	<u><i>Pneumocystis</i> Pneumonia (PCP)</u>
<u>Stages of HIV infection</u>	<u>Tuberculosis (TB)</u>
<u>Opportunistic infections</u>	<u>Sexually Transmitted Infections (STIs)</u>
<u>Viral load</u>	<u>Shingles (or herpes zoster)</u>

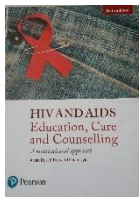
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A special relationship

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There is a very special relationship (or a fine balance) between the viral load, the CD4 cells (representing the immune system) and the progression of the disease (Aids). If you grasp this relationship, you are halfway there! Everything you read about Aids can be explained by looking at this relationship between CD4 cells and HI viruses. This relationship will explain how healthy or sick a person with HIV infection is, what the effects of positive living are and why ARVs work so well. Let's explore this relationship further:

Study

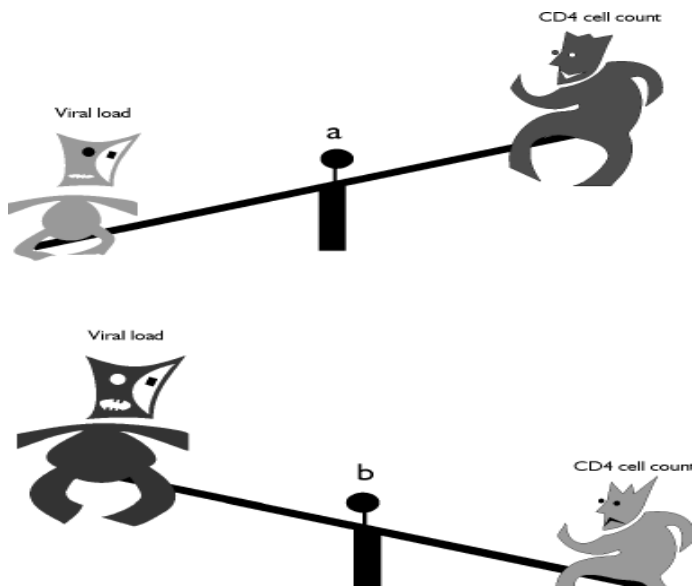


Prescribed book: pp. 84-86

Section 4.1: The CD4, the viral load and the stages of HIV infection.

Pay special attention to:

- When the viral load is high, the CD4 cell count will be low.
- When the CD4 count is high, the viral load will be low.

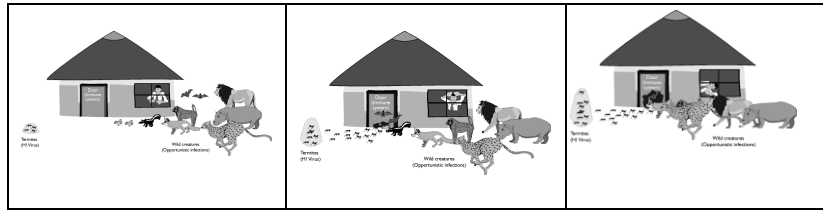


The relationship between the CD4 count and the HI viral count

To explain the relationship between the CD4 count, HIV and the health of the immune system, I will use the pictures of an HIV-positive man living in a house (the immune system) with creatures lurking around (opportunistic infections). If the man maintains the house properly (e.g. by keeping the door intact) the creatures cannot come in (to attack the immune system) and the man will stay healthy. If the man neglects his house (immune system) and lets the door fall into disrepair, the creatures (opportunistic infections) will take the opportunity to come into the house and they will kill the man. With this story in mind, do Activity 4.1.

ACTIVITY 4.1 – THE IMMUNE SYSTEM IN PICTURES

In this activity you will find the pictures below as well as a couple of questions to answer based on the pictures.



Go to [Activity 4.1](#)

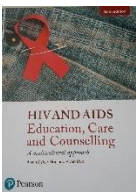


Feedback: I hope that the picture of the termites, the door and the lurking creatures will always be in your mind when you deal with the management of HIV infection and Aids. Make the principles from this exercise your own. You will later learn more about all the different things the housekeeper can do to keep a person healthy. But for now, let's concentrate on the creatures which get through the holes in the door.

