
Learning Unit 6: Antiretroviral therapy

**BOTH
TRACKS**



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Introduction

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The advent of antiretroviral therapy (ART) was truly a rescue boat launched in a sea of dying people. The tide also turned for many children when ART was used for the first time to prevent mother-to-child transmission in 1994 (though, to our great dismay, only since 2002 in South Africa). The introduction of triple drug therapy or highly active antiretroviral therapy (HAART) in 1995 changed the status of Aids from a disease without much hope to that of a chronic but manageable disease. The lives of thousands of South Africans living with HIV changed for the better when the South African government finally approved the plan to make ART publicly available in 2003. Today, South Africa has one the greatest antiretroviral programmes in the world. At this point it might be a good idea to Google how many people in South Africa are on ARVs.

But what is all the fuss about? In this learning unit you will get the chance to explore the what, why and how of ART. I hope that you will feel empowered enough, after studying this unit, to talk with confidence to an HIV-positive person about ARVs in general.

Key questions

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

- What are antiretrovirals (or ARVs)?
- Why are ARVs important, how do they work and when must a person start taking them?
- Why is it important to adhere to ARVs and what is adherence counselling?
- How can ARVs be used to *prevent* HIV infection?

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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):

Nucleoside reverse transcriptase inhibitors (NRTIs)	Drug regime (individualised versus standardised regime)
Non-nucleoside reverse transcriptase inhibitors (NNRTIs)	Drug resistance
Protease inhibitors (PIs)	Drug adherence
Highly active antiretroviral therapy (HAART)	Post exposure prophylaxis (PEP)

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What are ARVs?

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Before we talk about ARVs, look at the bigger picture by doing the following activity:

ACTIVITY 6.1 – ART: WHAT WILL YOU DO IF YOU WERE HIV POSITIVE?

Click on [Activity 6.1](#) to explore the bigger picture of ARVs and your immune system.

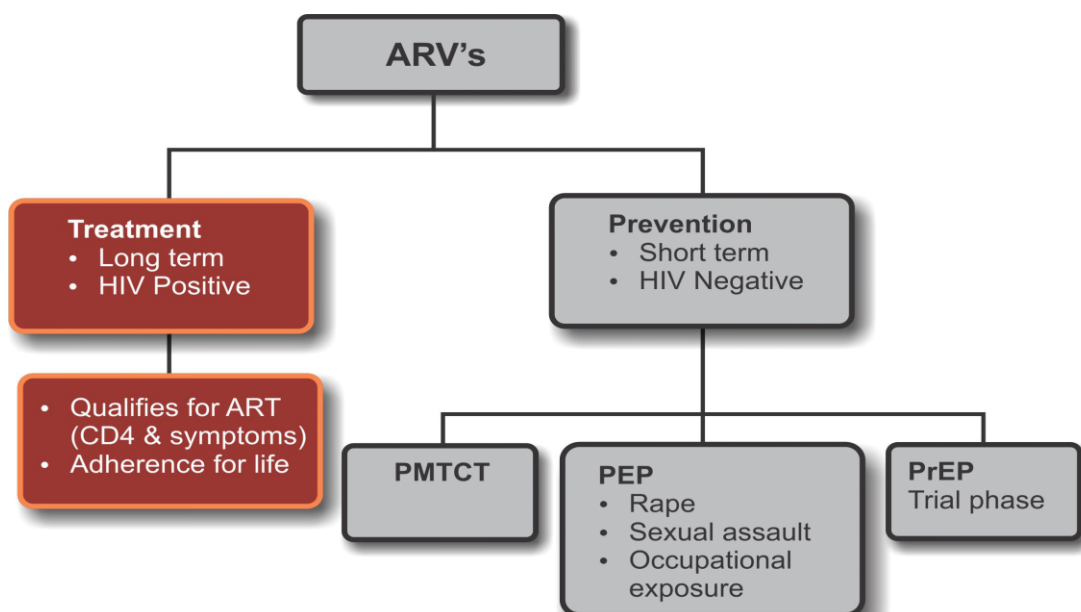
Feedback: The activity asked you to imagine what you would do to boost your immune system if you were HIV positive. Healthy living and eating are, of course, important, but at some stage ARVs will become necessary.

This learning unit will focus on the help that ARVs can provide to the immune system.

But what are ARVs, and what do they do? ARVs are medications that control the level of HIV in the blood. They cannot cure Aids. What they *can* do is to **lower the HIV levels** in the blood to such an extent that they do no harm, or less harm, to the immune system. Lower levels of HIV in the body also mean that there will be fewer viruses to transmit to other people.



There are **two main uses** of ARVs. ARVs are used in the first place to *treat* HIV infection, and in the second place to try to *prevent* HIV infection. The following diagram will help you to remember how Antiretroviral Therapy (ART) is used. We will now discuss ARVs as *treatment* for HIV infection (left hand side of diagram in red).



This diagram (or organisational chart) is an example of a mind map. You can see with one glance how ARVs are used. The organisation of this learning unit is based on this mind map. Use it and page back to it regularly to see where you are.

