



HIV Basics Course for Nurses

Participant's Handbook

September 2005





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Section One Introduction

Acknowledgments

This course was developed with the guidance and input of the Curriculum Committee of the Government Hospital of Thoracic Medicine, Tambaram Sanatorium, Chennai. It uses training materials from *All about Antiretrovirals: A Nurse Training Programme* by Marcus McGilvry and Nicola Willis, founders of Africaid, and materials developed for a training conducted for Ethiopian nurses delivered by HIV nurse consultants from the International Training and Education Center on HIV (I-TECH) in October 2004.

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Placeholder for Faculty List

(To be copied by facilitator from faculty list in Facilitator's Guide)

HIV Basics Course for Nurses
Government Hospital of Thoracic Medicine
Tambaram Sanatorium, Chennai

NOTE: This schedule is approximate and reflects all ten units of this course. The length of units will be determined by participant knowledge of HIV, number of questions and amount of discussion. These units do not have to be done over four days in one week but may be covered across several days within three to four weeks.

Day 1	Day 2	Day 3	Day 4
Registration/Lunch 30 minutes Welcome, Introductions, & Pre Assessment 30 minutes Unit 1: Overview of HIV/AIDS in India 1 ½ hours Tea Break 15 minutes Unit 2: Understanding HIV 1 ½-2 hours	Lunch 30 minutes Unit 3: Infection Control 1 ½ hours Tea Break 15 minutes Unit 4: Opportunistic Infections 1 ¼ hours Unit 5: HIV Symptom Management & Palliative Care 1 hour	Lunch 30 minutes Unit 6: Introduction to ART 1 ½ hours Tea Break 15 minutes Unit 7: Adherence Issues in HIV Care & Treatment 1 ½ hours Unit 8: Antiretrovirals in Children 1 hour	Lunch 30 minutes Unit 9: Pregnancy & HIV 1 hour Tea Break 15 minutes Unit 10: Role of the Nurse in HIV Care & Treatment 1 ¾-2 hours Post Assessment, Course Evaluation 20 minutes Closing Ceremony 40 minutes

Glossary of Terms

The definitions in this glossary were taken from the “Glossary of HIV/AIDS-related Terms” compiled by UNAIDS and available at: http://www.unaids.org/Unaid/EN/Resources/Terminology/glossary+of+hiv_aids-related+terms.asp. Terms not found in this UNAIDS database were defined by I-TECH trainers for a training held in Namibia. These are indicated with an asterisk (*).

Abacavir (ABC)	A nucleoside reverse transcriptase inhibitor antiretroviral medicine used in HIV infection with at least two other antiretroviral medicines.
Aciclovir	Antiviral medicine used to treat the symptoms of herpes simplex virus infection, herpes zoster virus (shingles), and disseminated varicella zoster virus (chicken pox) in immunocompromised patients.
Adherence	The extent to which a patient takes his/her medication according to the prescribed schedule (also referred to as 'compliance').
AIDS	Acquired Immune Deficiency Syndrome. The most severe manifestation of infection with the human immunodeficiency virus (HIV).
AIDS Defining Conditions	Numerous opportunistic infections and neoplasms (cancers) that, in the presence of HIV infection, constitute an AIDS diagnosis. Persons living with AIDS often have infections of the lungs, brain, eyes and other organs, and frequently suffer debilitating weight loss, diarrhoea, and a type of cancer called Kaposi's sarcoma.
ARV	Antiretroviral. Drug used to fight infection by retroviruses, such as HIV infection.
ART or ARVT	Antiretroviral Therapy. A treatment that uses antiretroviral medicines to suppress viral replication and improve symptoms.
Asymptomatic	Without symptoms. Usually used in the HIV/AIDS literature to describe a person who has a positive reaction to one of several tests for HIV antibodies but who shows no clinical symptoms of the disease.
CD4 Cells	<ol style="list-style-type: none">1. A type of T cell involved in protecting against viral, fungal and protozoal infections. These cells normally orchestrate the immune response, signalling other cells in the immune system to perform their special functions. Also known as T helper cells.2. HIV's preferred targets are cells with a docking molecule called 'cluster designation 4' (CD4) on their surfaces. Cells with this molecule are known

as CD4-positive (or CD4+) cells. Destruction of CD4+ lymphocytes is the major cause of the immunodeficiency observed in AIDS, and decreasing CD4+ lymphocyte levels appear to be the best indicator for developing OIs.

CD4 Receptors	The chemical on the surface of a CD4 lymphocyte to which HIV attaches.*
CD4 Count	A way of measuring immuno-competency by counting the lymphocytes that carry the CD4 molecule. Normal is well over 1000/ml of blood. A count lower than 200 ml is an indicator of AIDS.*
Combination Therapy	(For HIV infection or AIDS.) Two or more drugs or treatments used together to achieve optimum results against infection or disease. For treatment of HIV, a minimum of three antiretrovirals is recommended. Combination therapy may offer advantages over single-drug therapies by being more effective in decreasing viral load. An example of combination therapy would be the use of two nucleoside analogue drugs (such as lamivudine and zidovudine) plus either a protease inhibitor or a non-nucleoside reverse transcription inhibitor.
Combivir	A combined pill containing zidovudine and lamivudine that was USFDA-approved in 1997 for the treatment of HIV infection in adults and adolescents 12 years of age or older.
Didanosine (ddl)	A nucleoside reverse transcriptase inhibitor antiretroviral medicine used in HIV infection with at least two other antiretroviral medicines.
DNA	Deoxyribonucleic acid. Except for a few viruses, all living cells carry genetic information as DNA.*
Efavirenz (EFV or EFZ)	A non-nucleoside reverse transcriptase inhibitor for combination use with at least two other antiretroviral drugs for adults and children with HIV. Contraindicated in pregnancy; substitute nevirapine for efavirenz in pregnant women or women for whom effective contraception cannot be assured.
Efficacy	(Of a drug or treatment). The maximum ability to produce a result, regardless of dosage. A drug passes efficacy trials if it is effective at the dose tested and against the illness for which it is prescribed.
ELISA Test	Acronym for enzyme-linked immunosorbent assay. A type of enzyme immunoassay (EIA) to determine the presence of antibodies to HIV in the blood or oral fluids. Repeatedly reactive (i.e. two or more), ELISA test results should be validated with an independent

supplemental test of high specificity, such as the Western blot test.

Epidemiology

The branch of medical science that deals with the study of incidence, distribution and control of a disease in a population.

Fusion

The stage of the HIV lifecycle in which the virus binds to the CD4 receptor, activates other proteins on the surface of the cell, then fuses with the T helper or macrophage cell.*

Fusion Inhibitor (FI)

A category of ARV drugs that are designed to attack the fusion stage of the HIV lifecycle. Drugs in this category are not available in India.*

Generics

All drugs carry a generic name—an INN (International Non-proprietary Name)—which is the official name given to the molecule/medicine.

HAART

Highly Active AntiRetroviral Therapy. The name given to treatment regimens recommended by leading HIV experts to aggressively suppress viral replication and progress of HIV disease. The usual HAART regimen combines three or more different drugs such as two nucleoside reverse transcriptase inhibitors and a protease inhibitor, two NRTIs and a non-nucleoside reverse transcriptase inhibitor or other combinations.

HIV

Human Immunodeficiency Virus. The virus that weakens the immune system, ultimately leading to AIDS.

HIV-1

Human Immunodeficiency Virus Type 1. The retrovirus isolated and recognized as the etiologic (i.e. causing or contributing to the cause of a disease) agent of AIDS. HIV-1 is classified as a lentivirus in a subgroup of retroviruses. Most viruses and all bacteria, plants, and animals have genetic codes made up of DNA, which uses RNA to build specific proteins. The genetic material of a retrovirus such as HIV is the RNA itself. HIV inserts its own RNA into the host cell's DNA, preventing the host cell from carrying out its natural functions and turning it into an HIV factory.

HIV-2

Human Immunodeficiency Virus Type 2. A virus closely related to HIV-1 that has also been found to cause AIDS. It was first isolated in West Africa. Although HIV-1 and HIV-2 are similar in their viral structure, modes of transmission, and resulting opportunistic infections, they have differed in their geographical patterns of infection.

HIV Antibody Test

If positive, the results of this test indicate that the

person has been exposed to HIV and has developed antibodies to the virus after the window period of up to 12 weeks has passed.

Immunodeficiency	Breakdown in immunocompetence (i.e. the ability of the immune system to resist or fight off infections or tumors) when certain parts of the immune system no longer function. This condition makes a person more susceptible to certain diseases.
Immune Reconstitution Syndrome	As the number of CD4 cells increases in a patient on HAART, these cells recognize antigens to which the patient has been previously exposed, leading to symptoms of the diseases these antigens represent, e.g. TB. Actual infection may or may not be present.*
Immunology	The study of the immune system.*
Incidence	The number of new cases within a specific period of time.*
Integrase	An enzyme used to integrate HIV DNA into the host cell's own DNA.*
Interferon	A protein that can inhibit the development of a virus in a cell.
Lamivudine (3TC)	A nucleoside reverse transcriptase inhibitor antiretroviral medicine used in HIV infection with at least two other antiretroviral medicines.
Lopinavir	A protease inhibitor antiretroviral drug used in combination with two other antiretroviral medicines.
Maternal Antibodies	Antibodies passed from mother to fetus during pregnancy. Diagnosis of HIV through antibody testing for infants under 18 months is complicated by maternal antibodies.
Nelfinavir (NFV)	A protease inhibitor antiretroviral medicine used for the treatment of HIV infection in combination with two other antiretroviral medicines.
Nevirapine (NVP)	A non-nucleoside reverse transcriptase inhibitor used in HIV infection in combination with at least two other antiretroviral drugs; used in prevention of mother-to-child transmission in HIV-infected patients.
NNRTI	Non-Nucleoside Reverse Transcriptase Inhibitors. A class of drugs that inhibit an enzyme used by HIV called 'reverse transcriptase'. The non-nucleoside reverse transcriptase inhibitors include efavirenz and nevirapine. They interact with a number of drugs metabolised in the liver; the dose of protease

inhibitors may need to be increase when they are given with efavirenz or nevirapine. Nevirapine is associated with a high incidence of rash and occasionally fatal hepatitis. Rash is also associated with efavirenz but is usually milder. Efavirenz treatment has also been associated with an increased plasma cholesterol concentration.

NRTI	Nucleoside Reverse Transcriptase Inhibitors. A category of ARV drugs that binds to the active site of the HIV reverse transcriptase stopping the production of HIV DNA. Drugs in this category include zidovudine (AZT), didanosine (ddl), zalcitabine (ddC), stavudine (D4T), lamivudine (3TC), and abacavir, zalctabine, tenofovir.*
Opportunistic Infections (OIs)	Illnesses caused by various organisms, some of which usually do not cause disease in persons with healthy immune systems. Opportunistic infections common in persons diagnosed with AIDS include Pneumocystis carinii pneumonia; Kaposi's sarcoma; cryptosporidiosis; histoplasmosis; other parasitic, viral and fungal infections; and some types of cancers.
PCR	Polymerase chain reaction. A laboratory method to find and measure very small amounts of RNA or DNA. It is used as the "viral load" test to diagnose HIV in infants and to measure the level of HIV RNA in the blood of infected persons.*
PEP	Post-Exposure Prophylaxis. The use of ARV therapy just after a possible exposure to HIV has occurred. Recommended after rape, an occupational exposure to HIV (e.g. needlestick injury) or just after birth for infants who are born to HIV infected mothers.*
PLWHA	Acronym for "person/people living with HIV/AIDS".
PMTCT	Acronym for 'prevention of mother-to-child transmission'.
Prevalence	The number of cases at any time during the study period, divided by the population at risk.*
Protease	An enzyme used by HIV to process new copies of the virus after it has reproduced; drugs specifically aimed at this enzyme are called 'protease inhibitors' (see below). Human cells also use protease enzymes, but they are different from the HIV protease.
Protease Inhibitor (PI)	Antiviral drugs that act by inhibiting the virus protease enzyme, thereby preventing viral replication. Specifically, these drugs block the protease enzyme from breaking apart long strands

of viral proteins to make the smaller, active HIV proteins that comprise the virion. If the larger HIV proteins are not broken apart, they cannot assemble themselves into new functional HIV particles. The protease inhibitors include amprenavir, indinavir, lopinavir, nelfinavir, ritonavir, and saquinavir.

RNA	Ribonucleic acid*
Rapid Test	HIV blood, saliva, urine, or vaginal secretions test that yields same day results. Only rapid blood (finger stick) tests are currently available in India.*
Resistance	The ability of an organism, such as HIV, to overcome the inhibitory effect of a drug, such as AZT or a protease inhibitor.
Retrovirus	A type of virus that, when not infecting a cell, stores its genetic information on a single-stranded RNA molecule instead of the more usual double-stranded DNA. HIV is an example of a retrovirus. After a retrovirus penetrates a cell, it constructs a DNA version of its genes using a special enzyme called reverse transcriptase. This DNA then becomes part of the cell's genetic material.
Reverse Transcriptase	This enzyme of HIV (and other retroviruses) converts the single-stranded viral RNA into DNA, the form in which the cell carries its genes. Some antiviral drugs approved by the FDA for the treatment of HIV infection (e.g. AZT, ddI, 3TC, d4T, and ABC) work by interfering with this stage of the viral life cycle. They are also referred to as reverse transcriptase inhibitors (RTIs).
Ritonovir	A protease inhibitor antiretroviral medicine used in HIV-infection, as a booster to increase effect of indinavir, lopinavir or saquinavir and in combination with two other antiretroviral medicines.
Saquinavir (SQV)	A protease inhibitor antiretroviral medicine used in HIV infection in combination with two other antiretroviral medicines and usually with low-dose ritonavir booster.
Sentinel Surveys	This form of surveillance relates to a particular group (such as men who have sex with men) or activity (such as sex work) that acts as an indicator of the presence of a disease.
Seroconversion	The development of antibodies to a particular antigen. When people develop antibodies to HIV, they 'seroconvert' from antibody-negative to antibody-positive. It may take from as little as one week to several months or more after infection with

HIV for antibodies to the virus to develop. After antibodies to HIV appear in the blood, a person should test positive on antibody tests. See “Window Period”.

Side Effects	Medical problems that result from ARV drug toxicities. Common side effects include: peripheral neuropathy, lipodystrophy, hepatitis, pancreatitis, and lactic acidosis.*
STI	Also called venereal disease (VD), an older public health term, or sexually transmitted disease (STD). Sexually transmitted infections are spread by the transfer of organisms from person to person during sexual contact.
Surveillance	The ongoing and systematic collection, analysis, and interpretation of data about a disease or health condition. Collecting blood samples for the purpose of surveillance is called serosurveillance.
Symptomatic	Having evident signs of disease: weight loss, fever, diarrhea, enlarged glands, oral candida, herpes, skin problems.*
Transcription	The process of duplication or copying information from DNA.*
Translation	The synthesis of proteins under the direction of RNA.*
VCTC	Acronym for 'voluntary counselling and testing centre'.
Viral Load	In relation to HIV: The quantity of HIV RNA in the blood. Research indicates that viral load is a better predictor of the risk of HIV disease progression than the CD4 count. The lower the viral load the longer the time to AIDS diagnosis and the longer the survival time.
WHO Staging System	A classification of the clinical stages of HIV disease developed by the World Health Organization.*
Window Period	Time from infection with HIV until detectable seroconversion. During this time HIV antibody tests will be negative, even though the person is infected. 90% of infected individuals will test positive within 3 months of exposure and 10% will test positive within 3 to 6 months of exposure.*
Zidovudine (ZVD or AZT)	A nucleoside reverse transcriptase inhibitor antiretroviral medicine, zidovudine was the first antiretroviral drug to be introduced. Used in HIV

infection in combination with at least two other antiretroviral drugs, and in monotherapy of maternal-fetal HIV transmission.

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HIV Basics Course for Nurses

Pre Assessment

Date: _____

*** Please note, some questions may have more than one answer.**

1. Read the following statements and tick whether they are True or False:

- | | <i>True</i> | <i>False</i> |
|---|--------------------------|--------------------------|
| a. HIV attacks all blood cells | <input type="checkbox"/> | <input type="checkbox"/> |
| b. HIV attaches to white cells which carry the CD4 receptor sites | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Antibodies to HIV are present in the infected person's blood | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Antibodies are usually detected in a person's blood within 6-12 hours of infection | <input type="checkbox"/> | <input type="checkbox"/> |
| e. The CD4 count and viral load are useful prognostic markers | <input type="checkbox"/> | <input type="checkbox"/> |

2. When should adults and adolescents start on antiretroviral therapy?

Tick the box next to EACH correct answer.

- As soon as they have been diagnosed with HIV
- Once they have a clinical diagnosis of AIDS
- At WHO Stages I, II, and III for HIV disease and a CD4 cell count below 200 cells/ml

3. Which of the following are considered to be "AIDS defining" illnesses?

Tick the box next to EACH correct answer.

- Cryptococcal meningitis
- Syphilis
- Kaposi's Sarcoma
- Oesophageal candidiasis

4. Which of the following steps should be taken to prevent health care workers from becoming infected with HIV?

Tick the box next to EACH correct answer.

- Avoid touching the skin of any HIV-positive patients.
- Wear gloves or other protection when handling blood and body fluids.
- Use goggles or spectacles when performing a procedure which may cause the splashing of blood.
- Recap or bend all used needles to prevent reuse or injuries to others.
- Consider taking anti-HIV medications following a potentially infectious exposure

5. Read the following statements and tick whether they are True or False:

- | | <i>True</i> | <i>False</i> |
|---|--------------------------|--------------------------|
| a. Antibodies to HIV are detectable as soon as the person becomes infected | <input type="checkbox"/> | <input type="checkbox"/> |
| b. The person is no longer infectious once s/he takes antiretroviral drugs | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Antiretroviral drugs should be given as monotherapy if the patient can not afford more | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Antiretroviral drugs should be taken for life for maximum benefit | <input type="checkbox"/> | <input type="checkbox"/> |
| e. Antiretroviral drugs should be given as a combination of 3 or more drugs | <input type="checkbox"/> | <input type="checkbox"/> |
| f. CD4 cell counts tend to go down when the patient takes antiretroviral drugs | <input type="checkbox"/> | <input type="checkbox"/> |
| g. CD4 cell counts tend to go up when the viral load goes down | <input type="checkbox"/> | <input type="checkbox"/> |
| h. CD4 cell counts tend to go up if the antiretroviral drugs are working | <input type="checkbox"/> | <input type="checkbox"/> |
| i. Changing ART becomes necessary when there is virological and/or immunological failure | <input type="checkbox"/> | <input type="checkbox"/> |
| j. Changing ART may become necessary because of side effects | <input type="checkbox"/> | <input type="checkbox"/> |

6. When should the CD4 count of someone on ART be monitored?

Tick the box next to EACH correct answer.

- At least once a month
- At baseline and every 6 months
- Once a year only

7. Why is it important that the patient adheres to the prescribed regimen of antiretroviral drugs (i.e., takes each dose every day at the prescribed time)?

Tick the box next to EACH correct answer.

- It prevents the virus from developing resistance to the drugs.
- It reduces the likelihood of side effects developing.
- Adherence is the single most important factor determining the success of any antiretroviral drug regimen.
- The virus is likely to develop resistance if he/she does not adhere.

8. Which of the following indicate resistance to antiretroviral drugs?

Tick the box next to EACH correct answer.

- Changes in the trend of CD4/VL results that persist on testing again
- The development of new opportunistic infections
- The development of side effects to the drugs

9. Which of the following should be included in pre-start counseling for ART?

Tick the box next to EACH correct answer.

- Information about how the drugs work
- Information about the monitoring tests that are required
- Advice to start whatever the cost

10. A complete baseline nursing assessment includes which of the following?

Tick the box next to EACH correct answer.

- Medical and social history
- Patient self-assessment
- Physical examination
- Laboratory evaluation

Pre Assessment Case Study

Anita is a 31-year-old single mother of a healthy 10 year old child. Anita has been on treatment of pulmonary TB during the last four months, and she is improving. In the past she has had one episode of herpes zoster and oral thrush. She recovered completely from these episodes but had troublesome itching of the skin.

Anita has come to clinic because she believes she may be pregnant. After a pre-test counseling and testing, Christina has tested positive for HIV. Her CD4 count is 250/mm³. Her hemoglobin is 9.6g.

Questions:

1. In India, what percentage of pregnant women are estimated to be HIV-positive?

Please circle the correct answer (only one).

- a. 1 – 4 %
- b. 5 – 15 %
- c. 20 – 30 %

2. Read the following statements and tick whether they are True or False:

- | | <i>True</i> | <i>False</i> |
|---|--------------------------|--------------------------|
| a. Transmission of HIV from mother to the baby is 100% preventable with proper use of antiretroviral drugs. | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Mother-to-child transmission can be reduced by approximately 50% of <u>non-treated</u> rate by giving single dose Nevirapine to mother and also to the baby. | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Mother-to-child transmission is more likely to occur if the mother's viral load is high. | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Infants born to an HIV positive woman should be given a single dose of nevirapine within 72 hours after birth. | <input type="checkbox"/> | <input type="checkbox"/> |

3. Which of the following ARVs should be avoided during pregnancy?

Tick the box next to EACH correct answer.

- Efavirenz (Sustiva)
- Stavudine (d4T, Zerit)
- Zidovudine (AZT, ZDV)
- Lamivudine (3TC, Epivir)
- Nevirapine (Viramune)

4. Which of the following ARVs should be avoided in Anita's case due to the potential side-effect of anemia?

Tick the box next to EACH correct answer.

- Efavirenz (Sustiva)
- Stavudine (d4T, Zerit)
- Zidovudine (AZT, ZDV)
- Lamivudine (3TC, Epivir)
- Nevirapine (Viramune)

Thank you for completing this pre assessment.