[NEXT]

Symptoms of HIV infection

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You will see that we use a “*stages of disease*” approach in this course. This means that the progression of HIV infection and Aids is explained in terms of four stages of infection. We use the stages approach only because it is a handy theoretical way to understand the disease. The advent of ARVs changed the stage approach to the development of disease dramatically. ART literally brought some people with fully developed Aids back from the brink of death. You only have to read the life stories of great South Africans like Zackie Achmat and Edwin Cameron to realise this. The very sad scenario is, however, that many people all over Africa are not on ARVs (for various reasons) and this stage-like pattern progressing from being infected to death is still often seen.

<p>Study</p> 	<p>Prescribed book: pp. 86-96</p> <p>Section 4.2: The stages of HIV infection. This section will help you to explain to a patient with HIV infection the infections and diseases they are vulnerable to in the different stages of the disease.</p> <p>Pay special attention to:</p> <ul style="list-style-type: none">• The symptoms and diseases that can make a person sick in the different stages of infection. Click on the link http://goo.gl/eM1tR2 to watch a video on early symptoms.• The involvement of the CD4 cell count and the viral load in each one of the infections or diseases.• The fact that a person who is in the final stage of Aids (clinical stage 4) is very vulnerable to opportunistic infections and is usually very sick. Be aware of the diseases that the person can be vulnerable to and be able to give a short definition of each. (See the glossary). Click on the link http://goo.gl/x75Xyi to watch a video on the differences between HIV, Aids and opportunistic diseases.	 
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If you still have doubts about the CD4/HIV/symptoms seesaw, look at figure 4.3 (p. 88 of the prescribed book). Can you see how this picture brings it all together and how it shows how a person with HIV infection and Aids can deteriorate if nothing is done to boost the immune system and to repress the viral load?

ACTIVITY 4.2 – THE STAGES OF HIV INFECTION

This activity will require from you to link the symptoms and diseases that you read about in the prescribed book to the right stages of HIV infection. Go to [Activity 4.2](#).

Feedback: Go back to your prescribed book if you battled to place the symptoms and diseases in the right columns. Take note that some of the symptoms or diseases could fit into more than one stage of HIV infection.

You probably learnt the names of some new diseases in this section. I tried to define them properly in the prescribed book, but if you still battle with some of the words, go to your glossary and look them up. It might also help to Google the word on the internet.

Look at pictures of diseases

You have now learned about a number of diseases and infections but, if you don't know what they look like, they might mean nothing to you. The following online library gives images and photographs of Aids-related diseases. The pictures might help you to put a face to many diseases by looking at them. The images can even be transformed into PowerPoint slides. But be warned: Some of these pictures are not for sensitive viewers!



Go to the following website: <http://www.Aids-images.ch> . Click on "All diseases" (on the left, under "Search images by disease"). This will bring up an alphabetical list in a popup box. Choose a disease that you would like to view by clicking on it, for example "Candidiasis" or "Kaposi's sarcoma".

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Prevention of opportunistic infections

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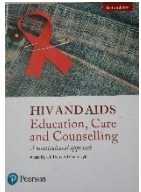
I looked up the word “opportunist” in various dictionaries, and came up with this interesting description in an Afrikaans dictionary: “An opportunist is a person without fixed principles who only takes the circumstances into account and waits for an opportunity” (own translation). An opportunistic disease does exactly that:

It has no “principles” and awaits the opportunity to attack a weakened immune system. Our only defence is to be proactive and to start treating the patient for a specific opportunistic disease before it attacks. Let’s discover together how this is done.



Kaposi's sarcoma

Study



Prescribed book: pp. 99-106

Section 4.4: Prevention of opportunistic infections. Pay special attention to:

- When prophylactic treatment of patients should start, based on the CD4 cell counts for the various diseases.
- Which diseases can be prevented by immunisation?
- CD4 counts that are no longer used to initiate TB preventative therapy.

You do not need to study Section 4.3 (symptoms of HIV infection in children).

ACTIVITY 4.3 – PROPHYLACTIC TREATMENT OF OPPORTUNISTIC INFECTIONS

This activity may help you to remember when to start prophylactic (i.e. preventive) treatment. And don't think that you will never need this information. A student told me that she advised her HIV-positive brother to speak to his doctor about TB prophylactic treatment when his CD4 count dropped below 350 cells. The clinic personnel missed this completely because they did not look at his health problem holistically! Go to [Activity 4.3](#).