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Goals and classes of ARVs

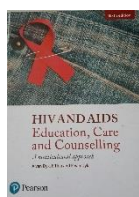
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One of the things that you will most surely have to talk about in your work as a counsellor is ARVs. At this stage of your studies, it probably feels like a daunting and impossible task. Relax! If you really put everything into the next sections, you will be able to talk about ARVs with confidence. You will get the chance to practise your newly-acquired knowledge in a counselling activity later.



We will now go to your prescribed book to learn more about ARVs.

Study



Prescribed book: pp. 146-150

Read the introduction in your prescribed book, then study the following:

Section 6.1: Clinical assessment. In this section you will learn more about the HIV wellness programme for HIV-infected adolescents and adults. You will also learn that there is only one way to see if ARVs are doing their job properly and that is to monitor the CD4 count and the viral load regularly. This section will help you to understand what a CD4 count and a viral load test tell us about a patient. You will also learn what a normal CD4 cell count is, and what it means when the doctor tells you that your viral load is undetectable.

Section 6.2: Goals of ART. This section will give you a general introduction to ARVs and explain the four goals of ARVs. The four goals of ARVs are very simple:

- to reduce the number of viruses in the body
- to boost the immune system
- to improve quality of life
- to reduce the impact of HIV on our society (fewer infections, and less sickness and death)

Section 6.3: Classes of ART and their mechanisms of action. Use figure 6.2 in your prescribed book to help you to understand how ARVs work. Take a red pen and make circles around the enzymes (the reverse transcriptase, protease and integrase enzymes) in figure 2.6 in your prescribed book. Make sure that you understand what the effects of ARVs are on these enzymes. You can also click on the video icon or on <http://goo.gl/aZsVod> to watch a YouTube video.

The classes of antiretroviral drugs are discussed in this section. Figure 6.2 explains the mechanisms of action of each of the classes of ARVs and it will give you a good idea of exactly what ARVs do to interrupt the replication of the virus. You don't have to know the names of the medicines in each one of the classes, but if you are on ARVs yourself, you might find it interesting to see into what class your ARVs fall. It is not necessary to study Table 6.1.

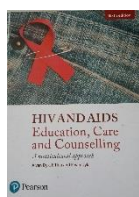


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When students see all the strange names of ARVs, they get such a fright that they don't want to read any further. Relax! We do not expect you to know the names of medications. What is important is to know the *general principles* about ARVs and how they work. Your patients or clients may ask you these questions.



Study



Prescribed book: pp. 151-160

Study the following sections in your prescribed book:

Section 6.4: ARVs available in S.A. You do not need to study this section for exam purposes. Nurses and counsellors who work with ARVs are welcome to read it. Please note that this information may be outdated. Go to the Southern African HIV Clinicians Society website (<http://goo.gl/Zl7PZV>) for the most recent information on ARVs:

Section 6.5: Guidelines for the use of ART. This section will explain why we use HAART or triple combinations of ARV medications, and never only one or two drugs. You will see that maximum viral suppression is of the essence. Use your newfound knowledge of the four classes of ARVs to understand these guidelines better. We will break Section 6.5 down a bit to make it easier.

Section 6.5: When to start ART. The World Health Organisation recommends that people should start ARV treatment as soon as possible after diagnosis, irrespective of their CD4 count. The South African Department of Health follows the WHO guidelines. Make sure that you read the enrichment box on 'New guidelines regarding ART initiation'. Some critics feel that we should get our house in order first and get problems such as stock-outs sorted out first, before starting treatment. What do you think? Click on <http://goo.gl/a1LVld> to see the WHO guidelines for ARV treatment. Also read what an Aids expert, Prof Francois Venter of Wits, has to say about the WHO guidelines <http://goo.gl/3WRStz>

Make sure that you understand the guidelines on when to start ART for: (a) adolescents ≥ 15 years and adults; (b) adolescents aged 10 to 15 years; (c) infants, children and early adolescents.

Section 6.5: Counselling before ART initiation.

Section 6.5: Choice of drug regime. Make sure that you know the difference between individualised and standardised treatment plans. Note that South Africa uses the standardised regime (as do most other sub-Saharan countries). You need to study 'ART for adults and adolescents ≥ 15 years. (There will be NO examination questions on ART

for adolescents aged 10 to 15 years, ART for children and ART in patients for TB.)

Section 6.5: Support for children to adhere to ART. You need to study this section on how to support children on ART.

Section 6.5: Drug interactions. It is important to take note of the interactions between ARVs and TB medications.

Before you learn more about ARVs, let's pause for a moment to reflect on what you know so far by doing the following activity.

ACTIVITY 6.2 - THE THREES AND FOURS TABLE OF ARVS

Go to [Activity 6.2](#) and fill in the table to see if you understand the basics of ARVs. This activity provides a convenient summary of the why, what and how of ARVs and it will come in very handy when you do your preparations for the examinations.

Below are a few pictures to show you what some of the ARVs look like.