HIV Basics Course for Nurses

Post Assessment

Date: _____

*** Please note, some questions may have more than one answer.**

1. Read the following statements and tick whether they are True or False:

- | | <i>True</i> | <i>False</i> |
|---|--------------------------|--------------------------|
| a. HIV attacks all blood cells | <input type="checkbox"/> | <input type="checkbox"/> |
| b. HIV attaches to white cells which carry the CD4 receptor sites | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Antibodies to HIV are present in the infected person's blood | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Antibodies are usually detected in a person's blood within 6-12 hours of infection | <input type="checkbox"/> | <input type="checkbox"/> |
| e. The CD4 count and viral load are useful prognostic markers | <input type="checkbox"/> | <input type="checkbox"/> |

2. When should adults and adolescents start on antiretroviral therapy?

Tick the box next to each correct answer.

- As soon as they have been diagnosed with HIV
- Once they have a clinical diagnosis of AIDS
- At WHO Stages I, II, and III for HIV disease and a CD4 cell count below 200 cells/ml

3. Which of the following are considered to be "AIDS defining" illnesses?

Tick the box next to EACH correct answer.

- Cryptococcal meningitis
- Syphilis
- Kaposi's Sarcoma
- Oesophageal candidiasis

4. Which of the following steps should be taken to prevent health care workers from becoming infected with HIV?

Tick the box next to EACH correct answer.

- Avoid touching the skin of any HIV-positive patients.
- Wear gloves or other protection when handling blood and body fluids.
- Use goggles or spectacles when performing a procedure which may cause the splashing of blood.
- Recap or bend all used needles to prevent reuse or injuries to others.
- Consider taking anti-HIV medications following a potentially infectious exposure

5. Read the following statements and tick whether they are True or False:

- | | <i>True</i> | <i>False</i> |
|---|--------------------------|--------------------------|
| a. Antibodies to HIV are detectable as soon as the person becomes infected | <input type="checkbox"/> | <input type="checkbox"/> |
| b. The person is no longer infectious once s/he takes antiretroviral drugs | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Antiretroviral drugs should be given as monotherapy if the patient can not afford more | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Antiretroviral drugs should be taken for life for maximum benefit | <input type="checkbox"/> | <input type="checkbox"/> |
| e. Antiretroviral drugs should be given as a combination of 3 or more drugs | <input type="checkbox"/> | <input type="checkbox"/> |
| f. CD4 cell counts tend to go down when the patient takes antiretroviral drugs | <input type="checkbox"/> | <input type="checkbox"/> |
| g. CD4 cell counts tend to go up when the viral load goes down | <input type="checkbox"/> | <input type="checkbox"/> |
| h. CD4 cell counts tend to go up if the antiretroviral drugs are working | <input type="checkbox"/> | <input type="checkbox"/> |
| i. Changing ART becomes necessary when there is virological and/or immunological failure | <input type="checkbox"/> | <input type="checkbox"/> |
| j. Changing ART may become necessary because of side effects | <input type="checkbox"/> | <input type="checkbox"/> |

6. When should the CD4 count of someone on ART be monitored?

Tick the box next to EACH correct answer.

- At least once a month
- At baseline and every 6 months
- Once a year only

7. Why is it important that the patient adheres to the prescribed regimen of antiretroviral drugs (i.e., takes each dose every day at the prescribed time)?

Tick the box next to EACH correct answer.

- It prevents the virus from developing resistance to the drugs.
- It reduces the likelihood of side effects developing.
- Adherence is the single most important factor determining the success of any antiretroviral drug regimen.
- The virus is likely to develop resistance if he/she does not adhere.

8. Which of the following indicate resistance to antiretroviral drugs?

Tick the box next to EACH correct answer.

- Changes in the trend of CD4/VL results that persist on testing again
- The development of new opportunistic infections
- The development of side effects to the drugs

9. Which of the following should be included in pre-start counseling for ART?

Tick the box next to EACH correct answer.

- Information about how the drugs work
- Information about the monitoring tests that are required
- Advice to start whatever the cost

10. A complete baseline nursing assessment includes which of the following?

Tick the box next to EACH correct answer.

- Medical and social history
- Patient self-assessment
- Physical examination
- Laboratory evaluation

Post Assessment Case Study

Anita is a 31-year-old single mother of a healthy 10 year old child. Anita has been on treatment of pulmonary TB during the last four months, and she is improving. In the past she has had one episode of herpes zoster and oral thrush. She recovered completely from these episodes but had troublesome itching of the skin.

Anita has come to clinic because she believes she may be pregnant. After a pre-test counseling and testing, Christina has tested positive for HIV. Her CD4 count is 250/mm³. Her hemoglobin is 9.6g.

Questions:

1. In India, what percentage of pregnant women are estimated to be HIV-positive?

Please circle the correct answer (only one).

- a. 1 – 4 %
- b. 5 – 15 %
- c. 20 – 30 %

2. Read the following statements and tick whether they are True or False:

- | | <i>True</i> | <i>False</i> |
|---|--------------------------|--------------------------|
| a. Transmission of HIV from mother to the baby is 100% preventable with proper use of antiretroviral drugs. | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Mother-to-child transmission can be reduced by approximately 50% of <u>non-treated</u> rate by giving single dose Nevirapine to mother and also to the baby. | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Mother-to-child transmission is more likely to occur if the mother's viral load is high. | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Infants born to an HIV positive woman should be given a single dose of nevirapine within 72 hours after birth. | <input type="checkbox"/> | <input type="checkbox"/> |

3. Which of the following ARVs should be avoided during pregnancy?

Tick the box next to EACH correct answer.

- Efavirenz (Sustiva)
- Stavudine (d4T, Zerit)
- Zidovudine (AZT, ZDV)
- Lamivudine (3TC, Epivir)
- Nevirapine (Viramune)

4. Which of the following ARVs should be avoided in Anita's case due to the potential side-effect of anemia?

Tick the box next to EACH correct answer.

- Efavirenz (Sustiva)
- Stavudine (d4T, Zerit)
- Zidovudine (AZT, ZDV)
- Lamivudine (3TC, Epivir)
- Nevirapine (Viramune)

Thank you for completing this post assessment.

HIV Basics Course for Nurses Course Evaluation

1. Please complete the following by ticking the column of your choice.

<i>PLEASE RATE THE QUALITY OF THE FOLLOWING...</i>	POOR	FAIR	GOOD	VERY GOOD	EXCELLENT
Overall Content of Course					
PowerPoint Slides					
Participant's Handbook					
Presentation of Material by Trainers					
Participant/Group Activities					
Facilitation of Activities by Trainers					

2. Think about what you *already knew* and what you *learned during* this training about HIV care and ARVs. Then evaluate your knowledge in each of the following topic areas related to HIV/AIDS care **Before** and **After** this training.

1 = No knowledge or skills

3 = Some knowledge or skills

5 = A lot of knowledge or skills



BEFORE TRAINING					<i>SELF-ASSESSMENT OF YOUR KNOWLEDGE AND SKILLS RELATED TO:</i>	AFTER TRAINING				
1	2	3	4	5	Unit 1: Overview of HIV/AIDS in India	1	2	3	4	5
1	2	3	4	5	Unit 2: Understanding HIV/AIDS	1	2	3	4	5
1	2	3	4	5	Unit 3: Infection Control	1	2	3	4	5
1	2	3	4	5	Unit 4: Opportunistic Infections	1	2	3	4	5
1	2	3	4	5	Unit 5: Symptom Management & Palliative Care	1	2	3	4	5
1	2	3	4	5	Unit 6: Introduction to Antiretroviral Therapy	1	2	3	4	5
1	2	3	4	5	Unit 7: Adherence Issues in HIV Care and Treatment	1	2	3	4	5
1	2	3	4	5	Unit 8: Antiretrovirals in Children	1	2	3	4	5
1	2	3	4	5	Unit 9: Pregnancy and HIV	1	2	3	4	5
1	2	3	4	5	Unit 10: Role of the Nurse in HIV Care and Treatment	1	2	3	4	5

3. To what extent do **you** feel prepared to perform nursing tasks related to HIV care and treatment?

1	2	3
Not At All Prepared	Somewhat Prepared	Well Prepared

If you do NOT feel prepared to perform job tasks related to HIV care, please explain briefly why you do not.

4. What topic areas related to HIV care and nursing would you like **more information** on, if any?

5. What did you **like** about the course?

6. Please share any comments you have that would help us **strengthen** or **improve** this course. If you were asked to redesign the course, what would you **change**?



HIV Basics Course for Nurses

Participant's Handbook

Section Two About This Course

I. What will you learn in this course?

The aim of the course is to equip nurses in India with sufficient knowledge of HIV, AIDS, and antiretroviral therapy (ART) to enable them to provide appropriate nursing care to PLWHAs and to effectively counsel and educate patients regarding HIV prevention and care issues.

At the end of the course, it is expected that participants will be able to:

- Describe HIV and its implications for nursing in India
- Identify common opportunistic infections (OIs) associated with HIV disease
- Explain how ARV drugs are used to treat HIV positive patients
- Identify common side effects, toxicities and drug interactions related to ARV drugs
- Explain major issues and challenges associated with ARV therapy adherence
- Describe how resistance to ARV drugs can occur
- Explain how HIV positive, pregnant women and their babies can be treated with ARV drugs
- Describe treatment for children living with HIV
- Describe common issues that arise for nurses as they treat HIV positive patients

II. How is this course organized?

The design of this course reflects the fact that participants are professional health care workers who are well-qualified and have experience in the field of HIV/AIDS. A variety of approaches to teaching and learning will be adopted, with the underlying assumption that participants are adult learners who will take considerable responsibility for their own learning. The focus will be on experiential learning and should emphasize the key knowledge and skills needed for nurses caring for individuals living with HIV/AIDS.

The course is a facilitator-led program and consists of 10 units. Units are one-to-two hours long. It includes the following teaching/ learning methods:

- Lecture
- Case studies
- Role plays
- Demonstration
- Large and small group discussions
- Assignment work
- Individual work
- Small group work and discussions
- Nursing demonstration videos

The knowledge and skills participants bring to the course are important to the learning process and participants are encouraged to share their knowledge and skills and to raise issues that they find challenging in their practice.

III. What ground rules are used during the training course?

To help ensure that time spent at the training is both productive and enjoyable, there are some rules and procedures that we ask participants to follow. The following information includes details on general procedures for the course and requirements for completion of the course. These ground rules are not meant to constrain participants but to contribute to a quality learning environment for everyone.

A. Identifying Expectations

At the beginning of the course, the facilitator will ask participants what they expect to learn from the course. These will be recorded and displayed throughout the duration of the course. The facilitator will identify which expectations are within the description of the course and which fall outside. This will help participants understand what the course will and will not cover.

B. Determining Group Norms

It is important for course participants to establish and commit to their own group norms (ground rules) on the first morning of the course. The facilitator will lead the group in an exercise which will help participants identify the ground rules they wish to follow during the course. The following are examples of group norms:

- Respect each other's confidentiality
- Respect each other's contributions, questions, and opinions
- Be on time
- Participate fully in discussions and exercises
- If you must leave a unit early, please inform the Training Coordinator or facilitator for that unit before the unit begins
- Turn off mobile phones

IV. How will this course be evaluated?

There are three methods used to assess and evaluate participant learning and the usefulness of the course.

A. Pre & Post Assessments

An anonymous pre assessment and post assessment will enable course coordinators to evaluate the transfer of knowledge. Participants will be provided 20 minutes at the beginning of day-one to complete the pre assessment, and time at the end of day-four to complete these instruments. Time permitting, answers to the assessment will be reviewed together as a group and/or distributed to participants as take-home materials.

B. End-of-Day Assessment

The facilitator will ask participants to write or discuss responses to the following four questions:

1. What did you enjoy the most about today?
2. What did you learn from today's sessions that you will use in your work?
3. What questions do you have about the material that was presented today?
4. What other comments do you have? Please be specific.

A Daily Evaluation Form is provided in your Participant's Handbook. The facilitator will review the feedback after the day's training, taking particular note of the questions participants provided. S/he will then prepare responses and use these to begin the next training unit.

C. Course Evaluation Form

Participants will be asked to complete an anonymous Course Evaluation Form, to assess the content and delivery for each unit. Fifteen-minutes will be provided at the end of the final day for participants to complete the form, and they will be collected at the close of that day.

V. How do I use this Participant's Handbook?

This *Participant's Handbook* was developed to help assist you as you participate in the course. The handbook contains the following information to help you be successful in the course:

- Information about This Course
- Training Schedule
- Glossary of Terms
- Unit Outlines
- Group Worksheets
- Handouts
- Copies of PowerPoint slides/acetates
- References.
- Daily Evaluation Form
- Course Evaluation Form

Refer to this *Handbook* frequently throughout the course. The facilitator will refer to it during each unit.

VI. How can I learn most effectively in this course?

There are five important things that you can do as a participant to help create an effective learning atmosphere for yourself, the other course participants and the facilitators:

A. Help to build an atmosphere of trust and support

One of the best ways to help build an atmosphere of trust and support is to listen thoughtfully to the ideas of other participants and provide constructive feedback that will help improve the learning for everyone. Let someone know

if they've said or done something that you like. Help a fellow participant or facilitator if you see he or she is having a challenging moment. The best learning takes place in a humane environment; help us to build one!

B. Maintain a positive attitude

There will be times during the course when you might say to yourself, "I'm so tired!" That's okay to say because you will be working hard and expending a lot of energy learning new things. But try to stay positive and productive as you participate in each unit. Negativity does not support a quality learning environment

C. Contribute to the learning of others

Participants are the most valuable resource in a training course. They help each other learn through sharing relevant work experiences and providing different perspectives. If you see yourself and your fellow participants as resources, you will learn so much more than if you rely solely on the course facilitators for learning the course content. Ask other participants questions, engage them in conversation, and consider sharing relevant examples from your own work experience.

D. Participate actively

A common assumption is that an active participant in a training course is someone who talks a lot. Not true! Participating actively actually requires more listening than talking. Looking at an individual as they are speaking, nodding your understanding, or using facial expressions that indicate "I'm listening" are active forms of listening.

Another way to actively participate in this training course is to contribute ideas during group exercises, answer questions posed by the facilitators and ask your own questions of participants and facilitators. In short, participating actively means that it is apparent to others that your brain is on and attentive to each unit's activities.

E. Provide useful feedback at the end of the day

Because we believe that your perspective about how this course is progressing is crucial, we will ask you to give us feedback on each day's unit. Your enjoyment, learning and understanding of the day's content will be the focus of this feedback and should not take you long to complete. Please provide us with this feedback so that we can monitor and evaluate the progress of the course.

Thank you!



HIV Basics Course for Nurses

Participant's Handbook

Section Three
Course Units 1-10



HIV Basics Course for Nurses

Participant's Handbook

Unit 1

Overview of HIV/AIDS in India

Unit 1: Overview of HIV/AIDS in India

Aim: The aim of this unit is to provide information about the status of HIV and AIDS in India.

Learning Objectives: By the end of this unit, participants will be able to:

- Explain the status of HIV and HIV treatment in India
- Describe prevention interventions
- Determine your role in providing HIV care to your patients
- Describe how the HIV epidemic in India has impacted nursing

Key Points:

1. AIDS is a global, regional, and national crisis.
2. ARV guidelines have been written, policies have been adopted and training is being conducted in India.
3. Approximately 20,000 people in India are currently receiving ART.
4. Competing health demands, sustainability, access, and capacity are ongoing challenges.
5. GOI will provide free access to ART for 10,000 PLHA by December, 2004 starting April 1, 2004.
6. HIV has changed the way nursing is practiced throughout the world.
7. Nurses have an important role in educating others about HIV and advocating for their patients.

Elements of Comprehensive Care and Support

Medical and Nursing Care

Prevention of opportunistic infections

- Tuberculosis prevention
- PCP pneumonia prevention
- Systemic fungal infection prevention

Treatment of opportunistic infections

- TB/HIV: DOTS
- Fungal infections: Lifelong secondary prophylaxis
- PCP pneumonia

Symptomatic and supportive nursing care

Antiretroviral treatment

- Reduce HIV related illnesses and deaths
- Prolong life and improve quality of life

Prevention of Parent-To-Child HIV Transmission (PPTCT)

- To reduce the transmission rate of HIV vertical transmission

Psychological Care

Counseling services

- Anonymous HIV counseling and testing
 - Counseling networks cover all districts in the region
 - Standard laboratory testing process
- Preventive counseling
- Supportive counseling
- Family counseling
- Premarital counseling

Spiritual care

- Religious groups
- People with HIV groups

Alternative Care

Meditation

Exercise

Nutrition

Traditional medicine

- Ayurvedic medicine
- Siddha medicine
- Other?

Socioeconomic Care

Income generating activities

- Through government support projects
- Through people with HIV/AIDS group activities

Financial support

- Transportation subsidy for TB and AIDS patients
- NGO support

AIDS orphans care in

- Government facilities
- Non-government facilities

No discrimination against HIV-infected people

- In health care facilities
- In communities

**“We Know More Than We Think We Do”
Group Exercise**

Introduction:

The purpose of this exercise is to validate what people already know and to correct misinformation in a non-threatening way. Active learning helps people problem-solve and working in groups de-emphasizes personal risk.

Directions:

- Create a group of five people.
- Your group is to read each statement and discuss whether the statement is:
 - ALWAYS TRUE
 - SOMETIMES TRUE
 - NEVER TRUE
- Discuss each statement for approximately 2 minutes and make your decision.
- When asked by the facilitator, raise the sign that indicates your group’s decision for each statement. All groups must raise their signs at one time.
- Be ready to provide reasons for your decision.

Questions:

1. STIs, including HIV, are more easily transmitted from men to women than from women to men.
2. One can generally identify a person with HIV infection by looking at him or her.
3. A person can get HIV infection from French kissing.
4. TB co-infection may lead to faster progression to AIDS.
5. Once a patient starts ARV treatment, he or she can no longer transmit HIV infection to others.
6. When one family member with HIV infection begins ARV treatment it is helpful for him or her to share the drugs with other family members who also have HIV infection but do not have access to ARV treatment.
7. Health Care Workers are able to predict who will be adherent to ARV treatment and who will not.
8. A pregnant woman who is HIV positive should be allowed to have an abortion.
9. A woman who is HIV infected should not get pregnant.
10. If a woman is HIV infected then it means the partner is HIV infected.

ALWAYS TRUE

SOMETIMES TRUE

NEVER TRUE

Stigma Discussion

INDIA

Taunted HIV+ woman kills herself

Posted Mon, 26 Apr 2004

An HIV-positive Indian woman committed suicide after taunts from co-workers about her illness, police said on Monday.

The 34-year-old woman's body was found hanging from a ceiling fan at the weekend in the western city of Ahmedabad at the home of her brother, with whom she had lived since her husband died of AIDS in 1997.

She left a suicide note blaming two fellow employees at a government office who made snide remarks questioning her character. Police said the two co-workers were taken in for questioning.

"She was pushed into despair because her colleagues teased her about her illness. The two accused will be interrogated about their conduct," police official R.K. Chawda said.

Activists point to the stigma of AIDS as a key obstacle in combating the disease in India, which has at least 4.58 million HIV-positive people, more than any country except South Africa.

HIV, the virus that leads to AIDS, is frequently spread to women by husbands who are infected through extramarital sex.

AFP

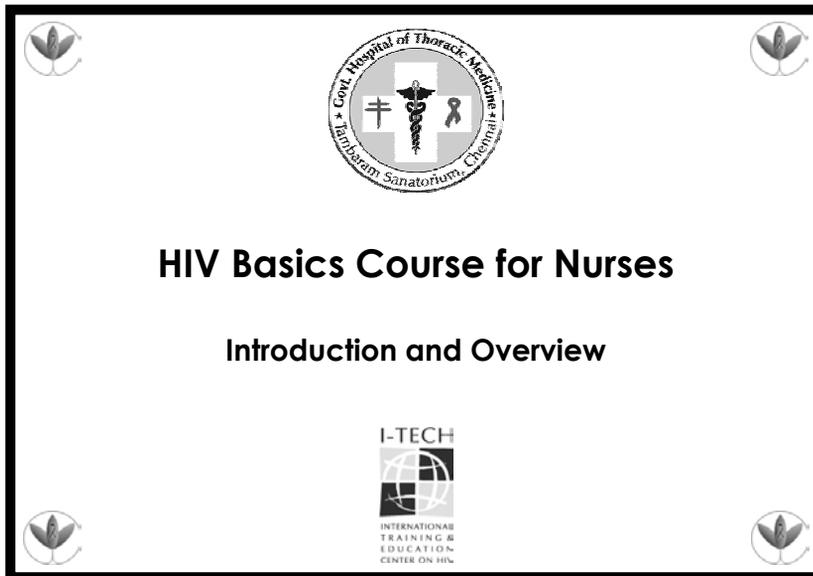
Questions for Discussion:

1. Have you heard similar stories of stigma & discrimination from your patients? What have they told you?
2. How can we as health care workers help our HIV+ patients to deal with stigma and discrimination?
3. What steps can you take to help end stigma & discrimination against people living with HIV/AIDS?



PowerPoint Slides

Refer to companion document for copies of the Unit 1 PowerPoint presentation slides.



Unit 1 should take approximately 1 ½ - 2 hours to implement.

- **Step 1:** Introduction and Course Overview; Slides 1.1-1.6 (30 minutes)
- **Step 2 :** We Know More Than We Think We Do Group Exercise; Slides 1.7-1.18 (30 minutes)
- **Step 3:** Overview of HIV in India; Slides 1.19-1.40 (20 minutes)
- **Step 4:** Stigma Discussion; Slide 1.41 (20 minutes)
- **Step 5:** Presentation of Key Points; Slides 1.42-1.47 (5 minutes)



Introductions

- Please share with us:
 - Your name
 - What your job is at GHTM
 - What you would like to learn during this course

Overview of HIV/AIDS

Slide 1-2

Step 1: Introduction and Course Overview; Slides 1.1-1.6 (30 minutes)

- Provide participants with the course overview and opportunity to introduce themselves.
- Begin with introductions, then review the course ground rules and learning objectives using the PowerPoint presentation. Ask the participants if they have any questions about the objectives before continuing.
- List what participants want to get from the training on flip chart paper, post it and then refer to it when reviewing the learning objectives on the next slides. Draw connections between the two and let participants know what won't be covered in this basic course but will be covered in future trainings.
- Keep the list posted in the room where the training will be held for the duration of the training.
- Refer back to it at the end to see what additional training may be needed.