Feedback: Consult your prescribed book if you had problems filling in the table.

Let's go back to our story about the termites, the door and the lion to explore further what opportunistic infections are and how they can be prevented.

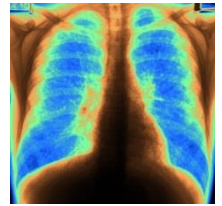
ACTIVITY 4.4 – OPPORTUNISTIC INFECTIONS

Look at the picture and answer a couple of questions based on the picture. Go to [Activity 4.4](#).

Feedback: Tuberculosis is one of the most dangerous opportunistic infections that attacks HIV-infected people with depressed immune systems. (The lower CD4 cell counts open up a bigger hole in the door.)

[\[NEXT\]](#)

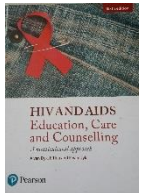
What does TB have to do with Aids? Marcos Espinal, the head of the WHO's Stop TB Partnership, said the following at a symposium in Cape Town:



*In Africa TB and HIV run in parallel, they are **married**, with each fuelling the other. The marriage between TB and HIV must be recognised and treated as a union of social – and not medical – diseases if the goal of eliminating tuberculosis in humans is to be achieved (Beresford, B. (2008). Mail & Guardian Online, 09 February).*

What a strange way to describe the relationship between HIV and TB! Take a closer look at the TB/HIV alliance and decide if you agree with Espinal.

Study



Prescribed book: pp. 106-116

Section 4.5: Tuberculosis. Pay special attention to:

- The transmission of TB.
- The two stages of TB: Primary and post-primary (secondary TB).
- The symptoms of TB.
- The treatment of a TB. (You do not have to know the names of the medications, but the basic principles of treatment are important).
- TB and HIV.
- Side-effects of TB medicines.
- Adherence to treatment – why it is important.
- Drug-resistant TB (multi-drug as well as extremely drug-resistant TB).
Click on the link <http://goo.gl/tqYjza> to watch a video on 'superbugs'.

You may leave out the diagnosis of TB.



It is extremely important for everybody working in the HIV and Aids field to recognise the importance of screening all people living with HIV for TB and to offer antibiotics to either *prevent* TB or to *treat* TB. It is also important to offer an HIV test to all people with TB and to assess if they should also start taking ARVs.

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STIs and HIV – A deadly combination

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You have probably realised by now that HIV and Aids have forced us to think holistically. In the previous section we looked at the HIV/TB link. Let's now explore the link between HIV and other STIs.



Study



Prescribed book: pp. 116-122

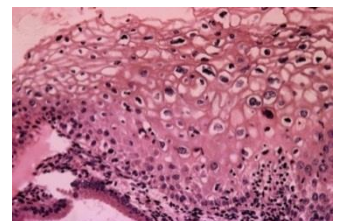
Section 4.6: Sexually transmitted infections. Pay special attention to:

- Why people who have other STIs are particularly prone to HIV infection.
- The difference between the diagnostic versus the syndromic management of STIs.
- Why we use the syndromic approach in developing countries like South Africa and not the diagnostic approach which is used in developed countries.
- The importance of regular pap smears.
- The importance of treating STIs when there is still time. Click on the link <http://goo.gl/OR6f5U> to watch a general discussion on STIs.
- Advising STI clinics on the general points of managing STIs.

Although you don't have to know the specific causes, symptoms and treatment of STIs, it is important that you recognise STI-related syndromes – not only in your patients, but also in yourself. Did you know that most STIs can be treated successfully? Click on the link <http://goo.gl/L15UB1> to watch a discussion on herpes.



If you want to see more pictures of what STIs look like, go to the following website: <http://goo.gl/4C8N9D>. Type the name of the STI you would like to look at in the search box. Do you appreciate the importance for women to go for their Pap (or cervical) smear tests regularly to make sure that they are not infected with the human papilloma virus (HPV)?