To help you to remember the individualised and standardised treatment plans, do the following activity.

ACTIVITY 6.3 – INDIVIDUALISED VS STANDARDISED ARV TREATMENT PLANS

It is very important that you understand the difference between individualised and standardised treatment plans. Go to [Activity 6.3](#) and fill in the table to indicate the advantages and disadvantages of the individualised and standardised ARV treatment plans. Think of your own community after you have completed the table – and think about which one of the two treatment plans will work best in your community.

Feedback: Individualised treatment plans are, unfortunately, not always practical in resource-poor situations, but standardised treatment plans may nonetheless be very effective.

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Effects of antiretroviral therapy

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We will now look at the effects of antiretroviral medications. What are the side-effects of ARVs? How do we know that they are working, and if they are not working, when to change them?

Let's continue by going back to your prescribed book:

Study



Prescribed book: pp. 160-163.

Section 6.6: Adverse effects of ARVs. It is important for clients on ARVs to know what the possible side effects of the medication they are taking are. Some side effects can have serious consequences for the patient. But not all people on ARVs experience side effects. Many are fortunate and have no side effects at all. If you are on ARVs yourself, do you experience any side effects from your medication? You don't have to study table 6.5, but if you are interested in the common side effects of specific ARVs, you are welcome to look them up there. (You do not need to know Table 6.7.)

Give special attention to immune reconstitution inflammatory syndrome (IRIS). What does it mean if we say that 'TB is the most common presenting IRIS in South Africa?'

Section 6.7: How to know if ART is effective. It is important to understand how the doctor and patient will know if ART is effective. This section highlights some of the laboratory tests that should be done.

Section 6.8: When to change ART. Study this section to make sure that you understand when it is necessary to change a patient's ARV treatment regime.

To be effective in practice, you really need to understand the basics about ARVs. If you don't feel comfortable with your ARV knowledge yet, please go back and read sections 6.1 to 6.8 in your prescribed book again. Now practise your counselling skills to *communicate* your newfound knowledge to a client.

ACTIVITY 6.4 – ROLE-PLAY: ART KNOWLEDGE IN PRACTICE

Go to [Activity 6.4](#) and increase your knowledge about ART by doing some role-play.

Feedback: Did your client ask you a question that you could not answer? What did you do? At the beginning of my career I felt terrible if a client asked me something that I didn't know. Now I accept that I am human and I tell the client that I don't know but will find out and get back to them. And I stick to my promise!

Allow me to make a comment on role-play in general. Role-play is a very handy tool to practise certain skills in a safe environment before you have to do it in the “real world”. However, people often get so involved in the role-play situation that they find it hard to get back to reality. A person who has played the role of an HIV-positive client, for example, often feels depressed after the role-play has ended. It is therefore very important to **debrief** after a role-play session. By this I mean that both you and your client should be brought back to the real world by you saying something like the following: “Thank you, Charles, for being the client in our make-believe situation. Now we can get back to our real lives where I am not an Aids counsellor and you are not an HIV-positive client.”

The following activity will bring you into contact with the thinking in Sizwe’s community:

Activity 6.5 – Responsibility towards your community

Go to [Activity 6.5](#) and read more about Sizwe’s story. Where does this leave you in terms of your responsibility towards your community?

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Adherence and drug resistance



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Before we go into adherence to ART, I want you to do think about your own personal experiences with medication in general, by doing the following activity.

ACTIVITY 6.6 – ADHERENCE QUESTIONNAIRE

I want you to think back to the times in your life when you had a prescription for a course of medication that you were instructed to complete, such as antibiotics. Now fill in the questionnaire in [Activity 6.6](#).

Feedback: Did you enjoy the exercise? Please note that the purpose of this exercise was to provide a fun way to find out if you are ready to commit to ARV treatment for the rest of your life. Please **DO NOT** use this questionnaire to test your client’s readiness to go onto ARVs! The message that we wanted to convey with this activity, is that an **adherence of 95% or more to ARVs is critical for viral suppression**.

<p>Study</p> 	<p>Prescribed book: pp. 163-166</p> <p>Section 6.9: The development of drug-resistant viruses. You were introduced to the concept of drug resistance in Learning Unit 4 where we discussed MDR-TB (or multi-drug-resistant TB). Use figure 6.3 to guide your understanding of how drug-resistant viruses can develop, or click on the slideshow icon or the link http://goo.gl/lxlydp to watch a slideshow on the internet. Do you think this can have serious implications for ART in general?</p> <p>Section 6.10: Adherence to antiretroviral therapy. This section will explain to you how important it is to adhere to ARVs. It will also share strategies for improving adherence to ARVs. While reading this section, think of ways in which the adherence strategies can be implemented in your community.</p>	
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Do you understand what happens when a person does not adhere to his or her ARVs? Drug-resistant viruses develop. This means that HIV has developed ways to resist the medication. The medication will therefore no longer work for this person (it will have no effect on the virus). It is therefore extremely important for people on ARVs to adhere to their medications at all times.