Course Learning Objectives

By the end of this course, you will be able to:

- Describe HIV and its implications for nursing in India
- Identify common opportunistic infections (OIs) associated with HIV disease
- Explain how ARV drugs are used to treat HIV positive patients
- Identify common side effects, toxicities, and drug interactions related to ARV drugs

Overview of HIV/AIDS

Slide 1-3

- Review the course learning goals with participants. Draw connections with participant's list from slide 2.



Course Learning Objectives

- Explain major issues and challenges associated with ARV therapy adherence
- Describe how resistance to ARV drugs can occur
- Explain how HIV positive, pregnant women and their babies can be treated with ARV drugs
- Describe treatment for children living with HIV
- Describe common issues that arise for nurses as they treat HIV positive patients

Overview of HIV/AIDS

Slide 1-4



Remember

- You already know a lot
- You have a lot to share with others
- Share what you know throughout our days together
- Ask questions at any time during the workshop
- We are here for YOU

Overview of HIV/AIDS

Slide 1-5

- Summarise need to participate, share and ask questions to make the training as meaningful to everyone as possible.



Ground Rules

- Provide guidance and establish boundaries for entire course
- Are set at the start of the course
- Are set by both participants and trainers

Overview of HIV/AIDS

Slide 1-6

- Explain the purpose of ground rules by reviewing the slide.
- Ask the group to brainstorm the ground rules they would like to establish for the course, and write them on a flip chart. Hang the flip chart where participants can see it throughout the course.
- Examples may include:
 - Punctuality & time management
 - Switch-off cell phones
 - Ask all questions
 - Respect everyone and their opinions
 - No interruption when others are speaking
 - Patience
 - No small meetings
 - Group participation
 - Flexibility



**We Know More Than
We Think We Do**

Group Exercise



I-TECH
INTERNATIONAL
TRAINING &
EDUCATION
CENTER ON HIV



**Step 2: We Know More Than We Think We Do Group Exercise; Slides 1.7-1.18
(30 minutes)**

- The purpose of this exercise is to validate what participants already know about HIV and AIDS and to begin our discussion of HIV and AIDS in India. Participants usually discover that they know more than they think they know about HIV.
- Ask participants to refer to the Worksheet “We Know More than We Think We Do” located in Participant’s Handbook (Worksheet 1.1)
- Review the relevant slides in the PowerPoint presentation.



Instructions

- In a group of 5 people, read each statement and discuss for 2 minutes whether the statement is:
 - ALWAYS TRUE
 - SOMETIMES TRUE
 - NEVER TRUE
- When asked by the facilitator, raise the sign that indicates your group's decision for each statement. All groups must raise their signs at one time. Be ready to provide reasons for your decision

Overview of HIV/AIDS

Slide 1-8

- Facilitate this small group discussion.
- Have participants discuss reasons for their answers.
- As you debrief the exercise and have each group discuss their responses, encourage participants to talk about their experiences with HIV and AIDS in their professional work and communities. Their answers to these questions will be more valuable and enlightening if they connect them with experiences they have had.
- Sample responses to each statement are also provided in Worksheet 1.1 of the facilitator's guide.



Question One

- STIs, including HIV, are more easily transmitted from men to women than from women to men
 - Always True?
 - Sometimes True?
 - Never True?

Overview of HIV/AIDS

Slide 1-9

- ALWAYS TRUE
- HIV is 8-10 times more likely to be transmitted from male to female than female to male.
- The presence of other STIs in women increases the risk of HIV transmission four-fold.
- The vagina allows the HIV virus into the body more easily because the tissues are more fragile.



Question Two

- One can generally identify a person with HIV infection by looking at him or her
 - Always True?
 - Sometimes True?
 - Never True?



Overview of HIV/AIDS

Slide 1-10

- **SOMETIMES TRUE**
- People with HIV can appear (and actually can be) very healthy.
- They can also have illnesses (opportunistic infections) that HIV-negative individuals have, such as TB or pneumonia.
- Thus, although there are certain infections and symptoms associated with HIV disease, it is virtually impossible to tell just by looking at someone if they are HIV-positive.



Question Three

- A person can get HIV infection from French or tongue kissing
 - Always True?
 - Sometimes True?
 - Never True?



Overview of HIV/AIDS

Slide 1-11

- SOMETIMES TRUE
- Saliva is not a place where HIV can live easily and there have been very few documented cases of the transmission of HIV via kissing.
- In the very few cases where virus was transmitted through kissing, both people had open sores in their mouths.
- Open sores in the mouth of the person with HIV could cause bleeding into their mouth. In such a case, the saliva could contain small amounts of blood with virus. Even so, the virus can only be transmitted to another if there are also open sores in the mouth of the other person (allowing the virus entry into their bloodstream).
- Thus, French kissing is not considered to be a practice that can spread the HIV virus **unless** people engage in deep mouth kissing **and** have open sores inside or outside their mouths.
- Oral sex is a concern and certainly any cuts/bleeding in the mouth would increase the risk.



Question Four

- TB co-infection may lead to faster progression to AIDS
 - Always True?
 - Sometimes True?
 - Never True?



Overview of HIV/AIDS

Slide 1-12

- ALWAYS TRUE
- TB can weaken the immune system, and in individuals with suppressed immune systems, this can mean the greater likelihood of opportunistic infections.
- TB medications can impact the effectiveness of ARVs negatively, thus compromising antiretroviral treatment.



Question Five

- Once a patient starts ARV treatment, he or she can no longer transmit HIV infection to others
 - Always True?
 - Sometimes True?
 - Never True?

Overview of HIV/AIDS

Slide 1-13

- NEVER TRUE
- This is a dangerous assumption!
- Although viral loads in HIV-positive individuals may become so low that they cannot be detected, this does not mean the virus cannot be passed to another person.
- The virus still exists because there is no cure for HIV.
- There is also the possibility that an individual can pass a resistant virus or a new strain of virus on to someone.



Question Six

- When one family member with HIV infection begins ARV treatment, it is helpful for him or her to share the drugs with other family members who also have HIV infection but do not have access to ARV treatment
 - Always True?
 - Sometimes True?
 - Never True?

Overview of HIV/AIDS

Slide 1-14

- NEVER TRUE
- As we will learn, the key to effective antiretroviral treatment is to take ALL prescribed drugs, at the right time, in the right quantities, in the right way (with or without food).
- This means that sharing medication with family members should not be done as it can lead to resistance.
- Half a dose of ARVs is worse than no dose at all!



Question Seven

- Health care workers are able to predict who will be adherent to ARV treatment and who will not
 - Always True?
 - Sometimes True?
 - Never True?

(Adherence means that the patient will take the medicine in the correct dose, at the correct time, every day.)

Overview of HIV/AIDS

Slide 1-15

- SOMETIMES TRUE
- Studies have shown that it is very difficult to determine who will be adherent to an ARV regimen.
- Don't assume that because someone appears as though they may not be adherent (e.g., IV drug users) that they will not.
- Adherence seems to be most affected by frequency of the regimen (once vs. three times a day) and pill burden (the number of pills taken in a given day).
- History of pill taking may also influence adherence.
- The primary reason people give for not taking their medications is that they **forgot**.
- It's hard to know who of your patients are forgetful and who are not. Participants will learn more about adherence in Unit 7.



Question Eight

- A pregnant woman who is HIV positive should be allowed to have an abortion
 - Always True?
 - Sometimes True?
 - Never True?



Overview of HIV/AIDS

Slide 1-16

- ALWAYS TRUE
- However, it depends on culture, religion, and other factors.
- This statement may generate a lot of discussion, both because of people's assumptions about passing the virus on to an unborn child AND the issue of abortion.
- An HIV-positive woman who is pregnant will not necessarily pass the virus on to her child.
- Although it is recommended that the mother be on ARVs and the baby receive Nevirapine, it's possible that even without ART the baby will be born uninfected.



Question Nine

- A woman who is HIV infected should not get pregnant
 - Always True?
 - Sometimes True?
 - Never True?



Overview of HIV/AIDS

Slide 1-17

- SOMETIMES TRUE
- See response to #8.
- Again, this question will generate a lot of discussion.
- Explore participants' responses by asking them to explain further and being open to their comments.
- The goal is to find out what participants know about HIV and what their assumptions are regarding people who live with HIV, NOT to judge them.



Question Ten

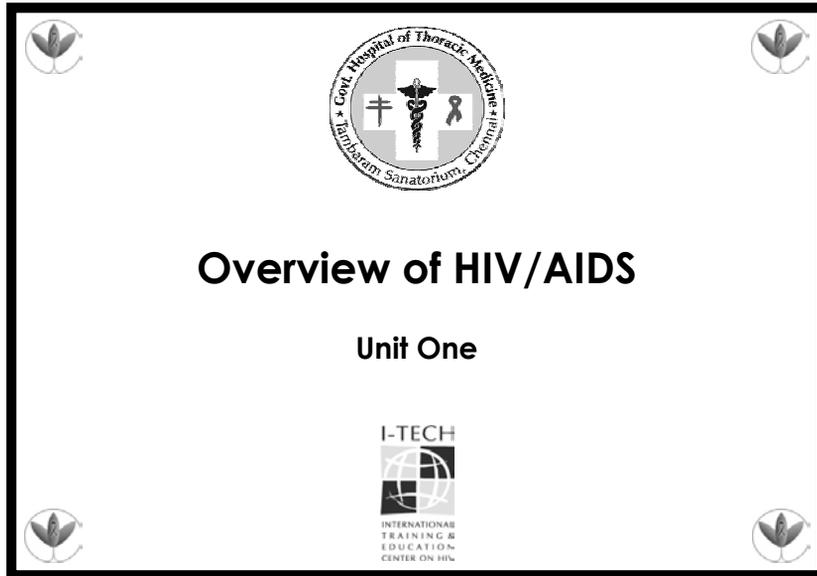
- If a woman is HIV infected then it means her partner is HIV infected
 - Always True?
 - Sometimes True?
 - Never True?



Overview of HIV/AIDS

Slide 1-18

- **SOMETIMES TRUE**
- Sometimes the partner is infected, sometimes not. It's important to stress to patients that people with HIV need care and support. We usually don't know who passed the virus to whom. And the only way to know if someone is infected for sure is to have an antibody test.
- Trainer's note: For an expanded explanation, please see the "We Know More...Answer Key" (Worksheet 1.1) in the Facilitator's Guide. This information is not important to pass on to the participants. It is here to assist you in case a participant has additional questions on this topic.



Step 3: Overview of HIV; Slides 1.19-1.41 (20 minutes)

- Check to make sure that slides 22-32 and slide 34 are updated.
- Begin by reviewing the unit objectives.
- The aim of this unit is to provide information about the status of HIV and AIDS in India.



Learning Objectives

By the end of this session, you will be able to:

- Explain the status of HIV and HIV treatment in India
- Describe prevention interventions
- Determine your role in providing HIV care to your patients
- Describe how the HIV epidemic in India has impacted nursing

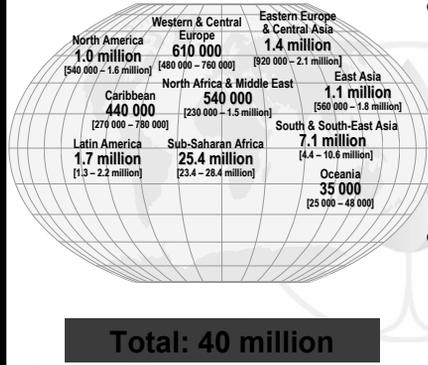
Overview of HIV/AIDS

Slide 1-20

- Review learning objectives.
- Ask participants if they have any questions before continuing.
- The purpose of the next few slides is so participants can get an understanding of the global AIDS crisis and how it impacts the country of India.



HIV/AIDS: Global Scenario



Source: UNAIDS, 2004

Overview of HIV/AIDS

Slide 1-21

- The region of South & South East Asia presently has the second largest number of people living with HIV, second only to Sub-Saharan Africa
- The South & South East Asia region is in danger of becoming the region with the highest number of people living with HIV

- Check to make sure this slide is updated.
- Emphasise to participants the importance of describing AIDS as a global crisis and not as one that is just affecting India.
- Discuss the statistics of HIV in each region with participants.



About 14,000 New HIV Infections a Day in 2003 Worldwide

- More than 95% of infected persons are in low and middle income countries
- Almost 2000 of people infected are children under 15 years of age
- About 12,000 are persons aged 15 to 49 years, of whom:
 - Almost 50% are women
 - About 50% are 15-24 year olds

Overview of HIV/AIDS

Slide 1-22

Source: WHO

- Check to make sure this slide is updated.
- Points to make to participants:
 - Growth of the pandemic worldwide, especially resource poor countries
 - India is not spared this growing problem
 - Many children are infected
 - Most infections occur among young and middle age adults, 50% among young adults
 - 50% worldwide are women



Current Projections of the HIV/AIDS Epidemic

- An additional 45 million people will become HIV infected between 2002 – 2010 in 126 low- and middle-income countries unless we increase current preventions efforts!
- >40% will be in Asia and the Pacific

Overview of HIV/AIDS

Slide 1-23

Source: WHO

- Check to make sure this slide is updated.
- Discuss possible reasons why it is projected that in the next 5 years >40% of HIV/AIDS cases in the world will be in Asia and the Pacific.



HIV/AIDS: Indian Scenario



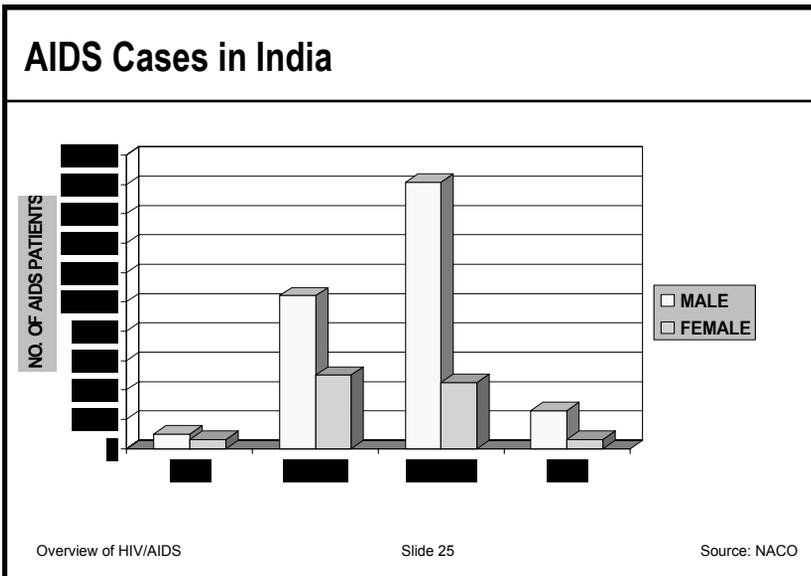
Source: NACO 2003

Overview of HIV/AIDS

Slide 24

- Just over 5 million PLWHAs are estimated to live in India
- Uneven distribution: Six high HIV prevalence states are in South and North Eastern regions
- There is an increasing number of PLWHAs who have clinical manifestations and need support and care

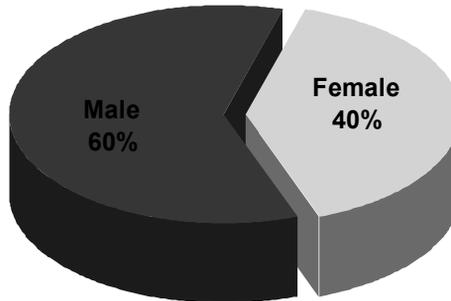
- Check to make sure this slide is updated.
- Discuss about how many patients are testing positive for HIV at GHTM every month and what is the impact on the hospital and the nursing staff



- Check to make sure this slide is updated.



Distribution of Reported AIDS Cases by Sex in India Through December, 2003



Overview of HIV/AIDS

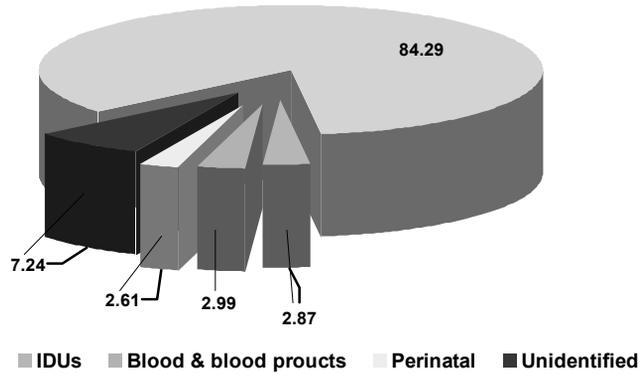
Slide 26

Source: NACO

- (No. 61201)
- Check to make sure this slide is updated
- Emphasise that there may actually be a more even distribution of women to men not reflected in the numbers on this chart because more men than women access care and get tested in India.



Known Modes of HIV Transmission



Overview of HIV/AIDS

Slide 27

Source: NACO

- Check to make sure this slide is updated
- Emphasise the overwhelming amount of heterosexual transmission. Briefly discuss each mode of transmission.



Where Are We Today?

- ARV therapy is one of the great success stories of modern medicine!
- But WHO estimates only 800,000 take ART worldwide
 - Only 300,000 are in developing countries
- At least 5.1 million are living with AIDS in India as of 2004
 - Only 30,000 will be on ART by the end of 2004 (NACO)



Overview of HIV/AIDS

Slide 28

- Check to make sure this slide is updated.
- Of the 30,000 Indians on ART:
 - 10,000 on GOI free ART programme
 - 20,000 with NGO support or private pay



ARVs: Who's Getting Them?

Antiretroviral therapy coverage in low- and middle income countries, by region
Situation as of June 2005

Geographical region	Number of people receiving ARV therapy (low estimate – high estimate)	Estimated need	Coverage
Sub-Saharan Africa	500 000(425 000 –575 000)	4 700 000	11%
Latin America and the Caribbean	290 000 (270 000 –310 000)	465 000	62%
East, South and South-East Asia	155 000 (125 000 –185 000)	1 100 000	14%
Europe and Central Asia	20 000 (18 000 – 22 000)	160 000	13%
North Africa and the Middle East	4 000 (2 000 –6 000)	75 000	5%
Total	970 000 (840 000 –1 100 000)	6.5 million	15%

Overview of HIV/AIDS

Slide 1-29

Source: World Health Organisation, 2005

- Check to make sure this slide is updated.
- ARVs are life saving drugs that ARE available.
- But as this chart shows only certain people have access.
- In Southeast Asia, only 7% of those in need are receiving these expensive drugs...while in the Americas 84% of those in need are accessing these medications.



ART: Indian Initiative

- Union Health Minister announces **Free ART** for PLWHAs on the eve of World AIDS Day, 2003
- January 2004:
 - NACO guidelines on Eligibility and Logistics (Draft)
 - Drug Procurement procedures
 - Identification of Training Centers
 - Selection of ART Treatment Centers
- April 1, 2004: Free ART Roll-out in 6 high prevalence states

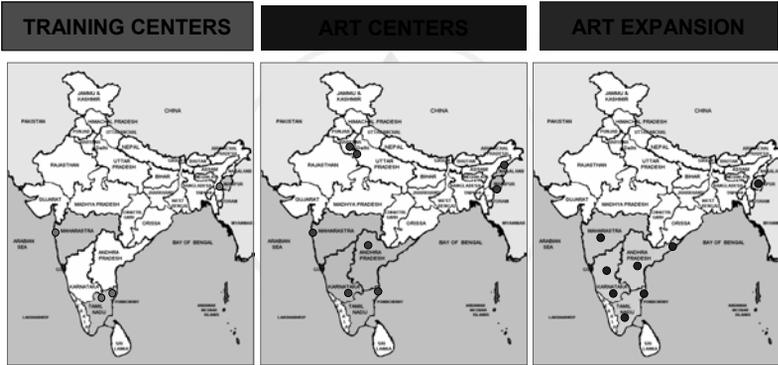
Overview of HIV/AIDS

Slide 1-30

- Check to make sure this slide is updated.
- GOI is committed to HIV Treatment Programmes
- GHTM was identified as one of the training centers.
- There are now ? persons receiving ART at GHTM (Check with ART outpatient for current numbers)



ART : Indian Initiative



Overview of HIV/AIDS

Slide 1-31

Source: NACO, 2004

- Check to make sure this slide is updated.
- The government realises that there are many national healthcare concerns...HIV is just one!
- Although GOI is committed to treatment, there are many challenges
- Experts who have had experience with developing ARV programmes are concerned about the ability for the government to guarantee sustainability.
 - o Once people have started ARVs, it is a lifelong need.
 - o Access is another concern: how will those in need be able to reach ARV sites for initiation and carry out regular follow-up for care and treatment.
 - o The need is so great, and is growing, so there is concern about being able to keep up with the need.



Continuum of Care in HIV/AIDS: Are Medicines Enough?



Overview of HIV/AIDS

Slide 1-32

- Ask participants what are some other ways besides ART treatment to address the growing problem of HIV/AIDS in India.



HIV Prevention: GOI Commitment

- Targeted Interventions
 - 100% condom programme targeting commercial sex workers and their clients
 - Harm reduction for injecting drug users
- STI Management
- Prevention of Parent-To-Child Transmission (PPCTC)
- Ensuring safe blood supply
- PEP for occupational exposure
- Voluntary counselling and testing

Overview of HIV/AIDS

Slide 1-33

- Check to make sure this slide is updated.
- Points to make to participants:
 - Importance of prevention interventions targeting special populations
 - Commercial sex workers
 - Injection drug users
 - Ask participants to identify other high risk groups
 - Importance of other prevention interventions as listed in slide



HIV Prevention

- Primary prevention messages are aimed at people who are at risk of HIV
 - How to prevent becoming infected
- Secondary prevention messages target people known to be HIV infected
 - How to prevent passing the infection to others
- There is no cure for AIDS. Prevention is the only way to stop HIV transmission

Overview of HIV/AIDS

Slide 1-34

- Primary prevention targets those who are not known to be infected.
- Nurses are in an ideal position to educate patients, other staff, their own families and communities about the growing problem and how to prevent it.