Human papilloma virus

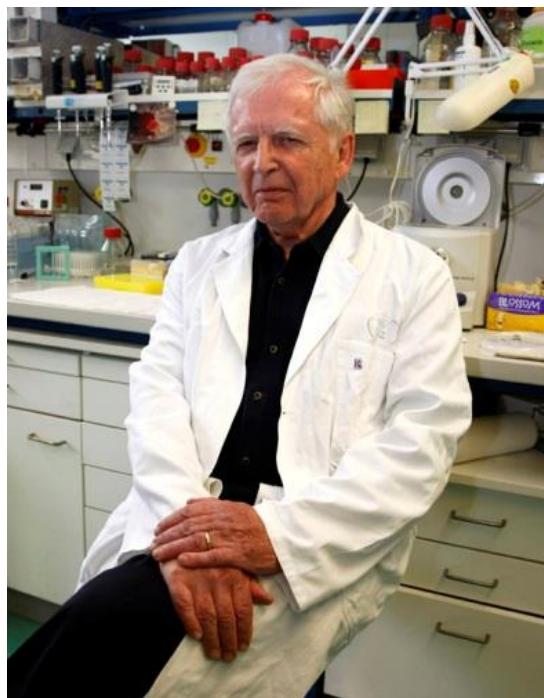
HPV causes cervical cancer. According to WHO estimates, 630 million people have HPV and more than 650 women die from cervical cancer around the world each day. According to the pharmaceutical information on Gardasil, the vaccine should be given to boys and girls between the ages of 9 and 17 years, and to females between the ages of 18 and 26 years. But let's play devil's advocate and ask you to consider the following questions:

- Since HPV is implicated in almost all cases of cervical cancer, why is the vaccine not available in the public sector?
- What can we do to help disempowered women who often need the vaccine most to get it?
- HPV has serious health consequences, but what are the ethical implications of giving a vaccine that prevents an STI to young children?

What are the ethical implications of **NOT** giving a vaccine that prevents a very serious STI to young children – given the fact that we live in a country with a very high crime and rape rate?

Did you know?

In 2014 the South African Minister of Health, Dr Aaron Motsoaledi, announced that all girls of between 9 and 12 years of age would be vaccinated with the HPV vaccine. This will save thousands of women in future from cervical cancer and death. Click on the video link <http://goo.gl/apWhLx> to watch a video on HPV and the vaccine to protect women.



Dr Harald zur Hausen who received the Nobel Prize in Physiology or Medicine in 2008 for developing the HPV vaccine

ILLNESS FROM ANOTHER PERSPECTIVE – SIZWE’S STORY

This learning unit was written within the Western philosophy of health and illness, but there are also other perspectives that we should acknowledge, for example the traditional African beliefs about health and illness. Although we will deal with the African perspective in detail in Learning Unit 11, here is an appetizer from your recommended book: *Three-letter plague: A young man’s journey through a great epidemic* (page 29). Sizwe is telling Jonny about the death of his friend Jake.

Jake died in 2000. By the end of 2004, the people of Ithanga had, in whispers and behind closed doors, attributed five other deaths among their ranks to the virus. “How did you recognise that these people had Aids?” I asked Sizwe. “The pimples on the body. The person getting thin. The diarrhoea. There is always diarrhoea but the stomach is never sore. It runs and it does not stop.”

Notably absent from this list are the symptoms of tuberculosis, pneumonia and cryptococcal meningitis, the most common causes of death among Aids sufferers in these parts. Ithanga did not yet have sufficient knowledge of the epidemic to recognise it, for many of its symptoms were identical to illnesses the village had known for many generations to be the work of witchcraft. A person who contracted cryptococcal meningitis or suffered from Aids dementia was said to have had a demon sent to him by an enemy. A person suffering from shingles – a common opportunistic infection triggered by immunodeficiency – was said to have had a witch’s snake crawl over her skin while she slept. It was only much later, when people with shingles went to the clinics and the nurses diagnosed their condition as an Aids-related infection and treated them successfully, that the definition of Aids in Ithanga began to expand.

It is important for caregivers and counsellors to recognise different viewpoints about the causes and treatment of illness. But as I have said before, more about this in Learning Unit 11.

You are now finished with this learning unit. Click on [Assessment](#) to do some self-assessment questions.

Study reflection

After completing Learning Unit 4 (HIV-associated symptoms and diseases), you should have acquired the following knowledge and understanding and be able to:

- explain what each one of the key terms mentioned under “key concepts” at the beginning of this learning unit means to you.
- explain to a client or a patient how the relationship between the CD4 cell count, the viral load and the stages of infection works.
- describe the different stages of HIV infection.
- devise a TB symptom checklist that can be used in an HIV VCT clinic to diagnose TB in patients.
- recognise the main symptoms of STIs in your patients as well as in yourself.
- advise the manager of a free counselling clinic for youth on how to offer a youth-friendly service which offers help to youth for STIs.