ACTIVITY 6.7 – ZACKIE ACHMAT: ADHERENCE IN PRACTICE

Go to [Activity 6.7](#) and read what Zackie Achmat had to say about his heart attack and the implications for ARV adherence.

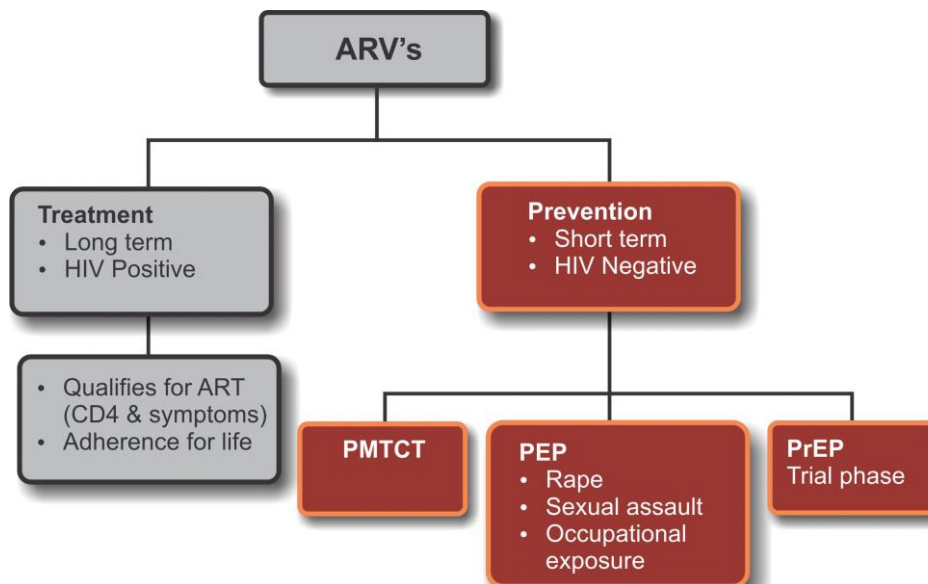
Feedback: Adherence to ARV is a serious issue.



Let's conclude this section with the following excerpt from *Three-letter plague* (p 111):

If people are to administer their own life- long treatment, they must have a lively relationship with their medicines, a relationship at once emotional and cognitive. They must know the name of each pill, its shape, its colour, its nickname, all its potential side effects. They are stuck with these tablets for their lives. Their relation to them will at times be hateful and fraught and unhappy. The tablets will perhaps make them sick, fail to stop them from getting sick, change the shape of their bodies. Best to develop a language with which to speak to them.

If you look at the diagram that we gave at the beginning of this learning unit again, you will see that we have now completed the discussion of the left hand side of the diagram (grey), namely how ARVs are used to *treat* HIV infection once it has occurred and damaged the immune system. In the next section, we will discuss the right hand side of the diagram (red), namely how ARVs can be used to *prevent* HIV infection from occurring in the first place.

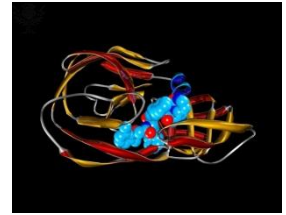


Using ARVs to prevent HIV infection

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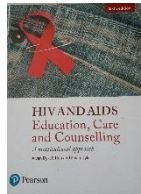
If you look at the right hand side (green) of the figure on the previous page, you will see that ARVs are used to prevent HIV infection in the following circumstances:

- mother-to-child transmission
- occupational exposure
- after rape or sexual assault



Go to your prescribed book to learn more.

Study



Prescribed book: pp. 169-176

Section 6.11: Prevention of mother-to-child transmission. Although it is important to know the basic principles of the prevention of mother-to-child-transmission (or MTCT) of HIV, it is not necessary to know the specific drugs or protocols that are used. We will also not ask detail questions on infant prophylaxis.

Section 6.12: Post-exposure prophylaxis after occupational exposure. Write down the letters PEP one below the other and write the meaning of each letter next to it. In this section you will read how PEP is used to prevent HIV infection after occupational exposure to the virus. Make a summary of the procedures that should be followed before a person can start taking PEP. Do you know when an exposure warrants PEP and when it does not require PEP?

Section 6.13: PEP after rape or sexual assault. Although PEP for rape survivors is no different from PEP after occupational exposure, we discuss it separately due to the high incidence of rape and violent crime in South Africa. Please read this section very carefully as you might need the information in the future.

Do you clearly understand the difference between (a) the use of ARVs to treat established HIV infections, and (b) the use of ARVs to prevent HIV from entering the CD4 cells in the first place? It is important to realise that HIV is NOT YET in the body in the case of (b) above.

In the next activity, I have lined up a few issues that often cause heavy debates. It is a great learning experience to reason about topics like this with your colleagues or friends.

ACTIVITY 6.8 – SOCIAL DEBATES AROUND PEP

Go to [Activity 6.8](#) and use the topics to debate with your co-students. You can do this on myUnisa.