HIV Prevention—Safer Sex

- Practice abstinence
- Delay start of sexual activity
- Be faithful to one partner or have fewer partners
- Get tested for HIV
- Test and treat STIs
- Use male and female condoms



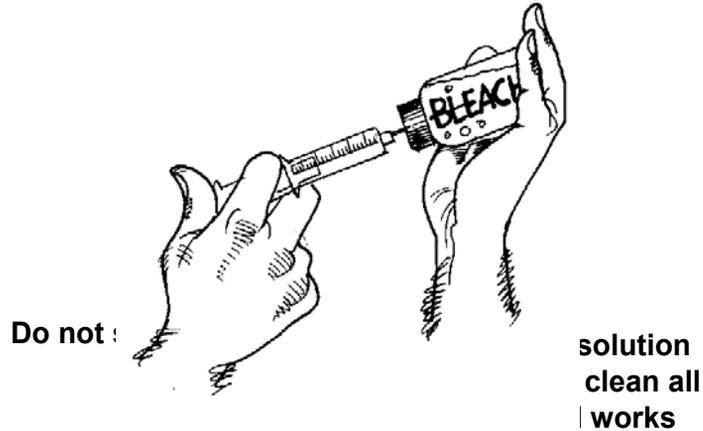
Overview of HIV/AIDS

Slide 35

- Points to make to participants:
 - o Abstinence is the only 100% way to avoid sexual transmission
 - o Abstinence may be an unrealistic expectation so safer sex messages are very important
- Condom slogan: no glove, no love



HIV Prevention for Needle Users



Overview of HIV/AIDS

Slide 36

- For Injection Drug Users, using their “own works” is the best protection against HIV exposure.
- If a person does share needles, keep in mind that bleach cleaning is not risk free, but is an important tool for risk reduction.
- If the person does share, clean needles immediately before and after use.
- Before using bleach, flush the syringe with water to rinse fresh or dried blood that may remain in the barrel.
- Follow the long-standing guidelines “bleach, bleach, water, water”.
- Flush the barrel of the syringe at least twice with bleach (that is , fill and then empty the barrel with bleach twice)
- Bleach works best after 30 seconds. Hold the bleach in the barrel for that long.



HIV Prevention—VCTC (1)

- Voluntary counselling and testing centers = VCTC
- An HIV prevention intervention initiated by patients of their own free will
- Provides the opportunity to confidentially explore and understand a patient's HIV risk factors



Overview of HIV/AIDS

Slide 37

- GHTM has a VCTC.



HIV Prevention—VCTC (2)

- VCTC offers supportive counselling and referral for patients when they learn of their HIV infection status
- VCTC offers an opportunity to teach patients about primary and secondary prevention
- VCTC is the point of entry for early access to HIV care

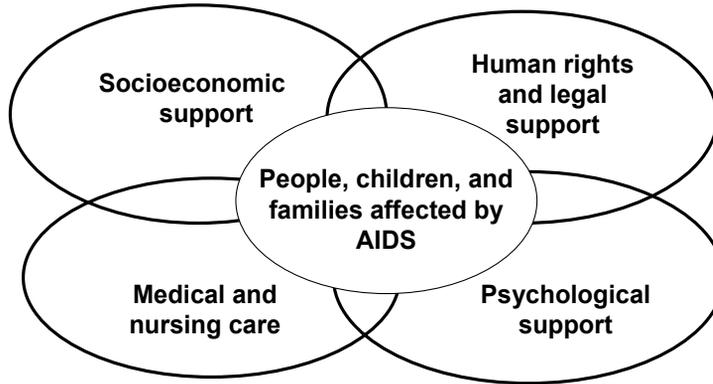
Overview of HIV/AIDS

Slide 1-38

- If there are nurses in the course with VCT training, ask if they have any additional information or experiences to share with the group.



Elements of Comprehensive Care and Support



Overview of HIV/AIDS

Slide 39

- Refer to Handout “Elements of Comprehensive Care and Support” (Handout 1.1)
- Effective management and care of PLWHAs and their families requires multiple comprehensive elements of intervention.
- Briefly discuss how each element is helpful in dealing with the disease as a family unit.



Difficulties of HIV/AIDS Care

- Nature of HIV disease
- Limited resources
- Knowledge and attitudes of health care personnel
- Long-term HAART treatment
- HIV/AIDS stigma and discrimination

Overview of HIV/AIDS

Slide 1-40

- Points to make to participants:
 - Many people do not get tested until they are very sick since there may be no symptoms for several years
 - AIDS illnesses are difficult to treat
 - Not enough resources to adequately treat all PLWHAs
 - Health care providers may have inadequate knowledge or have inappropriate fears to provide quality care for PLWHAs
 - Many challenges in sustaining treatment programmes
 - Stigma and fear of discrimination may prevent people from being tested and accessing care



Stigma Discussion

- Read the article in your manual
- Discuss these questions:
 1. Have you heard similar stories from your patients? What have they told you?
 2. How can we help our HIV patients to deal with stigma and discrimination?
 3. What steps can you take to help end stigma and discrimination against PLWHAs?

Overview of HIV/AIDS

Slide 1-41

Step 4: Stigma Discussion; Slide 1.42 (20 minutes)

- Ask participants to refer to the Worksheet “Stigma Discussion” located in the Participant’s Handbook (Worksheet 1.2)
- Give participants about 5 minutes to read the article. Discuss each question as a large group.



What Will Your Role Be?

- Provide optimal nursing care to PLWHA in all stages of disease
- Educate patients, families, fellow nurses, and communities about HIV prevention, care, and treatment
- Assist with the establishment of multidisciplinary HIV care teams, first at your site, then help others in your region
- Continue to raise awareness and visibility surrounding HIV/AIDS prevention and treatment

Overview of HIV/AIDS

Slide 1-42

Step 5: Presentation of Key Points; Slides 1.43-1.47 (5 minutes)

- Summarise the presentation.
- As a nurse you will play an important role in helping make the national ARV programme a success.
- You will be asked to educate other healthcare workers, as well as your families and community members about HIV, prevention, and treatment.
- In your work place you can help with the establishment of HIV/ARV teams so that "roll out" will be efficient and effective.



Share Our Knowledge...



Overview of HIV/AIDS

Slide 1-43

- Nurses are crucial in HIV care and ART treatment!



Key Points (1)

- AIDS is a global, regional, and national crisis
- ARV guidelines have been written, policies have been adopted, and training is being conducted in India
- Approximately 20,000 people in India are currently receiving ART
- Competing health demands, sustainability, access, and capacity are ongoing challenges

Overview of HIV/AIDS

Slide 1-44

- Present key points in this unit, and answer any final questions



Key Points (2)

- GOI will provide free access to ART for 10,000 PLWHAs by December, 2004 starting April 1, 2004
- HIV has changed the way nursing is practiced throughout the world
- Nurses have an important role in educating others about HIV and advocating for their patients



References

- World Health Organisation
http://www.unaids.org/wad2004/graphics/Epicore2004_Dec04_en.ppt#4
<http://www.who.int/hiv/facts/cov0605/en/index.html>
- NACO
http://www.nacoonline.org/annual_report.pdf



Thank You!

I-TECH
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TRAINING &
EDUCATION
CENTER ON HIV



HIV Basics Course for Nurses

Participant's Handbook

Unit 2
Understanding HIV and AIDS

Unit 2: Understanding HIV and AIDS

Aim: The aim of this unit is to assist participants in understanding HIV and how it can lead to AIDS.

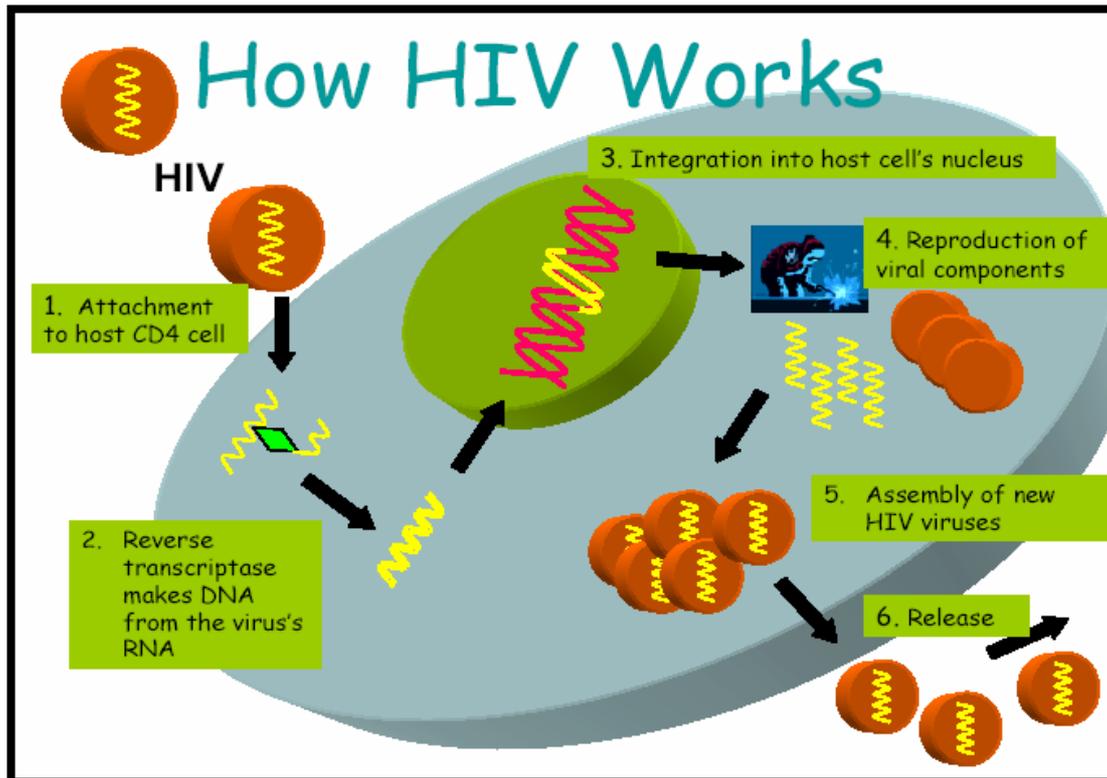
Learning Objectives: By the end of this unit, participants will be able to:

- Explain the pathophysiology of HIV
- Describe the progression of HIV disease
- Describe the transmission of HIV
- Describe the WHO clinical staging system for HIV infection and disease
- Explain the nursing implications involved in caring for patients with HIV/AIDS

Key Points:

1. HIV disease is complex, affecting many aspects of a patient's life, family and community.
2. HIV care is chronic, requiring repeated contact to health services.
3. HIV disease requires a multidisciplinary team approach.
4. It is essential for nurses to keep updated about HIV prevention, care and treatment practices and to educate others.

Handout 2.1: How HIV Works



1. HIV locates the CD4 cell and attaches to its surface. Having fused with the cell membrane, HIV releases its genetic material (viral RNA) and enzymes into the CD4 cell.
2. A DNA copy of the viral RNA must now be made. The enzyme Reverse Transcriptase is essential for this process. It copies the viral RNA into viral DNA.
3. The viral DNA is now integrated into the CD4 cell's nuclear material. This process is made possible by the enzyme *integrase*.
4. The individual components of HIV are then produced within the CD4 cell.
5. The individual components of HIV are then assembled together, to make new HIV viruses. This process depends on the enzyme *protease*.
6. New viruses are released from the CD4 cell. These infect other CD4 cells where the cycle repeats itself.

Remember the factory! During stages 1 to 6, HIV uses the CD4 cell like a factory. HIV needs the "machinery" inside the CD4 cell in order to be able to replicate. By stage 6, new viruses are released from the factory.

Source: McGilvray, M, Willis, N. All About Antiretrovirals: A Nurse Training Programme, Trainer's Manual, Africaid, 2004



Handout 2.2

HIV Disease Progression

Viral transmission

Sexual contact with an HIV-infected source

Exposure to HIV-infected body fluids

- Intravenous drug use (IVDU)
- Contaminated blood products
- Occupational exposure – needle stick

Perinatal transmission – from a woman to her baby during pregnancy, delivery or breastfeeding

Primary HIV infection (Acute Retroviral Syndrome)

Immune System Response

- When HIV enters the body, the immune system recognizes “antigen”.
- Initial response may include “flu-like” symptoms:
These are symptoms of primary infection.
Usually has very high viral load – easily transmits.

Acute Retroviral Syndrome (ARS)

- Symptomatic in 53% to 90% of people
- Occurs 2-4 weeks after exposure
- Lasts 1-2 weeks
- Increased likelihood of infecting others due to high viral load
- Signs and symptoms

More Common Symptoms	Less Common Symptoms
Fever	Diarrhoea
Lymphadenopathy	Headache
Pharyngitis	Nausea and Vomiting
Rash	Weight Loss
Erythematous maculopapular with lesions on face/trunk and sometimes palms or soles	Thrush
Myalgia or Arthralgia	Neurologic Symptoms
Lethagy/Malaise	Headache

Seroconversion

Immune System Response

- Within 2 – 12 weeks from infection, the body develops HIV-specific antibody.
- During this “**window period**”, the person is infected, but the HIV antibody blood test is **negative**.
- Millions of virions are created and destroyed every day as the body tries to suppress the virus.
- If patient has high risk exposure but tests negative, may be in “window period” – counsel re: safe sex



Handout 2.2 (continued)

HIV Disease Progression (continued)

Diagnostic Testing: HIV Antibody

- HIV antibodies only develop after 2 – 10 weeks of HIV infection so this test is negative or indeterminate during the Primary Acute HIV (Retroviral) Syndrome.
- In all other stages of HIV infection, HIV antibody testing is the best method for diagnosing HIV infection in older children and adults.

Asymptomatic chronic infection

Early Immune Depletion - CD4 > 500

- Level of virus is low
- HIV replication takes place mostly within lymph nodes
- Generally lasts 5 years or more – maybe less for patients with malnutrition or co-infection
- Generalized persistent lymphadenopathy
- Usually no other symptoms

Symptomatic HIV infection

Intermediate Immune Depletion - CD4 Between 500 and 200

- Immune deficiency decreases
- Infections start and persist as CD4 count decreases
- ART is considered
- Opportunistic Infection (OI) prophylaxis is considered

AIDS

Advanced Immune Depletion - CD4 < 200

- Case definition of AIDS is having a CD4 count < 200
- Opportunistic infections (OIs) develop
- OIs are the leading cause of morbidity and mortality in HIV-infected individuals.
- The most common OIs are preventable and treatable.

Advanced HIV infection/AIDS

- (CD4 < 50/mm³)



WHO Staging System for HIV Infection and Disease: Clinical Classification

Clinical Stage 1

- Asymptomatic
- Persistent generalized lymphadenopathy
- Performance scale 1: asymptomatic, normal activity

Clinical Stage 2

- Weight loss, <10% body weight
- Minor mucocutaneous manifestation (seborrhoeic dermatitis, prurigo, fungal nail infections, recurrent oral ulcerations, and angular cheilitis).
- Herpes zoster, within last 5 years
- Recurrent upper respiratory infections (i.e., bacterial sinusitis)
- And / or performance scale 2: symptomatic, normal activity

Clinical Stage 3

- Weight loss, <10% body weight
- Unexplained chronic diarrhoea, >1 month
- Unexplained prolonged fever (intermittent or constant), >1 month
- Oral candidiasis (thrush)
- Oral hairy leukoplakia
- Pulmonary tuberculosis, within the past year
- Severe bacterial infections (i.e. pneumonia, pyomyositis)
- And / or performance scale 3: bed-ridden <50% of the day during the last month

Clinical Stage 4

- HIV wasting syndrome (weight loss of >10%, plus either unexplained chronic diarrhoea > 1 month, or chronic weakness and unexplained prolonged fever > 1 month)
- *Pneumocystis carinii* pneumonia
- Toxoplasmosis of the brain
- Cryptosporidiosis with diarrhoea, >1 month
- Cryptococcosis, extrapulmonary
- Cytomegalovirus (CMV) disease of an organ other than liver, spleen or lymph nodes
- Herpes simplex virus (HSV) infection, mucocutaneous >1 month, or visceral
- Progressive multifocal leukoencephalopathy (PML)
- Any disseminated endemic mycosis (i.e.) histoplasmosis, coccidioidmycosis
- Candidiasis of the oesophagus, trachea, bronchi or lungs
- Atypical mycobacteriosis, disseminated
- Non-typhoid Salmonella septicaemia
- Extrapulmonary tuberculosis
- Lymphoma
- Kaposi's Sarcoma (KS)
- HIV encephalopathy (Clinical findings of disabling cognitive and / or motor dysfunction interfering with activities of daily living, progression over weeks or months, in the absence of a concurrent illness or condition other than HIV infection that could explain findings)
- And / or Performance scale 4: bed – ridden, >50% of the day during the last month.



Handout 2.4

WHO Clinical Staging System

WHO Improved Clinical Staging System: A further refinement of the WHO clinical staging system includes a laboratory axis.

Laboratory axis		Clinical axis				
Lymphocytes*	CD4**	Stage 1 Asymptomatic PGL	Stage 2 Early HIV	Stage 3 Intermediate	Stage 4 Late AIDS	
A	>2000	>500	1A	2A	3A	4A
B	1000- 2000	200- 500	1B	2B	3B	4B
C	<1000	<200	1C	2C	3C	4C



Worksheet 2.1: Typical Patient Questions

Patients look to nurses for explanations about their condition. If patients are to have confidence in their nurse and receive clear, accurate information, it is vital that nurses are able to answer their questions appropriately. These role plays have been designed to equip you with the skills to answer some common questions patients may have about their condition.

Join a group of 2-4 people. You will be given a question by the trainer. Discuss your question and decide how best to respond to patients. Then feedback your response to the whole group through role play, where one member of the group is the patient asking the question and one is the nurse providing the answers.

Typical Patient Questions:

1. What is the difference between HIV and AIDS?

.

2. How does HIV make me sick?

.

3. What are these blood tests I have to have?

4. What will happen to me now that I have HIV?



Worksheet 2.2

WHO Staging Case Studies

Case Study Instructions:

Discuss the case as a large group and answer the related questions in the time you are given.

WHO Staging Case 1

A 35-year-old truck driver comes to the OP complaining of persistent diarrhoea that started five months earlier. You do a CD4 count and stool exam. His CD4 = 250. His stool exam reveals cryptosporidium.

Question:

1. How would you classify this patient?



Worksheet 2.2 (continued)

WHO Staging Case Studies

Case Study Instructions:

Discuss the case as a large group and answer the related questions in the time you are given.

WHO Staging Case 3

A young woman comes to the clinic complaining of fever for over one month. From her previous record, you see that six months ago she weighed 54 kg. She now weighs 46 kg. She has a history of herpes zoster.

Question:

1. Based on her symptoms alone, how would you classify this patient?



Worksheet 2.3: Common Questions about HIV

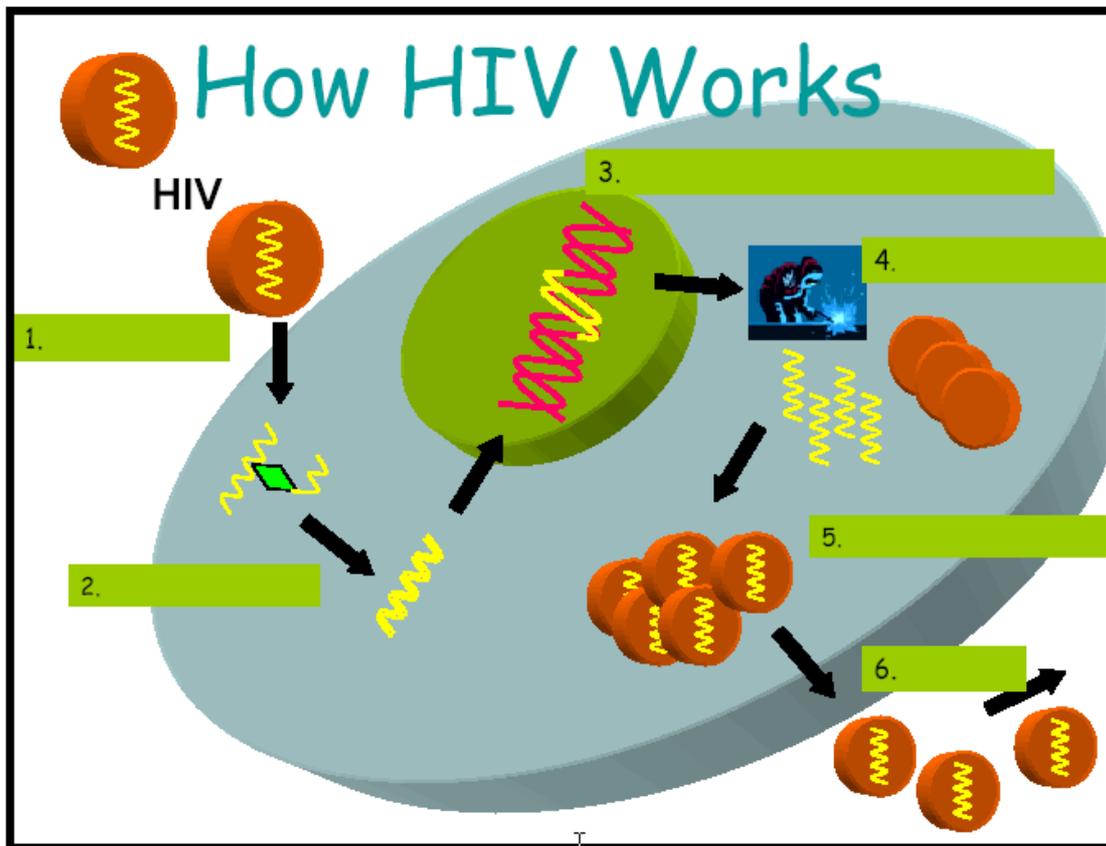
(Additional Self-Review Questions)

- 1. Which cells does HIV primarily target for replication?**
- 2. Why does HIV “need” CD4 cells?**
- 3. What is the effect of HIV’s attack on CD4 cells?**
- 4. What does “latency” mean?**
- 5. What are the clinical signs and symptoms associated with early infection (Stage I & II)?**
- 6. What are the clinical signs and symptoms associated with the later stages of HIV infection (Stage III & IV)?**



Worksheet 2.4: How HIV Works Fill-in Worksheet

(Additional Self-review Questions)



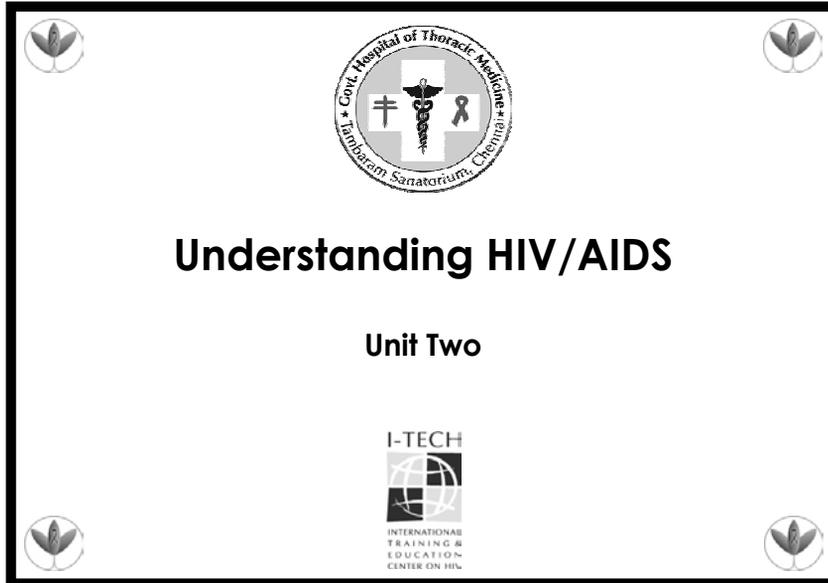
Now that you know the basics of how HIV works, identify what is happening at each stage of the HIV lifecycle. Fill-in the blanks in the diagram above and provide explanations for each stage below.