Self-Assessment 4



Now is the time to pause briefly and to assess whether you have acquired the necessary knowledge and skills. Click on the link [Self-Assessment 4](#) to do a few questions on this learning unit.

You are now finished with the assessment. Now go to Learning Unit 5.

APPENDICES

- Activities
- Self-Assessments
- Glossary

ACTIVITY 4.1 – THE IMMUNE SYSTEM IN PICTURES

Look at the pictures below and answer the questions that follow.

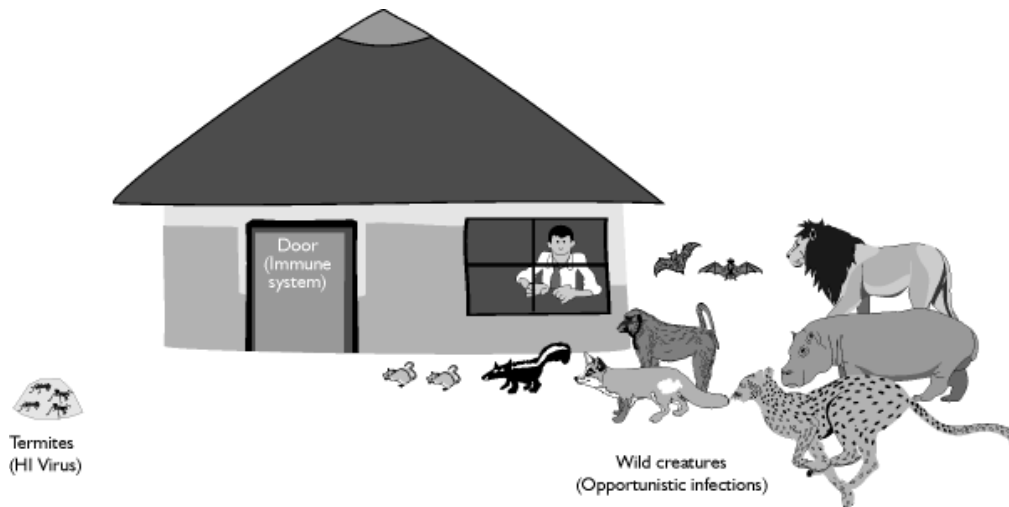


FIGURE 1: A healthy immune system keeps pathogens out

After looking at Figure 1, answer the following questions:

1. How many termites are there in this picture?
2. What percentage of the wooden door is still intact (100%, 80%, 50%, 20%)?
3. Which of the creatures can get through the door?
4. What is the general condition of the person behind the door?
5. What can the housekeeper do to keep the door intact?

Now look at the following picture and answer the questions that follow:

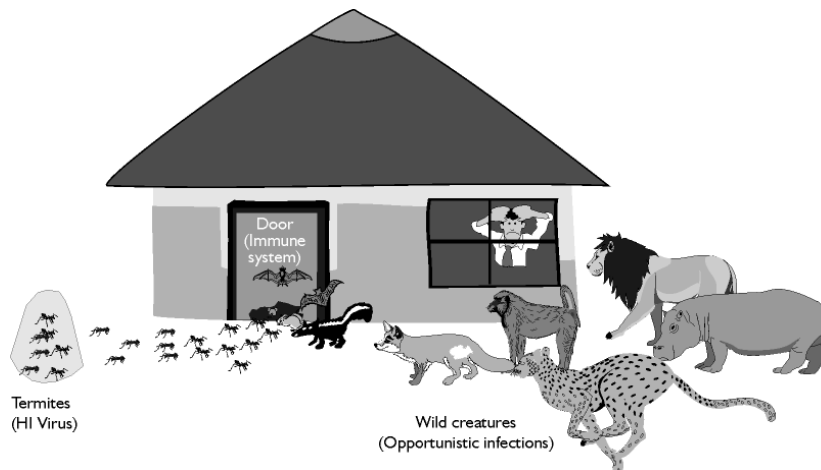


FIGURE 2: A bigger challenge to the immune system

After looking at Figure 2, answer the following questions:

1. How many termites are there in this picture?
2. What percentage of the wooden door is still intact (100%, 80%, 50%, 20%)?
3. Which of the creatures can get through the door now?
4. What is happening to the person in the house?
5. What can the housekeeper do to control the damage?