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

Assessment

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Study reflection

After completing Learning Unit 6 (Antiretroviral therapy), you should have acquired the following knowledge and understanding and be able to:

- explain what each one of the key terms mentioned under “picking up useful words” at the beginning of this learning unit means to you.
- explain to a patient what the four goals of ART are.
- draw a picture to explain to a colleague how a virus can develop drug resistance.
- devise a personal plan for a client to help them to adhere to their ARV treatment plan.
- explain the protocol that should be followed before a rape survivor can receive ARVs as post-exposure prophylaxis.

Self-Assessment 6



Click on the link [Self-Assessment 6](#) to do a few questions on this learning unit.

You are now finished with the assessment. Now go to Learning Unit 7.

APPENDICES

- Activities
- Self-Assessments
- Glossary

ACTIVITY 6.1 – ARVS: WHAT WOULD YOU DO?

1. Imagine that you are HIV positive. Based on what you have heard and read, what are the things that you would do to keep yourself and your immune system healthy?
2. What role would ARVs play in your health plan?

[\[FEEDBACK\]](#)

FEEDBACK 6.1

You probably mentioned many things that you can do to keep your immune system healthy, like eating enough fruit and vegetables, doing exercise, not smoking and limiting alcohol intake, using condoms, going for regular check-ups, and getting treatment for opportunistic infections and diseases. You probably mentioned ART as a last resort when your immune system needs some help to cope. Well, you are correct! There are many things that we can do to keep our immune systems healthy, but there will come a time that the immune system needs a bit of help from ARVs. This learning unit will focus on the help that ARVs can provide to the immune system.

[\[BACK\]](#)

ACTIVITY 6.2 - THE THREES AND FOURS TABLE OF ARVS

Fill in the following table by answering the questions.

Prompt	Response	Additional information
Give three reasons why it is important to do regular CD4 counts.	1. 2. 3.	
Give three reasons why it is important to do regular viral load tests.	1. 2. 3.	
Name the four goals of ARVs.	1. 2. 3. 4.	
Name the four enzymes targeted by ARVs (including new developments).	1. 2. 3. 4.	
Name four classes of ARVs.	1. 2. 3. 4.	
Give three reasons why we use HAART (triple therapy).	1. 2. 3.	

[\[FEEDBACK\]](#)

FEEDBACK 6.2

See your prescribed book pp. 146-160.

[\[BACK \]](#)

ACTIVITY 6.3 - INDIVIDUALISED VERSUS STANDARDISED ARV TREATMENT PLANS

Fill in the following table to indicate the advantages and disadvantages of the individualised and standardised ARV treatment plans.

ARV treatment plan	Advantages	Disadvantages
Individualised plan		
Standardised plan		

[\[FEEDBACK\]](#)

FEEDBACK 6.3

An individualised treatment plan is based on the principle that ARVs are selected for the needs of a specific individual. A standardised treatment plan is “one-size-fits-all” – though with a few variations. This plan is often used in developing countries, where there is a lack of sophistication, to run complex individual treatment plans. See prescribed book for the advantages and disadvantages of these treatment plans.

[\[BACK\]](#)

ACTIVITY 6.4 – ROLE-PLAY: ANTIRETROVIRAL KNOWLEDGE IN PRACTICE

Ask a person who is interested in HIV and ARVs to engage in a roleplay situation with you. Explain to the person that you are studying the HIV and Aids Care and Counselling course and that you need their help to practise your skills to communicate your knowledge about ARVs. Ask the person to play the role of an HIV-positive client who needs information about ARVs. Your role is to be the counsellor, but warn the person that you might not be able to answer all the questions since you are still busy with your course! Take a notebook and a pen with you so that you can draw pictures to help you explain the what, why and how of ARVs. I am sure that your “client” will have many questions of their own, but to guide you a bit, here is a list of questions that the client can use.

1. “I have been HIV positive for many years now. I go for regular checkups and my CD4 cell count has recently been 400. When should I start with ARVs?”
2. “If I go onto ARVs, what exactly do they do in my body? I suppose what I am asking is, how do they work?”
3. “Will the ARVs make me sick?”
4. “How will you know that my ARVs are working and that they are really fighting the virus in my body?”
5. “They say that when you start with ARVs you have to take them for the rest of your life. I am only 30! Does it really mean I can never stop taking them? What about weekends and holidays?”
6. “Why not? Can you please explain to me what you mean when you said that the virus can become ‘resistant’ to the medications I take?” (Tip: Draw a picture to explain resistance.)
7. “Must I still use condoms when I am on ARVs? Why?”
8. “Can ARVs cure me?”
9. “My friend Susan is on ARVs and she told me the other day that her viral load is ‘undetectable’. What does that mean? Can she now stop her ARVs?”