Source: McGilvray, M, Willis, N. All About Antiretrovirals: A Nurse Training Programme, Trainer's Manual, Africaid, 2004



PowerPoint Slides

Refer to companion document for copies of the Unit 2 PowerPoint presentation slides.



Unit 2 should take approximately 1 ½ - 2 hours to implement.

- **Step 1:** Understanding HIV/AIDS; Slides 2.1-2.17 (20 minutes)
- **Step 2:** Typical Patient Questions Role Play; Slide 2.18 (20 minutes)
- **Step 3:** HIV Transmission; Slides 2.19-2.31 (20 minutes)
- **Step 4:** WHO Staging System and Case Studies; Slides 2.32-2.43 (30 minutes)
- **Step 5:** Implications for Nursing Practice, Presentation of Key Points; Slides 2.44-2.49 (5 minutes)



Learning Objectives

By the end of this session you will be able to:

- Explain the pathophysiology of HIV
- Understand the progression of HIV
- Describe the transmission of HIV
- Describe the WHO clinical staging system for HIV infection and disease
- Explain the nursing implications involved in caring for patients with HIV/AIDS

Understanding HIV/AIDS

Slide 2-2

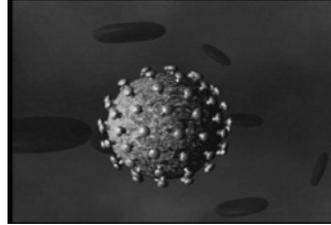
Step 1: Understanding HIV/AIDS; Slides 2.1-2.17 (20 minutes)

- Begin by reviewing the unit objectives.
- The aim of this unit is to assist participants in understanding HIV and how it can lead to AIDS.
- Review the unit learning objectives using the PowerPoint presentation.
- Ask the participants if they have any questions about the objectives before continuing.



What Is HIV?

- Human
- Immunodeficiency
- Virus
- HIV is a virus that damages the immune system of people it infects
- Unlike most viruses, the body cannot clear HIV. After becoming infected, a person has HIV infection for the rest of his or her life



Understanding HIV/AIDS

Slide 3

- Viruses are simple in structure and cannot replicate alone.
- They require the components of other cells for replicating.
- HIV, like all viruses, must therefore enter other cells if they are to replicate and survive.
- HIV is from a special family of viruses known as Retroviruses.
 - o With retroviruses, its genetic material is carried in the form of RNA rather than DNA.
 - o This RNA must be converted in to DNA during replication.



How Does HIV Make You Sick?

- Immune suppression:
 - HIV attacks the white blood cells which protect us from illness
 - Over time, the body's ability to fight common infections is lost and opportunistic infections occur
- Direct infection of major organ systems:
 - HIV directly infects the brain, gut, lungs, kidneys and heart

Understanding HIV/AIDS

Slide 2-4

- HIV is a retrovirus which targets the T-helper cells - "controllers of the immune system".
- HIV uses reverse transcriptase to become part of the host cell's genetic material.
- HIV makes the T-helper cell into an "HIV factory" to reproduce HIV.
- HIV destroys the T-helper cell in the process.
- Over time, the rate of T-helper cell destruction exceeds the rate of replacement of T- cells.
- As the amount of virus in the blood (viral load) increases, the T-helper cell (CD4+) count falls.

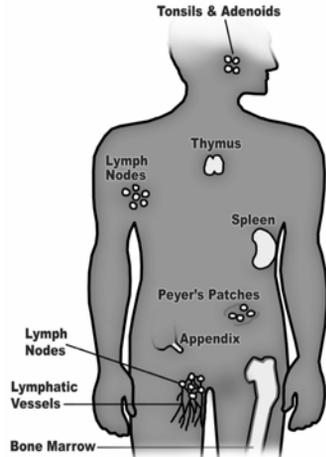


Understanding the Immune System

- The immune system protects the body by recognising and destroying:
 - Infectious agents such as bacteria, viruses and parasites
 - Abnormal cells
 - Foreign objects – anything from splinters to transplanted organs



Organs of the Immune System



Understanding HIV/AIDS

Slide 6

- Lymphoid organs of the immune system are everywhere in the body
- They are concerned with the growth, development, and distribution of white blood cells known as lymphocytes
- Lymphocytes are key players in immune function

- Looking at the picture and beginning at the top, review . . .
- Lymphoid tissue such as tonsils and adenoids.
- Note the cervical chain of lymph nodes (not shown) that you would palpate/monitor for enlargement on exam.
- Note the subaxillary lymph nodes and inguinal nodes as well.
- Thymus and bone marrow are considered primary organs of the immune system and their function will be discussed later.
- Peyer's patches are a grouping of lymph nodes found mostly in the mucosal and submucosal layers of the ileum.



HIV & CD4 Cells

- HIV uses CD4 cells for reproduction
- CD4 cells are cells that carry CD4 receptors on their surface
- CD4 receptors are found on a variety of cells, but mainly on T4-lymphocytes (T-helper cells)
- T4-lymphocytes are a type of white blood cell that 'switch on' the immune system to fight disease

Understanding HIV/AIDS

Slide 2-7

- HIV primarily targets cells known as CD4 cells. These cells are called CD4 cells as they carry CD4 receptors on their surface.
- These are protein molecules and are found on the surface of a variety of cells of the immune system.
- HIV looks for these CD4 receptors. When it finds them, HIV binds to the CD4 receptor on the surface of the CD4 cell like a lock and key.
- Most CD4 cells are T4 lymphocytes, which coordinate the immune system response.



HIV & the Immune System

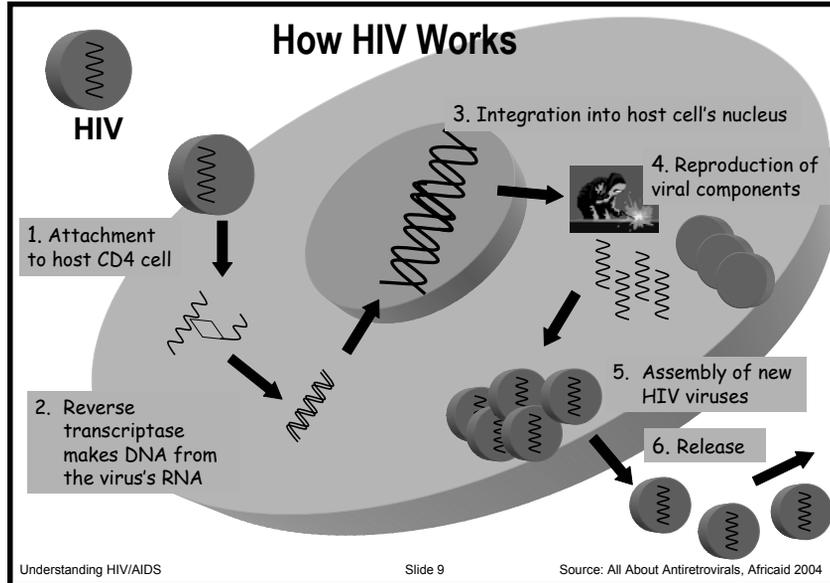
- The CD4 cells are like soldiers
- Strong CD4 cells are able to fight off infection
- BUT, when HIV enters a CD4 cell, it damages the CD4 cell, eventually killing it
- So, HIV damages the very system that protects the body from infection



Understanding HIV/AIDS

Slide 8

- Many people find it helpful to think of CD4 cells as “soldiers” in the body. Usually any infection entering the body is fought off by the soldiers (CD4 cells).
- Strong soldiers make a strong immune response and the infection is fought off. However, HIV damages these soldiers, finally killing them.
- The soldiers are either too weak or too few in number to fight off infection. The immune system is progressively weakened.

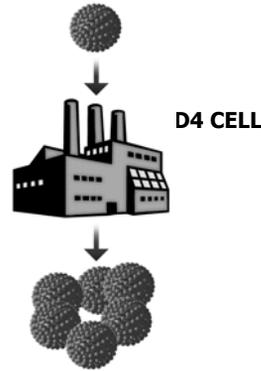


- The 6 stages of the HIV life cycle are essential if we are to understand the effect of ARVs on HIV.
 - HIV attaches to the CD4 cell & releases RNA & enzymes.
 - The enzyme Reverse Transcriptase makes a DNA copy of the viral RNA.
 - New viral DNA is then integrated using the enzyme integrase into the CD4 cell nucleus.
 - New viral components are then produced, using the cell's machinery. These are assembled together using the enzyme protease & then released as new viruses.
- Refer to Handout 1.2: The Life Cycle of HIV.



HIV Factory

- When HIV binds to a CD4 cell, it turns that cell in to an HIV 'factory'
- Billions of HIV viruses are produced and the CD4 cell is eventually killed
- The new HIV viruses infect other CD4 cells. The cycle is repeated again and again as newly infected CD4 cells become HIV factories producing more HIV viruses



Understanding HIV/AIDS

Slide 10

- Use of the factory analogy may help nurses to understand how HIV works. HIV (blue, round cells in diagram) uses the CD4 cell like a factory.
- It needs the machinery inside the factory (CD4 cell) to replicate. So HIV enters the factory and starts replicating, using the CD4 cell's machinery.
- Millions of new viruses are released from the factory (CD4 cell). These new viruses then move on to infect other CD4 cells which become more factories for HIV.



A Losing Battle...

- The normal range for CD4 count is 600— 1500 cells/mm³
- With HIV infection,
 - The body produces new CD4 cells
 - HIV viruses use CD4 cells to replicate more viruses
 - Slowly, over time, CD4 cells are killed by the virus
- In the long term, it's a losing battle for the CD4 cells

Understanding HIV/AIDS

Slide 2-11

- On average, an adult has between 600-1500 CD4 cells/mm³ in the body. If the person is infected with HIV, the virus gradually infects and destroys more and more CD4 cells.
- Over time, the number of CD4 cells in the body decreases.



Opportunistic Infections (OIs)

- HIV slowly destroys CD4 cells over years of infection
- As the CD4 count drops, infections take 'opportunity' of this weakened immune system, resulting in opportunistic infections



Understanding HIV/AIDS

Slide 12

- Over time, HIV destroys the CD4 cells and the immune system becomes increasingly weakened.
- As CD4 count falls, the immune system is unable to fight off infections that it would usually be able to fight off, even with the help of medication.
- These infections therefore take the opportunity of this weak immune system & are called opportunistic infections. These may be abbreviated to OIs.
- Patients with HIV usually die from opportunistic infections such as TB, pneumonia, herpes and meningitis.
- At this point, stop and refer participants to Handout 1.4: How HIV Works Fill-in Worksheet.
 - o Ask them to take five minute and fill in the sheet.
 - o Ask them to then check their responses with their neighbor.
- Answer any questions they may have about this diagram and how HIV works before moving on.



What Is AIDS?

- Acquired
- Immune
- Deficiency
- Syndrome



AIDS represents the end-stage disease that generally results from untreated HIV infection

Understanding HIV/AIDS

Slide 13

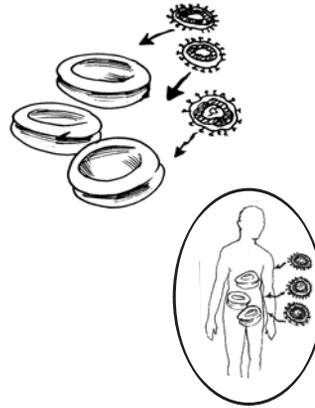
Source: Sahaya International

- HIV and AIDS are different! HIV is the virus that causes immune deficiency.
- This state of immune deficiency makes the body vulnerable to opportunistic infections.
- It is the collective presence of different opportunistic infections, as a result of immune deficiency, that is known as Acquired Immune Deficiency Syndrome (AIDS).
- Someone may be infected with HIV for many years before their immune system is damaged sufficiently to cause opportunistic infections and hence AIDS.



How Does HIV Cause AIDS?

- Viral replication causes CD4 cell death
- Loss of CD4 cells impairs immune system and ultimately leads to opportunistic infections or AIDS



Understanding HIV/AIDS

Slide 14

- Over time, HIV destroys the CD4 cells and the immune system becomes increasingly weakened.
- As CD4 count falls, the immune system is unable to fight off infections that it would usually be able to fight off, even with the help of medication.
- These infections therefore take the opportunity of this weak immune system & are called opportunistic infections.
 - These may be abbreviated to OIs.
- Patients with HIV usually die from opportunistic infections such as TB, pneumonia, herpes, and meningitis.



What Is “Viral Load”?

- The HIV viral load is simply a measure of the quantity of HIV in a drop (ml) of a patient’s blood
- In general, the higher the viral load, the faster CD4 cells are destroyed
- Over time, viral load increases as more and more viruses are produced



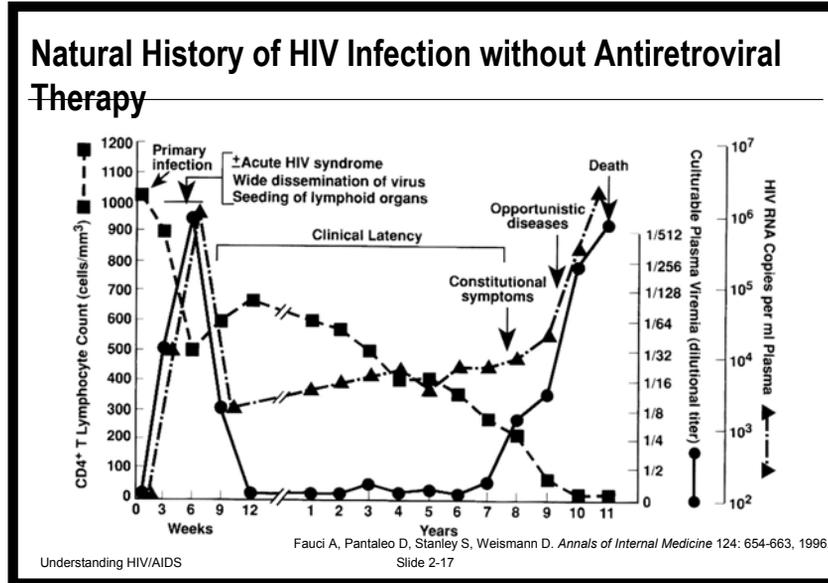
HIV Disease Progression

- Viral transmission
- Primary HIV infection (Acute Retroviral Syndrome)
- Seroconversion
- Asymptomatic chronic infection
- Symptomatic HIV infection
- AIDS
- Advanced HIV infection/AIDS (CD4 < 50/mm³)

Understanding HIV/AIDS

Slide 2-16

- Refer to HIV Disease Progression (Handout 2.2.)



Typical course of HIV infection. Throughout the course of HIV infection, virus replicates and immunodeficiency progresses steadily, despite the absence of observed disease during the so-called clinical latency period.

The normal course of disease is shown in this graph:

- o The viral load is very high within the first month of infection.
- o This high level of virus means the CD4 count drops steeply as it is being attacked by HIV.
- o Then, over the next few months, the immune system makes an attempt to fight the virus.
- o Viral load drops steeply & CD4 count is able to rise slightly.
- o After this initial stage, the HIV disease may then remain latent in the body during which a patient is asymptomatic.
- o This asymptomatic phase varies but may last up to 15 years in some patients.
- o Eventually however, the viral load starts increasing as replication continues.
- o The CD4 cells are progressively overwhelmed and the patient becomes symptomatic.
- o Towards the end, viral load gets extremely high as CD4 cell gets extremely low, dropping even as low as 0.



Typical Patient Questions Role Play

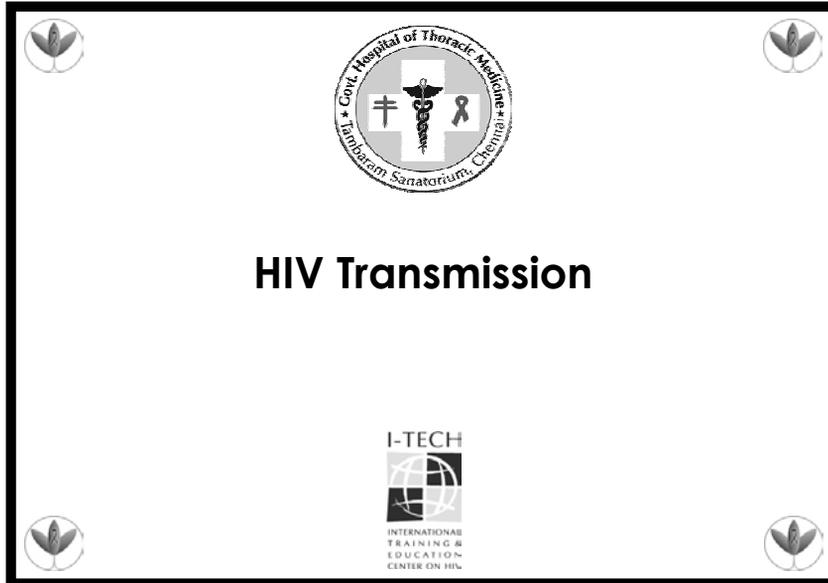
- Join a group of 2-4 people
- You will be given a question by the trainer. Discuss your question and decide how best to respond to patients
- Then feedback your response to the whole group through role play with one member of the group as the patient asking the question and one as the nurse providing the answers

Understanding HIV/AIDS

Slide 2-18

Step 2: Typical Patient Questions Role Play; Slide 2.18 (20 minutes)

- Participants should refer to Worksheet 2.1
- Provide each group with a question, let them practice, and then act out the interaction between a nurse and patient.



Step 3: HIV Transmission; Slides 2.19-2. 31 (20 minutes)

- Present the slides “HIV Transmission.”
- Before showing slides to participants, ask them how HIV is transmitted. Write their responses on flipchart paper or a chalkboard.
- How HIV is transmitted:
 - o HIV is transmitted from one person to another through interchange of blood and certain bodily fluids.
 - o Vaginal secretions and semen contain HIV. Sexual intercourse is one way in which HIV is transmitted.
 - o Sharing needles, or getting a deep needle stick during an occupational exposure from a person infected by HIV, is another way transmission occurs.
 - This is an example of blood from an infected person being transmitted to another
 - o Mother can transmit the virus to her baby either during pregnancy or breast feeding.
 - This does not happen all the time - in fact, only approximately 25% of the time.



HIV Transmission

True or False?

**Virgins cannot be infected
with HIV**

Understanding HIV/AIDS

Slide 2-20

- Whatever the class comes up with, then amend the statement.
- As an example, if they say if they are drug users, you would respond with, “non-intravenous drug using virgins... Does that make it true now?” until all transmission methods are covered.
- You may also consider the definition of virginity. There are those who will engage in only oral (and/or anal) sex to maintain “virginity”.



HIV Transmission



Sharing body fluids (sex)

Sharing needles



Mother to Baby



Infected blood

Understanding HIV/AIDS

Slide 21



HIV Transmission Mother to Baby



**During
Pregnancy or
Birth**



**Through Breast
Feeding**



Biological Factors Affecting Transmission (1)

- Infectiousness of host
 - High viral load
 - Initial and more advanced stages
 - Presence of semen & genital secretions
 - Exposure to blood
 - Breastfeeding of HIV positive mother



Biological Factors Affecting Transmission (2)

- Susceptibility of recipient
 - Presence of STI
 - State of health
 - Co-infection
 - Lack of circumcision in men



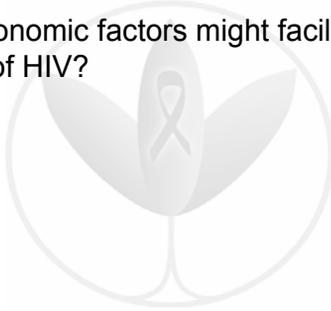
Biological Factors Affecting Transmission (3)

- Women are more susceptible
 - Increased mucosal surface area
 - Pooling of semen
 - Presence of genital ulcers or other STI
 - Sex during menstruation
 - Thinning of vagina
 - Menopause
 - Progestin contraceptives



Discussion: Socio-economic Factors Facilitating Transmission

- What socioeconomic factors might facilitate transmission of HIV?