And now the final picture to look at and questions to answer:



FIGURE 3: A failing immune system under heavy attack

After looking at Figure 3, answer the following questions:

1. How many termites are there in this picture?
2. What percentage of the wooden door is still intact (100%, 80%, 50%, 20%)?
3. Which of the creatures can get through the door now?
4. What do you think they are doing to the person in the house?
5. What can the housekeeper do to control the damage?

[\[FEEDBACK\]](#)

Feedback 4.1

I hope that the picture of the termites, the door and the lurking creatures will always be in your mind when you deal with the management of HIV infection and Aids. Make the following principles your own:

- Disease progression (the extent to which an HIV-positive person gets sick with opportunistic infections) will depend on the viral load and the CD4 count in the blood.
- The lower the viral load and the higher the CD4 count, the healthier a person with HIV infection will be. (Think of the **seesaw metaphor** used in the prescribed book, and the story about the termites and the door used in this guide).
- The *higher the viral load* and the *lower the CD4 count*, the sicker a person with HIV infection will be.
- Every HIV disease management intervention has only one purpose in mind: to keep the body as healthy as possible. Opportunistic infections and diseases (the lurking creatures) can be kept at bay only by keeping the viral load (the number of termites) as low as possible and the CD4 count (the intact door) as high as can be.
- You will later learn more about all the different things the housekeeper can do to keep a person healthy. But for now, let's concentrate on the creatures which get through the holes in the door.

[\[BACK TO LEARNING UNIT\]](#)

ACTIVITY 4.2 – THE STAGES OF HIV INFECTION

Do you think that you will be able to link the symptoms and diseases that you read about in the prescribed book to the right stages of HIV infection if I mix them up a bit? Well, let's see.

Stages of HIV infection

	Primary HIV infection	Stage 1 Asymptomatic latent	Stage 2 Minor symptomatic	Stage 3 Major symptomatic	Stage 4 Aids- defining conditions
(a) Symptoms & diseases	Sore throat Mild fever				
(b) CD4 count					
(c) Viral load					
(d) Health of individual					

1. Read through the random list of symptoms and diseases (below) and complete the columns in row (a) in the table by placing the symptoms under the correct stage. Was it easy for you to decide which symptoms and diseases belong to which stage of infection? I helped you a bit by placing the first two correct symptoms under the “primary HIV infection” stage.

List of symptoms and diseases

- sore throat for a week or two
- moderate swelling of the lymph nodes
- persistent generalised lymphadenopathy (or severe swelling of the lymph nodes for at least three months)
- persistent and recurrent oral and vaginal candida infections (thrush)
- persistent and unexplained weight loss (more than 10% of usual body weight)
- weight loss up to 10% of usual body weight
- severe and recurrent skin infections such as warts and ringworm
- recurrent herpes infections such as herpes simplex (or cold sores)
- Pneumocystis pneumonia (or PCP)
- mild fever for a week or two only
- occasional, recurring fevers
- unexplained fever that lasts for more than a month
- shingles (or herpes zoster)
- night sweats
- persistent cough
- HIV encephalopathy (or neurological abnormalities)
- meningitis

- lymphoma (or cancer of the lymph nodes)
 - recurrent oral ulcerations (or sores)
 - Kaposi's sarcoma
 - oral hairy leukoplakia (or thick, white patches on the tongue)
 - mild feelings of fatigue
 - tuberculosis
 - recurrent upper respiratory tract infections
2. Indicate in each column (rows b and c) what the CD4 count and viral load would look like for each stage of infection. You don't have to give the specific numbers of the CD4 count or viral load. Just indicate if it would be high or low, increasing or decreasing.
 3. Complete row (d) by indicating how healthy or sick a person will be in a specific stage.

[\[FEEDBACK\]](#)

FEEDBACK 4.2

If you battled to place the symptoms and diseases in the right column, you are welcome to go back to your prescribed book and take a peek.