[\[FEEDBACK\]](#)

FEEDBACK 6.4

Well done! That wasn't too hard, was it? Below is a summary of what you may have discussed with your "client":

- You probably told your client that treatment usually starts when the person is ready to adhere to the medication, irrespective of the CD4 count. Note that private practitioners often start ARVs earlier (higher CD4 counts) than in the public health sector.
- Did you draw a picture to explain how ARVs stop virus reproduction by interfering with its enzymes (question 2)?
- Did you explain that not all people get side effects from ARVs and that the doctor will discuss possible side effects of the specific medication the client is taking in detail with them? (question 3)
- You probably told your client that we will know that the ARVs are doing their job if (*inter alia*) the viral load stays low (question 4).
- This, of course, links up with question 9 where the concept of an "undetectable" viral load is explained as well as the fact that the virus can never be completely eradicated from the body (question 8).
- I suppose you also used a picture to explain to the client why ARVs should be taken for the rest of their life, namely to keep on repressing the viruses and to prevent the development of resistance (questions 5 and 6).
- In your answer to question 7, did you explain to the client that, although chances of transmitting the virus to sex partners are much lower when the viral load is low, that they should still use condoms to protect their sex partner(s) as well as to protect themselves against reinfection with other strains of the virus?

Well done!

Please read the important note on debriefing if you go back to the learning unit.

[\[BACK \]](#)

ACTIVITY 6.5 – RESPONSIBILITY TOWARDS YOUR COMMUNITY

Read the following excerpt from *Three-letter plague*, page 74. Sizwe is telling Jonny about his reluctance to take his niece, who is HIV positive, to the clinic. He rather wants to take her to a young girl in Mthatha who is said to possess extraordinary healing powers.

She (the young girl from Mthatha) is your first option,” I suggest. “The clinic is your last option.”

He nods. “A cure is better.”

“Is that the problem with the clinics? They don’t offer a cure?”

“I have three problems with antiretrovirals,” he replies crisply.

“First, people do not know about them. We don’t know them here. Second, it seems you must get sick before they give you the antiretrovirals. You must wait until you are sick. I do not like that. Why must you get sick first?”

He has been staring at his hands as he speaks. Now he lifts his head and looks me in the face.

“The third reason is the biggest reason. I feel terrible for the people living with this disease inside of them. It is there for their whole lives. I think of Thandeka living with this disease inside her for the rest of her life, and I feel so sorry for her. I wonder whether she can cope with that, whether anyone can cope with that. A cure is much better.”

“We will go together,” I say, “to the girl from Mthatha and to the clinics. At the clinics you will meet the doctor who runs the ARV programme. You will ask him everything you want to know.”

This text is rich with complexities around ARVs in our communities. But for now I want you to concentrate on Sizwe’s second problem with ARVs: Why start with ARVs when the immune system is already compromised (a low CD4 count) or when the person already shows symptoms? Why not earlier? What would you tell Sizwe?

[\[FEEDBACK\]](#)

FEEDBACK 6.5

The Three Letter Plague was written in 2008 when our ARV policy in South Africa was very different from now. So the answer to this question will also be very different now – almost 10 years later. In 2008, your answer would probably contain a combination of the following explanations:

- Taking ARVs for the rest of your life is difficult.
- The immune system should be given the chance to fight on its own for as long as possible (by starting later rather than sooner).
- ARVs sometimes have side effects – these should be delayed for as long as possible.
- A long treatment history may increase the chances of developing resistant viruses.
- Resistant viruses make future treatment more difficult.
- There should thus be a balance between the patient's health and optimum treatment time – a **shorter treatment** history is ultimately the ideal.

Now, your answer will probably be that his niece does not have to wait so long to qualify for ART, because the policies and guidelines about ART have changed since 2008. His niece can now be treated much sooner. It is also so much easier to take ARVs now, because we now have fixed-dose combinations (one tablet containing 3 types of ARVs). But I wonder if this theoretical explanation will really satisfy Sizwe? Can you think of a metaphor or story that will convince Sizwe?

Keep your eyes open and your ears on the ground for new developments in the ART field.

[\[BACK\]](#)

ACTIVITY 6.6 – ADHERENCE QUESTIONNAIRE

Think back to the times in your life when you had a prescription for a course of medication that you were instructed to complete, such as antibiotics. Now fill in the following questionnaire by making a cross in the relevant box, indicating if you strongly agree, agree, disagree or strongly disagree with the statements.

Statement	Strongly agree	Agree	Disagree	Strongly disagree
1. I have been on antibiotics before.				
2. It happened once or twice in the past that I stopped taking my antibiotics before they were finished, because I felt better.				
3. Although I usually take all my pills as prescribed, I often find it hard to take them at the prescribed time because I am busy or because I simply forget to take them.				
4. My situation (work, personal life) is such that I am often not able to take pills exactly at the prescribed times every day.				
5. I will definitely be able to take pills every day for the rest of my life, if necessary.				
6. I stopped taking medication in the past because it made me feel sick, or because I developed side effects.				
7. I think it is a silly idea to get a treatment helper to help me to remember to take my pills, because then I would have to tell this person why I am taking medication – my reasons are private.				
8. It will be easy for me to take medication on a regular basis because I have something that will remind me, such as a cellphone or clock that I will definitely use.				
9. If I have to take pills for the rest of my life, it will be difficult for me to plan ahead to have enough pills – for example if I go on holiday.				