Understanding HIV/AIDS

Slide 2-26

- Group Discussion: Put answers from audience on flip chart. Then compare with the next 3 slides.



Socio-economic Factors Facilitating Transmission (1)

- Social Mobility
 - Global economy
 - HIV/AIDS follows routes of commerce
- Gender
 - In many cultures men are expected to have many sexual relationships
 - Financial or material dependence on men mean women cannot control when, with whom, and in what circumstances they have sex



Socio-economic Factors (2)

- Poverty
 - Lack of information needed to prevent HIV
 - In many poor settings, women have to exchange sex for material favors for daily survival to provide for themselves and their children
- Cultural Factors
 - Traditions, beliefs, and practices affect understanding of health and disease and acceptance of conventional medical treatment
 - Culture can create barriers which prevent people, especially women, from taking precautions



Socio-economic Factors (3)

- Stigma and Denial
 - Denial and silence are the norm
 - Stigma prevents acknowledgment of problem and care-seeking
- People in Conflict
 - Context of war and struggle of power spreads AIDS
- Drug Use and Alcohol Consumption
 - Impaired judgment
 - Sharing of needles and equipment



How HIV Is NOT Transmitted (1)

- Kissing/hugging (deep, French kissing has extremely low risk unless blood is present in the mouth)
- Sweat, tears, urine, or faeces
- Cooking utensils, cups, toilet seats, bedding, or towels



Understanding HIV/AIDS

Slide 30

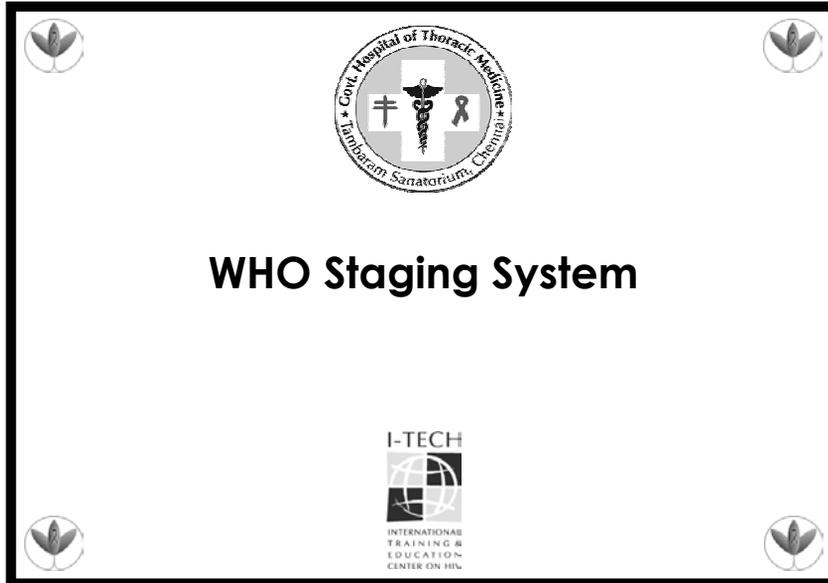
- Secretions such as saliva have not been shown to be effective transmitters of HIV.



How HIV Is NOT Transmitted (2)

- Swimming pools and telephones
- Biting insects (e.g. mosquitoes and bed bugs)
- Eating food prepared by an infected person





Step 4: WHO Staging Classification Case Studies; Slides 2.32-2.43 (30 minutes)

- Refer to Handouts “WHO Staging System for HIV Infection and Disease: Clinical Classification” and “WHO Clinical Staging System” (Handouts 2.3-2.4.)
- Present slides “WHO Staging System”



WHO Staging System for HIV Infection and Disease

- WHO has developed a clinical and laboratory classification system for predicting morbidity and mortality of infected adults based on both clinical symptoms and lab markers
- The system incorporates a patient performance scale



WHO Staging System—Stage 1

- Clinical Stage I:
 - Asymptomatic
 - Persistent generalised lymphadenopathy
- Performance Scale 1:
 - Asymptomatic, normal activity

Understanding HIV/AIDS

Slide 2-34

- A system has been developed in which different stages of disease from beginning to end are characterised by certain signs and symptoms.
- These give us an idea of the severity of disease and prognosis.
- Stage 1 is usually asymptomatic and may go on for many years. However, swollen lymph nodes are commonly seen as this is where more and more soldiers are produced in an attempt to fight against the HIV.
- Healthy lifestyle is important for maintaining good health for as long as possible.



WHO Staging System—Stage 2

- Clinical Stage II:
 - Weight loss, < 10% of body weight
 - Minor mucocutaneous manifestations
 - Recurrent oral ulcerations
 - Herpes Zoster
 - Recurrent upper respiratory tract infections
- Performance Scale 2:
 - Symptomatic, normal activity

Understanding HIV/AIDS

Slide 2-35

- CD4 count falls below 350, indicating that the immune system is weakening.
- In turn, infections are seen more often than usual. Medication may help the patient to fight these and it is possible to continue with daily life.
- Weight loss is common. Maintaining health is essential.
- Prophylaxis against PCP & Toxoplasmosis is started, using Cotrimoxazole (CTZ, Bactrim, Septra)
- Early treatment of infections is essential as they are normally much more difficult to treat and any infection weakens any remaining immune cells.



WHO Staging System—Stage 3

- Clinical Stage III:
 - Weight loss, > 10% of body weight
 - Unexplained chronic diarrhoea
 - Unexplained prolonged fever
 - Oral candidiasis
 - Pulmonary tuberculosis
 - Severe bacterial infections
- Performance Scale 3:
 - Bedridden, < 50% of the day during the last month

Understanding HIV/AIDS

Slide 2-36

- As CD4 count drops further, more serious, debilitating Opportunistic Infections occur.
- Weight loss continues, along with a lack of energy and reduced ability to carry out daily activities.
- Again, primary health care, early treatment of infections and prophylaxis is all essential to promote health and preserve any remaining immune function for as long as possible.
- ARVs should be started now if available.



WHO Staging System--Stage 4 (1)

- Clinical Stage IV:
 - HIV wasting syndrome
 - Pneumocystis carinii pneumonia
 - Toxoplasmosis of the brain
 - Cryptosporidiosis with diarrhoea
 - Cryptococcosis, extrapulmonary
 - CMV disease of an organ other than liver, spleen or lymph nodes
 - Herpes simplex virus infection
 - Progressive multifocal leukoencephalopathy

Understanding HIV/AIDS

Slide 2-37

- CD4 count may reach 0. With next to no immune function left, patients are often extremely sick and very serious opportunistic infections occur.
- Weight loss is considerable.
- Treatment of infections and symptom management is of paramount importance.
- Patients may be cared for in the home or a hospice.
- The need for prophylaxis continues as does the need for ARVs. It must be stressed however, that some patients with very low CD4 counts are not so sick and continue to display reasonably good health.



WHO Staging System—Stage 4 (2)

- Clinical Stage IV (continued):
 - Any disseminated endemic mycosis
 - Candidiasis of the esophagus, trachea, bronchi or lungs
 - Atypical mycobacteriosis, disseminated
 - Non-typhoid Salmonella septicaemia
 - Extrapulmonary tuberculosis



WHO Staging System—Stage 4 (3)

- Clinical Stage IV (cont.):
 - Lymphoma
 - Kaposi's sarcoma
 - HIV encephalopathy
- Performance Scale 4:
 - Bedridden, >50% of the day during the last month



WHO Clinical Staging System

- WHO Improved Clinical Staging System: A further refinement of the WHO clinical staging system includes a laboratory axis

Laboratory axis			Clinical axis			
	Lymphocytes*	CD4**	Stage 1 Asymptomatic PGL	Stage 2 Early HIV	Stage 3 Intermediate	Stage 4 Late AIDS
A	>2000	>500	1A	2A	3A	4A
B	1000-2000	200-500	1B	2B	3B	4B
C	<1000	<200	1C	2C	3C	4C

Understanding HIV/AIDS

Slide 40

Source WHO

- The laboratory axis subdivides each category into 3 strata (ABC) depending on the number of CD4 cells. If this is not available, total lymphocytes can be used as an alternative marker
- Refer participants to Handout 2.4



WHO Staging Case Study #1

- A 35-year-old truck driver comes to the OP complaining of persistent diarrhoea that started five months earlier
- You do a CD4 count and stool exam. His CD4=250
- His stool exam reveals cryptosporidium
 - How would you classify this patient?

Understanding HIV/AIDS

Slide 2-41

Step 4 (cont.) WHO Staging Case Studies

- Participants should refer to Worksheet 2.2.
- Read case studies as a large group and answer questions.



WHO Staging Case Study #2

- A 24-year-old student presents for anonymous HIV testing. She was raped three months ago
- Two months ago, she went to the doctor complaining of fever, malaise, fatigue, and swollen lymph nodes. At the time, she was diagnosed with influenza
- Presently, she has no complaints or symptoms. Her HIV test came back positive. Her CD4 count is 550
 - How would you classify this patient?
 - Was the diagnosis she received two months ago correct? If not, what was the correct diagnosis?



WHO Staging Case Study #3

- A young woman comes to the clinic complaining of fever for over one month
- From her previous record, you see that six months ago she weighed 54 kg. She now weighs 46 kg
- She has a history of herpes zoster
 - Based on her symptoms alone, what would be her WHO clinical classification?



Implications for Nursing Practise (1)

- Understanding the pathophysiology of HIV and the human immune system response enhances your ability and confidence to provide optimal nursing care
- Integrating secondary prevention teaching into a patient care plan:
 - protects others from acquiring HIV; and,
 - minimises co-infections

Understanding HIV/AIDS

Slide 2-44

Step 5: Implications for Nursing Practise, Presentation of Key Points; Slides 2.44-2.49 (5 minutes)

- Discuss nursing implications.
- Your role as a nurse will be enhanced by the information you learn about HIV and your increased understanding of HIV.
- As you learn more about HIV, you will be able to provide state of the art care for your patients, educate others about how HIV is transmitted and therefore actively be involved in prevention of further infections.



Implications for Nursing Practise (2)

- Knowing the continuum of HIV disease allows for patient care planning so you can delay disease progression
- You can significantly prolong and improve your patient's quality of life

Understanding HIV/AIDS

Slide 2-45

- Once you understand the natural spectrum of HIV disease you can anticipate and plan interventions that can delay disease progression.
- Your ability to improve quality of life ...and prolong life...for your patients will be enhanced.



Implications for Nursing Practise (3)

- Educating patients and families about how to manage HIV will:
 - decrease their anxiety and fear; and,
 - encourage family members and caregivers
- Advocating in the care setting and the community for acceptance and compassion will decrease fear, stigma and isolation

Understanding HIV/AIDS

Slide 2-46

- You are now able to expand your role as nurse to include "educator". Nurses are in the perfect position to educate both their patients and their families about HIV so that they are more comfortable giving care and support.
- Advocating through education is also an effective way to decrease fear within the community which often drives underlying stigma and discrimination.



Implications for Nursing Practise (4)

- It is crucial to being a role model for other health care personnel by providing empathetic and knowledgeable quality HIV care and advocacy
- Sharing your HIV disease knowledge and training is essential to:
 - improving patient outcomes; and,
 - obtaining community involvement and support

Understanding HIV/AIDS

Slide 2-47

- Upon completing training in HIV and ARVs, hopefully you will feel comfortable sharing your knowledge with other members of your profession.
- You can also serve as a role model who is skilled, compassionate and willing to advocate for quality care and treatment for those living with HIV/AIDS.
- Refer participants to Handout 1.3: Common Questions about HIV and Handout 1.5: Typical Patient Questions.
 - Go through Handout 1.3 as a review of this session.
 - Use Handout 1.5 to discuss how nurses can talk with patients about HIV.



Key Points

- HIV disease is complex, affecting many aspects of a patient's life, family, and community
- HIV care is chronic, requiring repeated contact to health services
- HIV disease requires a multidisciplinary team approach
- It is essential that nurses keep updated about HIV prevention, care, and treatment practises, and educate others

Understanding HIV/AIDS

Slide 2-48

- Present key points in this unit, and answer any final questions.
- Worksheets 2.3-2.4 contain additional self-review questions.



Thank You!





HIV Basics Course for Nurses

Participant's Handbook

Unit 3
Infection Control

Unit 3: Infection Control

Aim: The aim of this unit is to inform participants about infection control procedures to use when treating and caring for HIV positive patients.

Learning Objectives: By the end of this unit, participants will be able to:

- Protect themselves and others from TB and blood borne pathogens
- Describe proper procedures to follow if they are pricked by a needle or get blood and body fluids in their eyes or mouth
- Provide input to the hospital infection control committee on infection control procedures

Key Points:

1. Protecting yourself and others from TB includes all of the following:
 - Early detection and treatment
 - Extra precautions during high risk procedures
 - Good ventilation
 - Patient placement and flow
 - Cough hygiene
2. Protect yourself from blood borne pathogens by:
 - Complete three doses of Hep B vaccine
 - Eliminate unnecessary injections
 - Don't recap needles
 - Dispose of sharps immediately after use to minimize handling that increases risk of needlesticks
3. PEP should be in place as soon as possible to be effective and used for four weeks. PEP should be reevaluated for effectiveness after 72 hours.
4. You can help to educate others by being a good role model and watching others to make sure infection control is practiced properly.
5. Keep informed, keep calm, and stay safe!



Handout 3.1

NACO Post-Exposure Prophylaxis Guidelines

INTRODUCTION

Health care workers (HCWs) are normally at a very low risk of acquiring HIV infection during management of the infected patient. However, in spite of a low statistical risk of acquisition of HIV, the absence of a vaccine or effective-curative treatment makes the health care worker apprehensive. So it is very necessary to have a comprehensive programme in place to deal with anticipated accidental exposure.

Most exposures do not result in infection. The risk of infection varies with type of exposure and other factors such as:

- The amount of blood involved in the exposure
- The amount of virus in patient's blood at the time of exposure
- Whether post-exposure prophylaxis (PEP) was taken within the recommended time.

Prevention is the mainstay of strategy to avoid occupational exposure to blood/body fluids. All the biosafety precautions must be practised at all times for all patients, blood and body fluids while providing medical services.

DEFINITION OF AN OCCUPATIONAL EXPOSURE

An occupational exposure that may place a worker at risk of HIV infection is a percutaneous injury, contact of mucous membrane or contact of skin (especially when the skin is chapped, abraded or afflicted with dermatitis or the contact is prolonged or involving an extensive area) with blood, tissue or other body fluids to which universal precautions apply.

STEPS TO BE TAKEN ON EXPOSURE TO HIV-INFECTED BLOOD/BODY FLUIDS AND CONTAMINATED SHARPS, ETC.

Immediately following an exposure:

- Needlesticks and cuts should be washed with soap and water;
- Splashes to the nose, mouth or skin should be flushed with water;
- Eyes should be irrigated with clean water, saline, or sterile irrigants;
- Pricked finger should not be put into mouth.

No scientific evidence exists as to the fact that the use of antiseptics for wound care or squeezing the wound will reduce the risk of transmission of HIV. The use of other agents such as bleach is not recommended.

Report the exposure to the appropriate authority and condition must be treated as an emergency. Prompt reporting is essential because in some cases, HIV post-exposure prophylaxis (PEP) may be recommended and it should be started as soon as possible, preferably within 2 hours and not later than 72 hours.

TYPES OF OCCUPATIONAL EXPOSURES TO HIV FOR WHICH PEP IS RECOMMENDED

Most occupational exposures do not lead to HIV infection. The chance of possible serious side-effects (toxicity) of the drugs used to prevent infection may be much greater than the chance of HIV infection. The physician should consider both risk of infection and possible side-effects of drugs should be carefully considered when deciding whether to give post-exposure prophylaxis. Exposures with a lower infection risk may not be worth the risk of the side-effects associated with these drugs. The decision to start PEP is made on the basis of degree of exposure to HIV and HIV status of the source from whom exposure/infection has occurred: (Fig. 1, 2, 3).

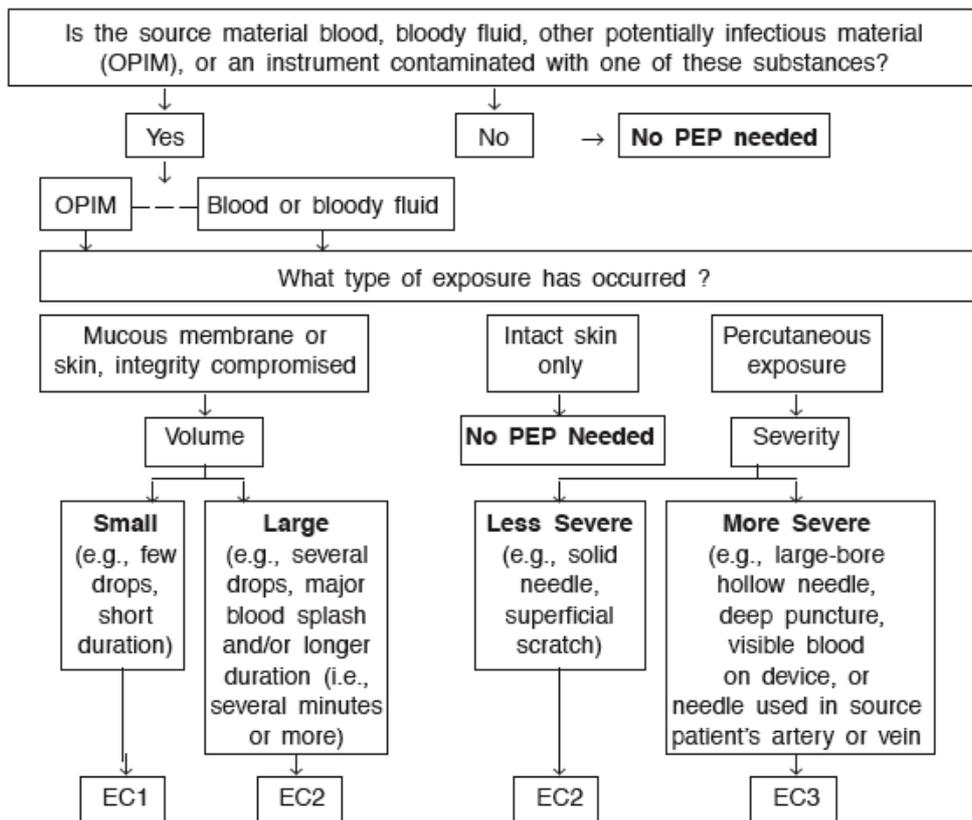


Figure 1 – Determination of the Exposure Code (EC)

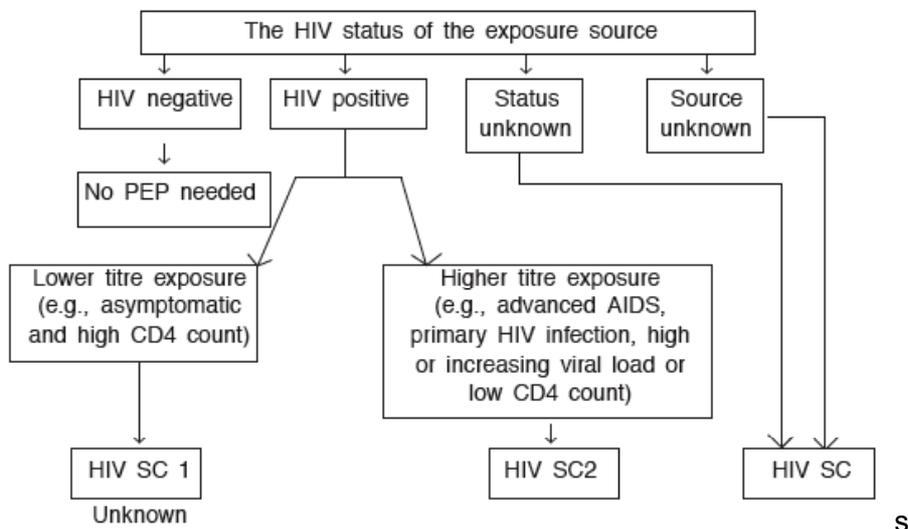


Figure 2 – Determination of the HIV Status Code (HIV SC)

EC	HIV SC	PEP Recommendation
1	1	Pep may not be warranted
1	2	Consider basic regimen. Exposure type poses a negligible risk for HIV transmission.
2	1	Recommend basic regimen. Most HIV exposures are in this category; no increased risk for HIV transmission has been observed but use of PEP is appropriate.
2	2	Recommend expanded regimen. Exposure type represents an increased HIV transmission risk. ³
3	1 or 2	Recommend expanded regimen. Exposure type represents an increased HIV transmission risk.
	UNKNOWN	If the source, (in the case of an unknown source), the setting where the exposure and the EC is 2 or 3, consider PEP basic regimen.

Figure 3 – Determination of PEP Recommendation

PRE- AND POST-TEST COUNSELLING AND TESTING

The person should be provided with pre-test counselling and AZT be started as discussed above. Before starting AZT, 3-5 ml of person's reference blood sample is taken and tested for anti-HIV antibodies immediately after the exposure. In case the sample tests positive as per the strategy of HIV testing the individual is referred to the clinician for management, as a case of HIV infection. In case the sample tests non-reactive, a 2nd sample is collected at 6 weeks and 3rd at 12 weeks after the exposure and tested for HIV antibodies.

The facilities for RT-PCR are available presently at MC Medical College, Mumbai and NARI, Pune and AIIMS, New Delhi and this can give us results even at 2nd or 4th weeks after exposure. Post-test counselling is done in all cases. During the follow-up period, especially the first 6-12 weeks when most infected persons are expected to show signs of infection, the recommendations for preventing transmission of HIV are to be followed by the HCW. These include refraining from blood, semen, organ donation and abstaining from sexual intercourse. In case sexual intercourse is undertaken, a latex condom must be used correctly and consistently. This reduces the risk of HIV transmission. In addition, women should not breast-feed their infants during the follow-up period after exposure to prevent exposing their infants to HIV in breast milk.