When you filled in your table, did you notice that some of the symptoms or diseases could fit into more than one stage of HIV infection? The distinguishing factor is usually the degree or seriousness of an infection, how long it lasts, how well it responds to treatment, as well as its recurrence. Some symptoms (such as fever, vaginal thrush, diarrhoea, shingles) can occur in more than one stage of infection, but they are much more severe and persistent in the latter stages of infection, and also have the tendency to recur more often.

I hope that your column for stage 1 (the asymptomatic latent stage) is blank (except maybe for one symptom). The only symptom that some people in this asymptomatic stage (meaning “no symptoms”) may have is swollen lymph nodes.

If you look back at the table, can you clearly see the relationship between the CD4 cells, the viral load and the seriousness of the symptoms and diseases? Symptoms and diseases become much more severe as the immune system deteriorates and they also tend to recur more often.

[\[GO BACK TO LEARNING UNIT\]](#)

ACTIVITY 4.3 PROPHYLACTIC TREATMENT OF OPPORTUNISTIC INFECTIONS

Read section 4.4 in your prescribed book again and use the information to fill in the table below to indicate:

- when you would start treating patients prophylactically in terms of their CD4 cell counts for the diseases mentioned
- which of these diseases can be prevented by immunisation? (You don't need to know the names of medications that are used to prevent the opportunistic infections.)

Prophylactic treatment of opportunistic infections

Disease/infection	Prophylaxis when CD4 count drops to below ...	Can patient be immunised against disease? (Yes/No)
Tuberculosis	(Be careful! There is a catch here.)	
PCP		
Candidiasis (thrush) – oral – vaginal		
Toxoplasmosis		
Influenza		
Hepatitis B		

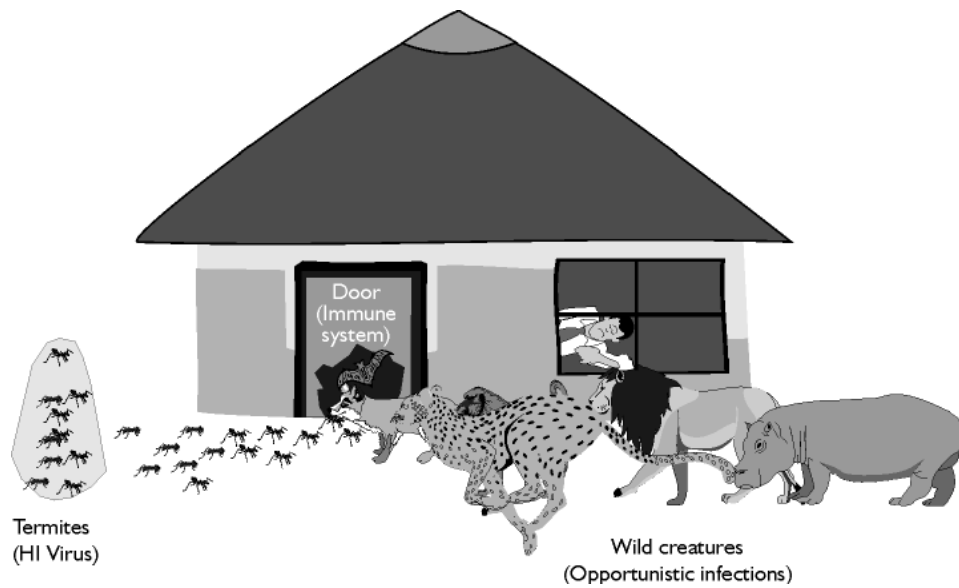
[\[FEEDBACK\]](#)

FEEDBACK 4.3

You probably had no problems filling in the table, since the answers are in your prescribed book. Note that it is a good idea for HIV-positive people to be vaccinated against influenza (flu) and hepatitis B. The immune system needs all the support it can get! Did you remember that CD4 counts are no longer used to initiate TB prevention?

[\[GO BACK TO LEARNING UNIT\]](#)

ACTIVITY 4.4 – OPPORTUNISTIC INFECTIONS



A failing immune system under heavy attack

1. Look at the picture above (this is the picture where the termites had done quite a bit of damage to the door) and answer the following questions:
 - a. What represents the opportunistic infections in this picture?
 - b. Which creatures cannot get through the hole in the door yet?
 - c. What can be done to prevent those creatures from getting through the hole in the door?
2. If you think of your community, your co-workers, or your patients, which disease do you think is the most common opportunistic infection in Africa? Think back to a time when you attended the funeral of a friend who died of Aids, or talk to somebody who attended such a funeral. What did the people say this person died of?