10. I don't want to excuse myself every time from a meeting or a gathering with friends to go and take my pills.				
11. There is nothing wrong with sharing my prescription pills with other people who could not get their pills in time.				
12. I will be able to stop taking alcohol if this is required of me.				
13. I will be able to go for regular check-ups every three to six months for the rest of my life if this is required of me.				
14. I will never be able to give up smoking to take pills. (If you don't smoke, mark "strongly disagree".)				
15. I don't like taking pills and I will probably stop taking them when I feel better.				
16. I was on antibiotics before, and I can honestly say that I took all my pills, at the prescribed times, until all the pills were finished.				

[\[FEEDBACK\]](#)

FEEDBACK 6.6

Now let's see how you did in your adherence questionnaire. Give yourself the following marks:

- Question 1: no marks (only a test question)
- Questions 2, 3, 4, 6, 7, 9, 10, 11, 14 and 15: 1 mark for strongly agree, 2 marks for agree, 3 marks for disagree and 4 marks for strongly disagree
- Questions 5, 8, 12, 13 and 16: 4 marks for strongly agree, 3 marks for agree, 2 marks for disagree and 1 mark for strongly disagree

Add up your marks and write the total in this block: []

The minimum mark you could have obtained is 15 and the maximum mark is 60.

Now let's see how you did on your adherence scale.

Adherence of 95% or more is critical for viral suppression.

57 to 60 points: Well done! You would probably be a good candidate for ARVs because you show good intentions to adhere to your medication. Research has shown that ARVs have 81% effectiveness for patients with an ART adherence of 95% or more. Those patients who adhered 100% to their drug regimens had an undetectable viral load in 65% of the cases. Adherence of 95% or more is critical to achieve viral suppression and to slow the time to treatment failure and subsequent development of resistance.

48 to 56 points: This is not good enough for ARV adherence! Research has shown that, of those patients whose adherence was down to 80%, only 36% had undetectable viral loads.

43 to 47 points: This situation is even worse than in the previous scenario. You will probably have to go into a programme first to prepare you for adherence before you can start ARV treatment.

Adherence of 70% or lower – a waste of money, time and energy!

42 points or lower: Patients who have an ART adherence of 70% or lower (42 points on your scale) have only a 6% chance of the medication being effective. The chance of developing resistant viruses is huge!

Did you enjoy the exercise? Please note that the purpose of this exercise was to provide a fun way to find out if you are ready to commit to ARV treatment for the rest of your life. Please DO NOT use this questionnaire to test your client's readiness to go onto ARVs!

How do we get someone with a score of 42 (70%) to a score of 60 (100%)? Let's find out by consulting the prescribed book. But remember that knowledge alone is not enough to get people to adhere to their medications – it needs an attitude change as well.

[\[BACK\]](#)

ACTIVITY 6.7 – ADHERENCE IN PRACTICE

Read what Zackie Achmat, a well-known Aids activist, said about his heart attack in March 2005¹ and answer the questions in Activity 6.7

I awoke to a stunning pain on the left side of my chest; it was very heavy but dull, and I immediately thought “heart attack”. I couldn’t move properly, so I couldn’t pick up my cell phone to call my housemate, so I rolled out of bed and slid on my stomach to my housemate’s room – luckily only five metres away. Emergency services soon arrived. As they were picking me up I said, “Bring my Pablo Neruda poems and biography, and my antiretrovirals”, and then lost consciousness.

What does this passage say about Zackie’s adherence to ARVs?

- What kind of relationship do you think Zackie has with his ARVs if you read the sentence “Bring my ... poems ... and my antiretrovirals ...”?
- What can happen to a patient who is admitted to hospital for an emergency if nobody knows that the patient is on ARVs – especially if the patient is to stay in hospital for an extended period?

[\[BACK\]](#)

¹ *Heart*. (2008). Interview with Zachie Achmat. pp 19–20.

ACTIVITY 6.8 – SOCIAL DEBATES AROUND PEP

Debate the following issues with a person who also feels strongly about the issues concerned. The knowledge you have gained so far will assist you with your arguments.

- How can we refuse to give PEP to a health care worker who reports her needle stick injury a week after the accidental exposure to HIV-infected blood?
- Is it not cruel and inhumane to refuse PEP to an HIV-positive woman who has been raped? (Note: she was HIV positive at the time of rape.)
- Is it such a good idea to offer short-term treatment (or PEP) to people after rape or accidental exposure? Will short-term treatment not lead to the development of resistant viruses?

[\[FEEDBACK\]](#)

FEEDBACK 6.8

Did you use the following background information to inform your position in the debate?