DRUGS RECOMMENDED FOR POST-EXPOSURE PROPHYLAXIS/TREATMENT

It is recommended that in India zidovudine (ZDV) and lamivudine (3TC) be used as follows. Both these drugs should be considered for treatment of all exposures involving HIV-infected blood, fluid containing visible blood, or other potentially infectious fluids or tissues (ZDV-200 mg x 8 hly). **CHECK DOSAGES!!** Used in combination, ZDV and 3TC are very effective in treating HIV infection after exposure and considerable information shows that they are safe when used for a short time (Lamivudine 150 mg x 12 hrly). In selected cases (HIV status code

and EC code 2 and 3), Indinavir (or one of the other protease inhibitors) is also being used as per PEP guideline.

DURATION FOR WHICH DRUGS NEED TO BE TAKEN

The optimal course of treatment is unknown; since 4 weeks of ZDV appears to provide protection against HIV infection, if tolerated, treatment should probably be taken for 4 weeks.

PREGNANCY AND PEP

Based on limited information, ZDV taken during 2nd or 3rd trimesters of pregnancy has not caused serious side-effects in mothers or infants. There is very little information on the safety of ZDV when taken during the 1st trimester or on the safety of other antiviral drugs taken during pregnancy. If the HCW is pregnant at the time of occupational exposure to HIV, the designated authority/physician must be consulted about the use of anti-viral drugs for post-exposure treatment.

FACTS KNOWN ABOUT THE SAFETY AND SIDE-EFFECTS OF THESE DRUGS

Most of the information known about the safety and side-effects of these drugs is based on studies of their use in HIV-infected individuals. For these individuals, ZDV and 3TC have usually been tolerated well except for nausea, vomiting, diarrhoea, tiredness, or headache for people taking ZDV.

STEPS TO BE UNDERTAKEN BY THE INFECTION CONTROL OFFICER ON RECEIVING INFORMATION ABOUT OCCUPATIONAL EXPOSURE

- All the needle stick injuries should be reported to the AIDS State Society giving the exposure code and the HIV status code in a proforma enclosed (Annexure 17.1).
- The State AIDS Societies should in turn inform NACO about the cases periodically.
- A registry is planned to be opened in NACO soon for follow-up of all such cases.
- NACO has decided in principle to supply antiretroviral drugs to all cases for postexposure prophylaxis in Govt. hospital settings for HCW.

Infection control officers in all hospitals have been directed to ensure that antiretroviral drugs for PEP are available in casualty at all the times.



Handout 3.2 – Sharps Injury Proforma

Proforma for reporting exposure to blood/body fluids (NACO)

Instructions: Fill in the information below as if a staff member has just come to you with a sharps injury. Then proceed to answer the additional questions given below regarding this process.

Needle Stick/Sharp Injury Protocol:

Name of H.C.W.: *(Do not fill in)*

Section of H.C.W.:

Employment No.: *(Do not fill in)*

Date of Needle Stick/Sharp Injury:

Date of Reporting to Casualty:

Site & Depth of Injury:

Nature of Injury: Needle Prick/Sharp Cut/Laceration/Splash of Fluids/
Splattered Glass

Action taken in casualty:

Hep. B. vaccination given? Yes/No

HBIG? Yes/No

History of injury

History of Hepatitis B Immunization : Date: Intradermal/Intramuscular

Anti HBs Titre (Date of recent testing)

01. HBsAg Yes/No

02. HIV Yes/No

Source of Injury (If Available)

Serum sent for : (reports to be entered in full: upon visit)

01. HIV

02. HBsAg

Sharps Injury Small Group Activity

Divide into pairs or groups of 3. Ask for a volunteer in the group or pair who has experienced a needlestick or an injury with an infected sharps. The other group members should interview the nurse, asking the following questions:

1. When and where did the injury occur?

2. What sharps instrument were you using? What were you using the instrument for?

3. What were the circumstances leading to the injury? Why do you think the injury occurred?

4. What do you think might prevent injuries of this type in the future?

5. How did you feel after the injury happened?

6. What did you do after the injury occurred?

7. Did you report the injury? Why or why not?

Come back together as a large group to discuss the following:

- In what situations do needlesticks or injuries with infected sharps most commonly occur?
- How can we prevent them?
- Why don't people report needlesticks or sharps injuries?



Worksheet 3.2

Separating Clean & Dirty Discussion Questions

Clean Area

1. What types of items should be placed in the clean area?
2. For what activities should the clean area be used?

Dirty Area

1. What types of items should be placed in the dirty area?

Hand Washing

1. When should you wash and dry your hands?
2. What are the steps you should take when washing your hands?
3. Why is it important to dry your hands after washing them and not reuse towels?

Glove Wearing

1. When should you wear gloves and why?

Preparing Clean and Dirty Areas

- 1. What should you do to prepare the clean and dirty areas?**
- 2. Why are cloth coverings not appropriate for clean and dirty areas?**
- 3. Why should you never leave anything soaking in disinfectant?**
- 4. Since it is not safe to store anything in disinfectant, how should you store them during your shift?**
- 5. Is it OK to place paper in the bottom of trays?**
- 6. Where should the clean area be in relation to the dirty area?**

Other Areas

- 1. Why is there a need for other areas in addition to the clean and dirty areas?**
- 2. What types of items can be placed in the area for used items?**
- 3. Why do we have an area for personal items?**



Worksheet 3.3

Clean and Dirty Quiz Questions

1. What does the nurse do correctly and incorrectly in each of the following scenarios?

Scenario	Correct	Incorrect
Scenario 1		
Scenario 2		
Scenario 3		
Scenario 4		
Scenario 5		

2. Write down at least three things that should be changed at each station based on what you have learned about separating clean and dirty areas.

Station 1

1. _____

2. _____

3. _____

Additional changes _____

Station 2

1. _____

2. _____

3. _____

Additional changes _____

Station 3

1. _____

2. _____

3. _____

Additional changes _____



Worksheet 3.4

Giving Injections Safely Discussion Questions

Protecting Patients and Ourselves

- 1. Why is it important to give injections safely?**
- 2. What is the most common device that transmits hepatitis and HIV?**
- 3. What are two ways to protect ourselves from bloodborne pathogens?**

Preparing to Give an Injection

- 1. How should you set up a work area in order to give injections?**
- 2. What kind of syringe should you use for injections and why?**
- 3. When should you wear gloves when giving injections?**
- 4. What should you use to clean the top of the medicine vial?**
- 5. Why should you discard the syringe after mixing diluents and medications?**

6. How can you protect your fingers when opening glass ampoules?

7. You should use a different needle to withdraw the medication and give the injection. True or false?

8. Why should you never leave a needle in a vial?

9. What should you do after drawing the medication?

Giving an Injection

1. What can you do to restrain a patient before giving an injection, and why is this important?

2. What should you do after giving the injection?

3. What are other things you can do to prevent contaminants from injuring you or anyone else?



Worksheet 3.5 (Additional Self Review)

WHO Staging Case Studies

Case 1

A 32 year old man has lost 9 kg in the last 3 months. Before that, he weighed 75 kg. He has complained of feeling feverish for the past month. For the past month, he has left work early every day and usually goes to bed in the late afternoon or early evening. He was treated for pulmonary tuberculosis five months ago.

- What clinical stage is he according to WHO Clinical Staging System?
- If the patient's CD4 was 230, what would the patient's WHO Classification be? What if the CD4 count was 190?

Case 2

A 28 year old woman has come in because she keeps having upper respiratory problems, which was diagnosed as bacterial sinusitis. She says she has not had any problems keeping up with her usual activities, despite the respiratory problems. Her weight has been stable as well. Her last visit to Tambaram was four years ago, when she was treated for herpes zoster. You notice that she appears to have a fungal infection on her toenails. Her CD4 count is 230.

- What WHO clinical stage and lab classification does this patient have?

Six months later she returns to OP clinic still complaining of upper respiratory symptoms with increasing SOB, dry cough and tachycardia. She had an abnormal chest x-ray and was diagnosed with PCP pneumonia. Her weight is stable. Her CD4 count is 180.

- What WHO clinical stage and lab classification does she have now?

Case 3

A 40 year old man comes in complaining of a sore in his mouth for > 1 month. The doctor diagnoses it as herpes simplex virus. He also complains of fever and weakness for > 1 month and has lost 8 kg. Three months ago he weighed 70 kg.

- What clinical stage is he according to WHO Clinical Staging System?
- If his CD4 count was 170, what WHO clinical stage and lab classification would he be?

Case 4

A 20 year old woman was diagnosed with HIV 2 years ago. She complains of low grade fever, sore throat and productive cough for the past 10 days. Her weight is stable and she has no other complaints.

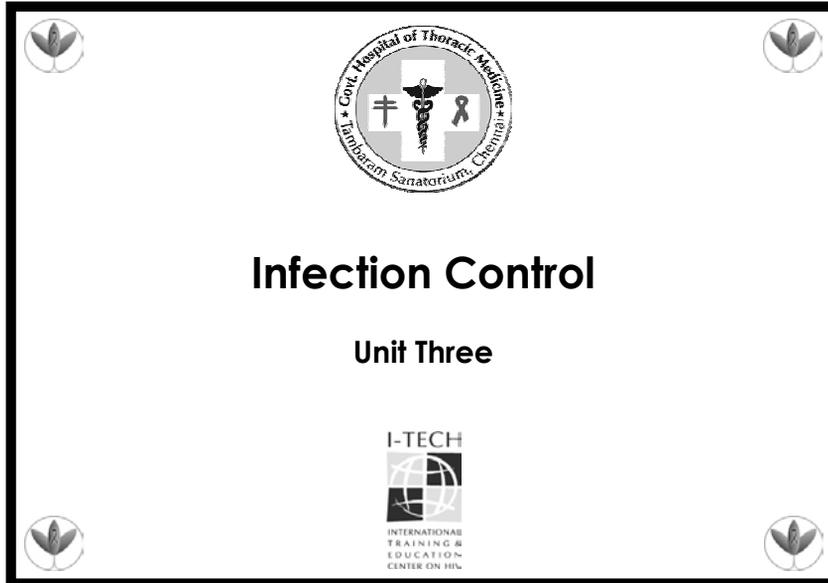
- What clinical stage is she according to WHO Clinical Staging System?
- If her CD4 count is 350, what is her WHO clinical stage and lab classification?



PowerPoint Slides

Refer to companion document for copies of the Unit 3 PowerPoint presentation slides.

 **Notes**



This unit should take approximately 1 ½ hours.

Make sure to photocopy and insert NACO PEP Guidelines as a handout for the Participant's Handbook. Also make copies of your hospital's sharps injury form.

- **Step 1:** Protecting Yourself from TB and Bloodborne Pathogens; Slides 3.1-3.34 (25 minutes)
- **Step 2:** Sharps Injury Small Group Activity; Slides 3.35-3.36 (15 minutes)
- **Step 3:** Sharps and PEP; Slides 3.37-3.55 (15 minutes)
- **Step 4:** Separating Clean and Dirty & Giving Injections Safely Nursing Demonstration Video; Slide 3.55 (25 minutes)
- **Step 5:** Presentation of Key Points; Slides 3.56-3.60 (5 minutes)



Learning Objectives

By the end of this session, participants will be able to:

- Protect themselves and others from TB and Bloodborne Pathogens
- Describe what to do to after a needle prick or if blood and body fluids get into the eyes or mouth
- Provide input to the HICC on infection control procedures

Infection Control

Slide 2

Step 1: Protecting Yourself from TB and Bloodborne Pathogens; Slides 3.1-3.34 (25 minutes)

- Begin by reviewing the unit objectives.
- The aim of this unit is to inform participants about infection control procedures to use when treating and caring for HIV positive patients.
- Go over the learning objectives, asking participants if they have any questions before continuing.



Preventing the Spread of TB to Staff and Patients

- Upon their arrival, screen all patients who have had a cough for more than 3 weeks for early detection of infectious TB
- Open windows and use masks during cough inducing procedures
- Leave windows open and direct air flow from staff to patients
- Separate AFB smear positive patients from others
- Instruct patients to turn their head and cover their mouth when coughing

Infection Control

Slide 3



Early Detection and Treatment of TB Protects You!

- TB is the greatest infection hazard nurses face
- Most infections happen from patients, visitors, and staff whom no one suspects of having TB
- Make sure all HIV patients, and all persons with a cough greater than 3 weeks, are evaluated for TB as soon as possible

Infection Control

Slide 4

- In Tamil Nadu, 1% of the population gets infected with tuberculosis every year. So nurses can potentially get infected both in the community and at work.
- Nurses working with HIV patients and TB patients are much more likely to get exposed to TB than HIV (greater risk of getting TB than HIV).



Have Chronic Coughs Evaluated

- A person with a cough greater than 3 weeks should be evaluated
- Supervisors should send staff members with a cough greater than 3 weeks for evaluation
- Act early!



Infection Control

Slide 5

- Do not hesitate to have yourself, another staff member, a visitor, a volunteer, family member, or patient evaluated for a chronic cough.



Pay Attention to Coughs



Infection Control

Slide 6

- Nurses should pay attention to staff, family members, and visitors who are coughing to make sure that TB is ruled out before they expose other people.



Refer Cases to a Physician

Doctor, we are sending you a person to be evaluated for TB. Please let us know when she can come back on the ward.



Infection Control

Slide 7

- Here staff let the physician know that they are referring a case so the physician can verify that the person arrives and when the person is clear to return to the wards.



Discussion: Tuberculosis & Nurses

- What do you think are the nursing tasks that put nurses most at risk for contracting TB?

Infection Control

Slide 8

- How is TB transmitted? During what tasks are you most likely to get exposed?
- The answers are on the following slides and include cough producing procedures such as:
 - o Bronchoscopy
 - o Taking a sputum sample
 - o Suctioning
 - o Nebulizer treatments
- Other high risk procedures:
 - o Surgery
 - o Placing intercostal drains
 - o Handling mycobacterium cultures
 - o Cleaning suction cups
- Also caring for patients in rooms that have poor ventilation



Cough Producing Procedures Put Nurses at Risk (1)

Bronchoscopy



Infection Control

Slide 9

- Bronchoscopy is a high risk procedure because infectious patients may be coughing extensively during the procedure, and bacteria go into the air.
 - Bronchoscopy should only be done in an area with special ventilation.
 - It should not be done to rule out TB or on patients known to be infectious due to the risk to both patient and staff.
- Bronchoscopy is also a risk for patients since the device can not be sterilised.
- To be safe for patients, the bronchoscope must be:
 - Completely taken apart
 - All channels flushed with special reagents
 - Then undergo high level disinfection, rinsing with water and drying by alcohol.
- Any deviation from this process is unsafe to the patient and can transmit hepatitis B, TB and HIV.



Cough Producing Procedures Put Nurses at Risk (2)



Getting a sputum specimen

Infection Control

Slide 10



Cough Producing Procedures Put Staff at Risk (3)

Suctioning



Infection Control

Slide 11



Cough Producing Procedures Put Staff at Risk (4)

Nebulizer treatments



Infection Control

Slide 12



Other High Risk Procedures

- Surgery
- Placing intercostal drains
- Handling mycobacterium cultures
- Cleaning suction cups



TB Masks Should Be Used During High Risk Procedures

- Masks that fit tightly over the nose and cheeks should be worn so air does not come around the mask
- To filter more bacteria, the mask should be thick and tested to show it can filter TB
- Masks can be re-used by the same staff until contaminated or clogged, but must be discarded when it becomes hard to breath through them

Infection Control

Slide 14

- A N95 mask means, for example, that it has a filter efficiency of 95%.
- There are a range of masks available and each offer different levels of protection for a range of prices.
 - o The more folds and the tighter fit of the mask, the more protection it offers. However, masks are not a substitute for early detection and treatment.



Do Other Masks Help?

- A paper or cloth mask can get wet in as little as ten minutes, allowing bacteria to pass
- If the mask is not tight over the nose and mouth, unfiltered air will be sucked in around the nose and cheeks
- Good ventilation, early identification, treatment, and isolation of pulmonary TB cases are more important than masks



Infection Control

Slide 15

- Masks offer some protection but less protection than:
 - o Good ventilation
 - o Early detection and treatment, and
 - o Separation of patients
- A mask does help protect patients from the germs that health care staff have and helps keep nurses from touching their nose and mouth with fingers, which can transmit disease.



Other Factors That Put Staff at Risk: No Cross Breeze

- Patient care areas without two open windows

DANGER:

- Bronchoscopy suite without windows to outside air or windows



Infection Control

Slide 16

- What other patient care areas can you think of that do not have a window on each side of the room?



Protect Yourself with Good Ventilation (1)

- Open windows
- See patient in a room with a window on each side



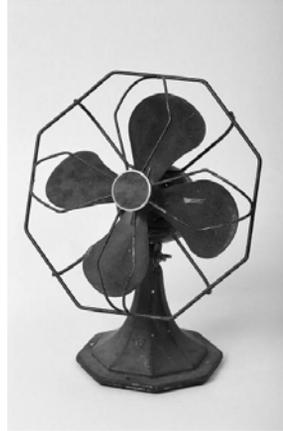
Infection Control

Slide 17



Protect Yourself with Good Ventilation (2)

- Position a fan behind you so air blows from you to the patient to outside



Infection Control

Slide 18



How Can You Reduce the Risk of TB for These Staff?

- Nurse placing PPDs in center office
- Staff entering medical records
- Clerical staff entering records behind in office near window



Infection Control

Slide 19

- We place PPDs to see if people have TB. Thus, these are undiagnosed and potentially infectious patients.
 - Staff placing PPDs should wear a mask.
- Secondly, we should see potentially infectious patients in areas with open windows that vent to the outside.
 - This is a hallway and the interior wall blocks air flow to the outside.
- Thirdly, the medical records staff member is in an area with patients. He is just entering data from papers so he does not need to be present in a room with patients.
 - In this example, the clerical staff also would be safer away from direct patient contact.
- If you meet with patients in the middle of a building, it is very difficult not to have patients waiting in the interior corridors where ventilation is not good because it often doesn't vent to the outside.
 - It is always better to have facilities designed so they can wait outside.
- The hospital infection control committee (HICC) is working on this issue of patient flow in the OPDs.



Instruct Coughing Patients to Turn Their Heads and Cover Their Mouths

- Cover the mouth with a cloth, a sleeve, or a sari to stop germs going into the air



Infection Control

Slide 20



Protecting Yourself and Others from TB

- Separate infectious TB patients (positive smear or smears pending) from other patients
- Staff who do not work directly with patients should not enter areas with infectious TB patients



Which Is the Most Dangerous Mix of Patients and Why?

- 1) HIV - and HIV +
- 2) Smear + TB and HIV +
- 3) Multi-Drug Resistant Tuberculosis (MDRTB) smear + and HIV+
- 4) MDRTB smear + and HIV -

Infection Control

Slide 22

- 1) HIV + and HIV negative patients can share a ward, they will not spread HIV infection unless they have sex with each other.
 - o Yes, there may be issues with patient confidentiality.
- 2) HIV positive patients must be screened for TB for their own health, and then screened for smear positive TB for their risk to others.
 - o While some HIV patients who are smear negative can be infectious; in general they are less infectious than smear positive patients.
 - o Smear + TB patients are infectious. They are very dangerous to HIV+ patients and should be separated from HIV+ patients who do not have infectious TB.
- 3) The greatest risk, however is MDRTB since this may be untreatable.
 - o HIV+ patients who get infected with TB may have a 10 X risk of developing TB disease. HIV causes more latent TB to progress to disease than any other risk factor.
- 4) MDRTB patients are also dangerous to HIV – patients, and they should not be allowed to mix with them or with non-essential staff.



Don't Mix Uninfected TB and Infectious TB Patients

- When do we consider people non-infectious?
- What precautions should we take with patients who are on ARVs?

Infection Control

Slide 23

- When do we consider people non-infectious?
 - (Two weeks on treatment and signs of clinical improvement? 3 negative smears?)
 - (Note to lecturer - use WHO or Indian national TB programme criteria).
 - While 3 negative smears does not guarantee that a patient is non-infectious, it the best predictor.
- Should you take precautions with patients who are put onto HIV medications? (ARV)?
 - Yes because some HIV + patients who are also TB infected may be too immunocompromised to have a reaction to the PPD (Mantoux test).
 - After starting on ARV medications, their immune system improves and then they could have a positive Mantoux test .
 - They could develop new or exacerbated symptoms of TB. They may develop a new cavity in the lungs.
 - Patients just started on ARV meds should be watched closely for signs of TB.



MDRTB Patients Should Not Mix with Other Patients

- Multiple drug resistant TB (MDRTB) is not treatable by ordinary drugs.
- 50% or more who develop MDRTB disease will die.
- These patients must not be in the same building as uninfected persons. Patients in a hospital can infect more people than at home

Infection Control

Slide 24

- Discussion questions:
 - What is the procedure for MDR-TB patients at GHTM?
 - How do you identify these patients?
 - What happens to them once they are identified?
 - How many of these patients do you see at GHTM?



Summary: To Protect Yourself and Others from TB

- Ensure a cross breeze, open windows, and the direction of air flow from the health care worker to the patient to outside
- Separate non-infected patients from patients who are, or might be, infectious
- Have patients turn their head and cover their mouth when they cough
- Keep non-essential staff out of areas with infectious patients or cough-inducing procedures



Part Two: Protecting Yourself from Bloodborne Pathogens (1)



Infection Control

Slide 26

- We mentioned that staff who care for TB and HIV patients are at risk for TB infection.
- Because staff work with sharps and blood or body fluids, they are also at some, but less risk for bloodborne infections such as HIV, Hep B, and Hep C.
- In your patients what are the most common bloodborne pathogens?
- (Note to instructor: In India and elsewhere, common blood infections in hospitalised patients include typhoid, malaria, etc.)