[\[FEEDBACK\]](#)

FEEDBACK 4.4

Tuberculosis is one of the most dangerous opportunistic infections to attack HIV-infected people with depressed immune systems – especially in Africa. It usually attacks as soon as the CD4 count starts falling below 350 cells/mm³ (which opens up a bigger hole in the door). The only way to prevent TB in people with already compromised immune systems is to start treating them prophylactically with TB medication as soon as you know they are infected with HIV. This will make it impossible for the TB germ to get through the hole in the door of the immune system.

[\[GO BACK TO LEARNING UNIT\]](#)

SELF-ASSESSMENT 4

Question 1

Complete the following sentence:

The health of an HIV-infected patient depends on the condition of his/her, and the is the best predictor of how easily the patient maybe infected with opportunistic infections.

Question 2

Disease progression depends on the viral load and on the CD4+T cell count in the blood. The following condition will make it easy for infections to attack the body:

1. A high viral load and a high CD4+T cell count.
2. A high viral load and a low CD4+T cell count.
3. A low viral load and a low CD4+T cell count.
4. A low viral load and a high CD4+T cell count.

Question 3

HIV infection is divided into different stages. Name each of these stages.

Question 4

Which infection is the most serious and common opportunistic infection affecting HIV patients in Africa?

Question 5

Explain the difference between the diagnostic approach and the syndromic approach in the treatment of STIs.

[\[FEEDBACK\]](#)

FEEDBACK 4

Feedback Question 1

The sentence should read: The health of an HIV-infected patient depends on the condition of his/her immune system, and the CD4+ cell count is the best predictor of how easily the patient maybe infected with opportunistic infections.

Feedback Question 2

The correct answer is: A high viral load and a low CD4+T cell count (alternative 2).

Feedback Question 3

The stages are:

- Primary HIV infection
- Clinical Stage 1: The asymptomatic latent stage
- Clinical stage 2: The minor symptomatic stage
- Clinical stage 3: The major symptomatic stage
- Clinical Stage 4: The severe symptomatic stage

Feedback Question 4

Tuberculosis

Feedback Question 5

The diagnostic approach involves the identification of the causing organism and precise treatment of the infection. The syndromic approach involves the recognition of the clinical signs and the patient symptoms and treatment of the major causes of the syndrome.

[\[BACK\]](#)

CD4 cell count

The laboratory test most commonly used to estimate the level of immune deficiency in HIV-infected individuals by “counting” the CD4 cells.

[\[BACK\]](#)

Stages of HIV infection

HIV infection can be divided into four clinical stages:

1. Asymptomatic stage
2. Mild symptoms
3. Advanced symptoms
4. Severe symptoms

Each stage is associated with the lack or presence of certain symptoms and opportunistic diseases.

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Opportunistic infections

Infections that would not normally cause disease in a healthy body but which exploit the opportunity presented by an infected person's weakened immune system to attack the body.

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Viral load

The amount of viral RNA (or virus particles) detectable in the blood of an infected person. The quantitative PCR technique is used to “count” the HIV particles or viral load in the blood of an HIV- positive person.

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Pneumocystis Pneumonia (PCP)

An infection of the lungs caused by a fungus. PCP is often seen in patients with severe immune deficiency (such as patients in the last stages of Aids) and is characterised by a continual dry, non-productive cough, laboured and sometimes painful breathing, as well as shortness of breath.

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Tuberculosis (TB)

Tuberculosis is an infectious disease that is caused by the bacillus *Mycobacterium tuberculosis*, which usually enters the body by inhalation through the lungs. TB is characterised by productive cough, coughing blood (haemoptysis), shortness of breath, weight loss, fever, night sweats and fatigue. TB does not respond to standard broad-spectrum antibiotics, only to anti-TB treatment.

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Sexually transmitted infections (STIs)

Sexually transmitted infections are infections transmitted primarily through sexual intercourse. These include (for example) syphilis, gonorrhoea, candidiasis, genital herpes and HIV infection.

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Shingles (or herpes zoster)

A condition characterised by an extremely painful skin rash or tiny blisters on the face, limbs or body. Shingles is caused by a virus, and it affects nerve cells.

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