- PEP has a protective effect only if it is given within 72 hours of exposure to the virus. If it is given too late, it will have absolutely no effect if the virus has already penetrated CD4 cells and started to replicate. The health care worker should be counselled accordingly.
- PEP won't have any effect on a person who is already HIV positive. If given, it can lead to the development of resistant viruses. Counselling is of the utmost importance in a case like this.
- If PEP is given to a person who is HIV negative, the whole idea is for the ARVs to protect the CD4 cells and to prevent the viruses (that might have entered the rape survivor's body) from entering CD4 cells and from replicating. If everything goes according to plan, there will be no viruses that can develop resistance.

[\[BACK\]](#)

SELF-ASSESSMENT 6

Question 1

Antiretroviral therapy has four primary goals. The virological goal is to:

1. Reduce HIV-related sickness and death
2. Improve quality of life
3. Reduce the HIV viral load
4. Restore the immune system

Question 2

Antiretroviral therapy is usually initiated as follows:

1. As soon as the person can adhere to ART, irrespective of CD4+cell count.
2. In all pregnant women
3. When CD4+cell count \leq 200 cells/mm³
4. When the patient is ready to commit to treatment

Question 3

What is the difference between an individualised and standardised drug regime approach?

Question 4

Explain what drug resistance is.

Question 5

Read the following paragraph and fill in the missing words in the spaces provided.

It is extremely important to adhere to your ARVs. To adhere to one's medication means that (a).....

Research has shown that an adherence level of at least (b).....is necessary for ARVs to suppress HIV sufficiently.

Non-adherence can lead to (c)

When this happens, the problem is that (d)

The following can be done to assist people to adhere to their medications:

(e).....

(h).....

(f).....

(i).....

(g).....

(j).....

FEEDBACK 6

Feedback Question 1

The correct answer is (3) – to reduce the viral load.

Feedback Question 2

The correct answer is (1) - When the CD4+cell count is ≤ 500 cells/mm³.

Feedback Question 3

Individualised approach: A combination of ARVs is selected that suits the specific individual patient.

Standardised approach: A specific regime of ARVs is prescribed to all patients with HIV infection.

Feedback Question 4

If a patient does not take his or her medication as prescribed, or if an insufficient ART regime is prescribed, the concentration of drugs in the bloodstream will fall too low to keep the pathogen depressed and mutants will develop. The drugs will be ineffective against these mutants. It is therefore important to have enough drugs (e.g. antibiotics, anti-tuberculosis medication or antiretrovirals) in the bloodstream for 24 hours a day to keep the pathogen depressed.

Feedback Question 5

- (a) the patient must take his/her medication exactly as prescribed and not skip any doses.
- (b) 90% or above.
- (c) drug resistant viruses
- (d) the ARVs the patient is taking will no longer have any effect on the virus that has developed drug-resistant. The viral load will go up again.
- (e) to (j) Any of the strategies to improve adherence to ARVs mentioned in your prescribed book.

[\[BACK\]](#)

Nucleoside reverse transcriptase inhibitors (NRTIs)

A class of anti-retroviral drugs that includes drugs such as zidovudine (AZT), lamivudine (3TC) and stavudine (d4T). NRTIs disturb the life cycle of HIV through interference with the reverse transcriptase enzyme by mimicking the normal building blocks of HIV DNA.

[\[BACK\]](#)

Drug regime (individualised versus standardised regime)

A course, schedule, plan or routine of therapy describing what medications a patient should take and how often.

[\[BACK\]](#)

Non-nucleoside reverse transcriptase inhibitors (NNRTIs)

A class of antiretroviral drugs that include drugs such as nevirapine and efavirenz. NNRTIs disturb the life cycle of HIV by directly inhibiting the reverse transcriptase enzyme.

[\[BACK\]](#)

Drug resistance

If a patient does not take his or her medication as prescribed, or if an insufficient ART regime is prescribed, the concentration of drugs in the bloodstream will fall too low to keep the pathogen depressed and mutants will develop. The drugs will be ineffective against these mutants. It is therefore important to have enough drugs (e.g. antibiotics, anti-tuberculosis medication or antiretrovirals) in the bloodstream for 24 hours a day to keep the pathogen depressed.

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Protease inhibitors (PIs)

A class of antiretroviral drugs that includes drugs such as saquinavir and indinavir. PIs inhibit the late stages of HIV replication by interfering with the protease enzyme.

[\[BACK\]](#)

Drug adherence

To take medication as prescribed (the right amount and at the prescribed times) without missing any dosages.

[\[BACK\]](#)

Highly active antiretroviral therapy (HAART)

A combination of antiretroviral drugs that efficiently inhibit HIV replication in HIV-infected people. The combination usually includes two nucleoside inhibitors (NRTIs) plus one non-nucleoside inhibitor (NNRTI) or two nucleoside inhibitors (NRTIs) plus one protease inhibitor (PI). Also often referred to as “triple therapy”.

[\[BACK\]](#)

Post exposure prophylaxis (PEP)

Methods for attempting to prevent HIV infection in a person who has been exposed to infected blood or other body fluids, for example, in the case of accidental exposure or rape. PEP with antiretroviral drugs must start as soon as possible (and no later than 72 hours) after exposure.

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