Protecting Yourself from Bloodborne Pathogens (2)

- Complete three doses of Hep B vaccine
- Eliminate unnecessary injections
- Wear gloves
- Don't recap needles
- Dispose of sharps immediately after use to minimise handling that increases risk of needlesticks
- Substitute a safer substance or tool whenever possible
- Report needlesticks

Infection Control

Slide 27



Protecting Yourself from Bloodborne Pathogens (3)

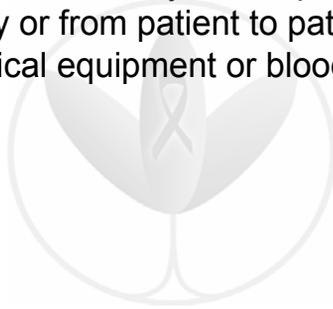
- Which pathogen is most likely to be transmitted from a needle used on an infectious patient?
 - HIV
 - HEP B
 - HEP C





Hepatitis B

- Hepatitis B is most likely to be spread from a sharps injury or from patient to patient through shared medical equipment or blood



Infection Control

Slide 29

- Hepatitis B can persist in the environment and infect patients when medications are prepared in dirty areas.
- This is one reason we want to work on surfaces that have been cleaned with disinfectant at the beginning of the shift.



Get a Hepatitis B Vaccination and Keep Your Vaccine Record

- Three doses of Hepatitis B protect most people for a lifetime
- The next dose at this facility will be given on _____
- Will you be there with your staff?

Infection Control

Slide 33

- Inform nurses when next dose will be given.



Prevention Is Critical

- In some hospitals in India, staff report 1-2 sharps injuries per person per year
- Do you know how, when, with what device, and to whom most sharps injuries occur?



Sharps Injury Small Group Exercise

- Divide into groups of 3
- Ask for a volunteer from the group who has experienced a needlestick or injury from an infected sharps
- The other group members will interview this person, using the questions provided on the handout
- Come back together as a large group to discuss

Infection Control

Slide 35

Step 2: Sharps Injury Small Group Activity; Slides 3.35-3.36 (15 minutes)

- Ask participants to refer to the Sharps Injury Small Group Activity worksheet located in Participant's Handbook (Worksheet 3.2.)
- After dividing into 3 person teams, have one person interview the other about the last time they had a needle stick.
- Then the interviewee answers questions about the result. With three people it is not so clear to whom the incident occurred and allows more privacy.
- When time permits, it is good to have staff interview others in the hospital so that a range of professions, sharps, procedures and locations are mentioned as being involved in needlesticks.
- Explain the sharps injury form and give an example of a needlestick and how to fill out the form.
- After giving 10 minutes for the groups to complete the forms, ask:
 - What devices were involved?
 - What was the person doing when they were stuck?
- Use the questions on Worksheet 3.1 to hold a large group discussion.



Discussion Questions

1. In what situations do needlesticks and injuries with infected sharps occur?
2. How can we prevent them?
3. Why don't people report needlesticks and sharps injuries?



Eliminate Needle Use When Possible

- Do not use an injection or IV medicine when an oral medicine will do!
- Do not place a venting needle into an IV; this increases the risk of contamination and needlesticks



Infection Control

Slide 37

Step 3: Sharps and PEP; Slides 3.37-3.55 (15 minutes)

- Continue with the lecture on sharps and PEP using the slides in the PowerPoint presentation.



Types of Sharps

- Needles
- Syringes
- Glass capillary tubes
- Glass ampoules
- Vacutainer needles
- Suture needles, IV introducers, and IV flushes

Infection Control

Slide 38

- What do we mean by “sharps”?
 - o Any sharp object used to diagnose or treat patients.
- What are examples of sharps in your workplace?
 - o Sutures
 - o Needles
 - o Glass ampoules
 - o Capillary tubes
 - o Blood-drawing tubes



Substitute Metal or Plastic for Glass When Possible

- Staff are discussing using metal tubes for pulmonary drainage rather than glass to help prevent accidents





When to Wear Gloves (1)

- When drawing blood or inserting IVs
- When doing procedures that contact blood or internal organs or open wounds
- When helping a bleeding person
- When examining patients with blood or body fluids present
- When transporting a patient whenever infectious fluids are present



When to Wear Gloves (2)

- When cleaning blood or body fluid spills
- When touching soiled items or contaminated surfaces
- When carrying infectious materials
- When changing dressings and cleaning wounds
- Whenever you may touch blood and body fluids



Sharps Injuries Are Likely to Occur

- While recapping needles
- During blood draws
- During IV insertion & removal
- When handling needles (taking them apart, picking up a dirty syringe, dumping containers, etc)
- When disposing of sharps
- During waste collection and processing

Infection Control

Slide 42



Safe Handling of Sharps

- Wear gloves when drawing blood or handling sharps—double glove for surgery
- Don't recap!
- Don't bend or break needles
- Never place used sharps on tables, beds, furniture
- Put used sharps immediately into a sharps container

Infection Control

Slide 43



Dispose of Sharps: The Ideal

- Immediately after use, put sharps in a leak proof and puncture proof container
- The container should be within easy reach
- Place the container close to you, not close to the patient. You should not reach over the patient to put sharps in to the container





Sharps Disposal at GHTM

- Needle destroyer
- Disposal of sharps in blue bins
- What are some potential problems with the current sharps disposal system?



Infection Control

Slide 45

- Involves more handling of the sharps which leads to more potential accidents.
- Unable to dispose of sharps at point of use, because the needle destroyer is at one end of the room.
- The syringe can be re-used because it is not always destroyed.
- Plastic bags can be punctured by sharps.
- Workers may empty the bags to take them home rather than putting them directly into the sharps container.
- Emptying blue bins puts sanitary workers at risk.



Sharps Disposal

- Disposal containers should be placed at all points of use
- Disposal bin should be rigid and should be leak and puncture proof
- Separate sharps from other waste so laundry workers or waste disposal staff do not get needlesticks
- Empty sharps containers when they are $\frac{3}{4}$ full



Danger!

- Open containers of used needles put staff at risk each time they put a hand in to pick up one
- Keep your ward free of used sharps



Infection Control

Slide 47



Remember This Procedure

- If a needle pricks you or blood & body fluids enter your eye or mouth:
 - Wash wounds with soap and water
 - Flush eyes and mouth with water
 - Check the patient record to see if the patient is HIV+, HIV- , or untested
 - Call the medical duty officer immediately

Infection Control

Slide 48

- While we do not have a vaccine for HIV, there is post exposure prophylaxis for persons who have had a significant exposure to blood or body fluids. This is what you should do if a needle pricks you or blood and body fluids enter your eye or mouth.
- Why should you report a needlestick?
 - So you can be tested for blood-borne pathogens.
 - So you can receive help.
 - So you can be reassured.
- It is important to keep track of number of needlesticks as practices change to ensure that they are working.



Treatment for HIV After Needlesticks (Post Exposure Prophylaxis) (1)

- Is most effective if started 1- 2 hours after exposure
- Can be given up to 72 hours after exposure
- Should NEVER be given without medical follow-up and filing an incident report because of the serious side effects, and the need to try to prevent similar injuries
- Must be taken for 28 days



Treatment for HIV After Needlesticks (Post Exposure Prophylaxis) (2)

- Pregnant staff can take PEP drugs. Tell the duty officer if you might be pregnant so he can give appropriate medications
- Staff member on PEP should avoid sex or have safe sex (use condoms). Safer sex practices should be continued through the window period (6 months)
- CDC recommendations: HIV Ab testing for 6 months post-exposure (e.g. at least 6 weeks, 3 months, 6 months)

Infection Control

Slide 50



The Medical Officer NACO PEP Policy

- Decides if PEP is needed
- Tests the source patient and staff for HIV, if test results are not available
- Tests staff members who take PEP at six and 12 weeks for HIV, and monitors for side effects
- Gives reporting form to to the Infection Control Committee and TNSACS
- Keeps all information confidential

Infection Control

Slide 51

- Refer to your institution's sharps injury reporting form.



Help the Infection Control Committee

- What is the current PEP policy and practice at GHTM?
- Do you think it is possible to practice the NACO PEP policy at GHTM? What are some possible difficulties and how can they be addressed?

Infection Control

Slide 52

- Hand out NACO PEP Guidelines and go over them. Ask the nurses how realistic they are for GHTM.
- Given the staffing, the fact that the lab is closed at night, and the duty officer is often any place in the hospital, and night nurses may have 90 patients, how do you suggest that a person on the night or weekends get PEP?
- Where should a copy of the NACO PEP guidelines be kept?
- Where should an emergency stock of the PEP drugs be stored?
- Where should the rapid lab tests be stored?
 - What other supplies would you need to do them?
- Where should the reporting form be stored?
 - On the ward?
 - In the duty office?
- Should you go there or should the duty officer come to you?
- What about testing the source patient?
 - Who should do it?
- What ideas do you have to make HIV PEP work at GHTM?



Summary: To Protect Yourself from Bloodborne Pathogens

- Complete three doses of Hep B vaccine
- Eliminate unnecessary injections
- Wear gloves
- Don't recap needles
- Dispose of sharps immediately after use to minimise handling that increase risk of needlesticks
- Substitute a safer substance or tool whenever possible
- Report needlesticks immediately

Infection Control

Slide 53



Handwashing Is Also Important

- Wash hands
 - At the beginning of your shift
 - Before and after invasive procedures
 - Before preparing medications
 - After contact with blood or body fluids
 - When they are visibly dirty
 - After removing gloves
 - Before feeding/serving a patient (or yourself!)
 - After using the toilet



Infection Control

Slide 54



Alcohol Hand Rubs Are Effective

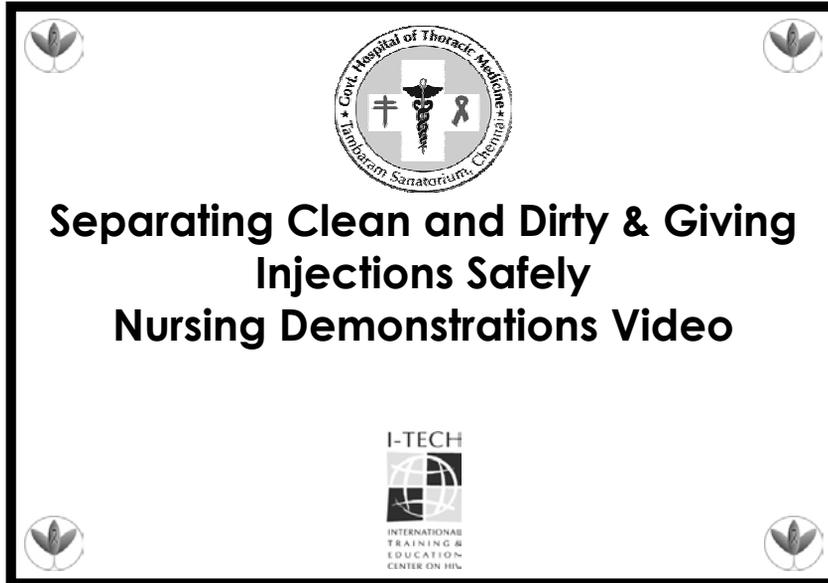
- Where affordable, nurses can carry alcohol hand rubs in their pocket and use between patients



Infection Control

Slide 55

- What do you think of the alcohol hand wash?
 - o Did you know you can use it in areas that have no water?
 - o Did you know that it has been proven to reduce nosocomial infections?
 - o Do you know that it doesn't work on heavily soiled hands, so those will need to be washed first?
 - o Would you carry it around in your pocket?
 - Why or why not?



Separating Clean and Dirty & Giving Injections Safely Nursing Demonstration Video; Slide 3.56 (25 minutes)

- Using the DVD entitled “India Nursing Demos,” show “Separating Clean and Dirty” (10:38), followed by “Clean and Dirty Quiz” (3:40).
- Refer to the facilitator’s guide for the video and the accompanying worksheets (Worksheets 3.2-3.4).



Key Points (1)

- Preventing the spread of TB includes:
 - Early detection and treatment
 - Strict isolation of smear positive patients
 - Good ventilation
 - Extra precautions during cough inducing procedures
 - Attention to patient placement
 - Teaching cough hygiene

Infection Control

Slide 57

Presentation of Key Points; Slides 3.57-3.61 (5 minutes)

- Summarise presentation, present key points in this unit, and answer any final questions.



Key Points (2)

- You can prevent getting HIV, Hepatitis B or C at work by:
 - Disposing of needles without recapping in sharps containers
 - Wearing gloves
 - Washing hands
- Tell you supervisor if you get a needlestick to see if HIV preventive medicine (PEP) is needed



Key Points (3)

- HIV PEP should be started within 1-2 hours and should be used for four weeks if needed
- You can help others by being a good role model
- Supervisors should tactfully correct staff if they are doing unsafe practices

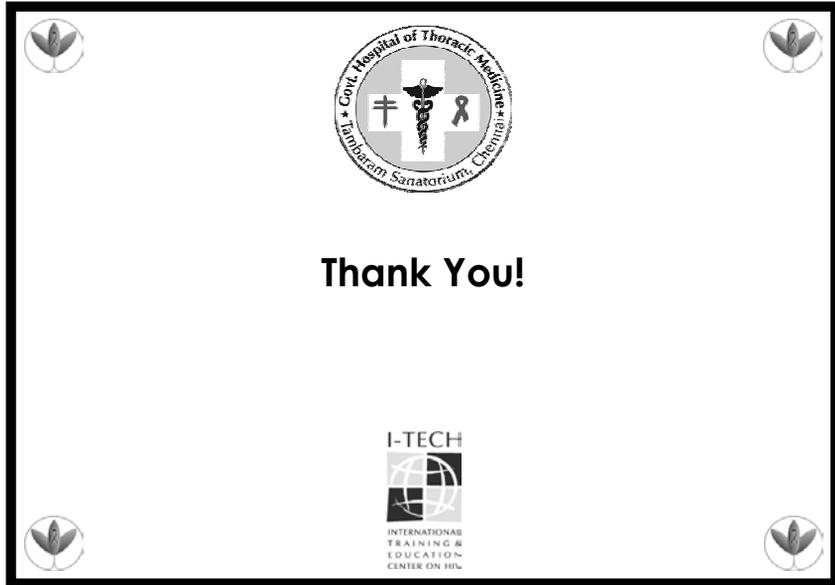


Hospital Infection Control Committee



Infection Control

Slide 60



- Review WHO staging with WHO case studies (Worksheet 3.3) as a class if time permits..

 **Notes**



HIV Basics Course for Nurses

Participant's Handbook

Unit 4
Opportunistic Infections

Unit 4: Opportunistic Infections

Aim: The aim of this unit is to provide information about treating infections related to HIV and AIDS.

Learning Objectives: By the end of this unit, participants will be able to:

- Define the term opportunistic infections (OI)
- Describe why people living with HIV/AIDS are susceptible to OIs
- Describe common OIs and their causes, diagnosis, treatment and prevention
- Use the WHO Staging System for HIV Infection and Disease.
- Describe the correlation between CD4 cell counts and OIs

Key Points:

1. An OI is caused by organisms that would not produce significant disease in a person with a well-functioning immune system.
2. People with HIV/AIDS are susceptible to OIs because their immune systems have been suppressed and are not capable of fighting disease.
3. There are several fungal, parasitic, viral, bacterial and malignant opportunistic infections most common to HIV-infected patients.
4. In India, TB accounts for nearly 50% of OIs and contributes significantly to HIV mortality.
5. Monitoring CD4+ white blood cells can help health care providers know what OIs to watch for and what treatment options to consider.
6. Primary prophylaxis is used to prevent OIs in individuals with HIV/AIDS.



Handout 1.3

WHO Staging System for HIV Infection and Disease: Clinical Classification

<p style="text-align: center;">Clinical Stage 1</p> <ul style="list-style-type: none">• Asymptomatic• Persistent generalised lymphadenopathy• Performance scale 1: asymptomatic, normal activity
<p style="text-align: center;">Clinical Stage 2</p> <ul style="list-style-type: none">• Weight loss, <10% body weight• Minor mucocutaneous manifestation (seborrhoeic dermatitis, prurigo, fungal nail infections, recurrent oral ulcerations, and angular cheilitis).• Herpes zoster, within last 5 years• Recurrent upper-respiratory infections (i.e., bacterial sinusitis)• And / or performance scale 2: symptomatic, normal activity
<p style="text-align: center;">Clinical Stage 3</p> <ul style="list-style-type: none">• Weight loss, >10% body weight• Unexplained chronic diarrhoea, >1 month• Unexplained prolonged fever (intermittent or constant), >1 month• Oral candidiasis (thrush)• Oral hairy leukoplakia• Pulmonary tuberculosis, within the past year• Severe bacterial infections (i.e., pneumonia, pyomyositis)• And / or performance scale 3: bedridden <50% of the day during the last month
<p style="text-align: center;">Clinical Stage 4</p> <ul style="list-style-type: none">• HIV wasting syndrome (weight loss of >10%, plus either unexplained chronic diarrhoea > 1 month, or chronic weakness and unexplained prolonged fever > 1 month)• <i>Pneumocystis carinii</i> pneumonia• Toxoplasmosis of the brain• Cryptosporidiosis with diarrhoea, >1 month• Cryptococcosis, extrapulmonary• Cytomegalovirus (CMV) disease of an organ other than liver, spleen, or lymph nodes• Herpes simplex virus (HSV) infection, mucocutaneous >1 month, or visceral• Progressive multifocal leukoencephalopathy (PML)• Any disseminated endemic mycosis (i.e.) histoplasmosis, coccidioidmycosis• Candidiasis of the oesophagus, trachea, bronchi or lungs• Atypical mycobacteriosis, disseminated• Non-typhoid Salmonella septicaemia• Extrapulmonary tuberculosis• Lymphoma• Kaposi sarcoma (KS)• HIV encephalopathy (Clinical findings of disabling cognitive and / or motor dysfunction interfering with activities of daily living, progression over weeks or months, in the absence of a concurrent illness or condition other than HIV infection that could explain findings)• And / or performance scale 4: bedridden, >50% of the day during the last month.

Nursing Care of Adults with HIV-related Illness

Introduction

Making a diagnosis of AIDS when HIV testing is unavailable

HIV and TB: the dual epidemic

Opportunistic infections and common treatments

Antiretroviral therapy (ARV)

Basic nursing care for PLWHA with opportunistic Infections

Questions for reflection and discussion

Introduction

Nursing care of the person with HIV-related illness is the same as the nursing care for any person who is ill. Consequently, all trained nurses/midwives are competent to care for patients with HIV-related illness as the same principles of nursing practice apply. In addition, many of the health care problems people will have as a result of HIV infection will be familiar to nurses because of their knowledge and experience of caring for people with other chronic, progressive diseases. The use of universal precautions for infection control is critical in the care and prevention of HIV (Fact Sheet 11).

Almost all (if not all) HIV-infected people will ultimately develop HIV-related disease and AIDS. This progression depends on the type and strain of the virus and certain host characteristics. HIV infects both the central and the peripheral nervous system early in the course of infection, often causing a variety of neurological and psychiatric problems. As HIV infection progresses and immunity declines, people become more prone to opportunistic infection and other conditions. Opportunistic infections are those that can invade the body when the immune system is not working adequately.

Opportunistic infections include:

- Tuberculosis
- Other sexually transmitted diseases (STDs)
- Septicaemia
- Pneumonia (usually pneumocystis carinii)
- Recurrent fungal infections of the skin, mouth and throat
- Other skin diseases
- Unexplained fever
- Meningitis

Other conditions may include:

- Cancers such as Kaposi sarcoma
- Chronic diarrhoea with weight loss (often known as "slim disease")

Many adults will have been tested for HIV and their status is known when an HIV-related illness presents. However, in many cases, testing is not done. Reasons for not testing include: fear, stigma, other psychosocial factors, lack of resources to provide testing, or inadequate voluntary HIV testing and counselling services.

Making a diagnosis of AIDS in adults when HIV testing is not available

A case definition for AIDS is made in the presence of at least 2 major signs and at least 1 minor sign.

Major signs:

- weight loss greater than 10% of body weight over a short period of time
- chronic diarrhoea for more than 1 month
- prolonged fever for more than 1 month

Minor signs:

- persistent cough for more than 1 month (for people with TB, this cough would not be considered a minor sign of AIDS)
- generalized itching skin rash
- history of herpes zoster in last 2 years
- fungal infections of mouth and/or throat
- chronic progressive or generalized herpes simplex infection
- generalized enlarged lymph nodes

Please note: The presence of either generalized Kaposi's sarcoma or cryptococcal meningitis is sufficient for a case definition of AIDS.

HIV and TB: The Dual Epidemic

Although both tuberculosis (TB) and HIV are considered potentially lethal diseases, the interaction between TB and HIV is life threatening if TB is undiagnosed or left untreated.

Unlike HIV, the TB germ can spread through the air to HIV negative people and is the only major AIDS related opportunistic infection to pose this kind of risk. Because HIV affects the immune system, it is estimated that TB carriers who are infected with HIV are 30-50 times more likely to develop active TB than those without HIV. Worldwide, over the next four years, the spread of HIV will result in more than 3 million new TB cases. Antituberculosis drugs are just as effective in HIV-infected individuals as in those not infected with HIV, and are considered cost effective, even in the poorest countries. DOTS is a programme of directly observed treatment by a short course of prescribed medicines and provides cost effective treatment for TB. This programme, available in most countries throughout the world, claims to cure 95% of TB cases. In addition to treating TB, health workers should consider offering preventive therapy with isoniazid (INH) to HIV-infected patients at high risk of developing TB such as those living in communities with a high incidence of TB. Protocols for TB prevention therapy are now available in many countries. Check the Ministry of Health or those of the District Health Management Team for guidelines in your country.

Opportunistic infections and common treatments

In most circumstances, a doctor will make the diagnosis of an opportunistic illness and prescribe treatment. However, it is useful for nurses and midwives to be familiar with the most common medical treatments for HIV-related infections. Drugs prescribed for HIV-related illnesses must be considered in relation to those used for other health problems, especially problems likely to occur because of HIV, such as TB, other respiratory ailments and chronic diarrhoea. For example, an HIV-positive patient who is receiving TB treatment should not be prescribed Thiacetazone (a TB drug common in some countries), because this can cause severe reaction in people with HIV. Antiretroviral therapy (if available) may have reactions with other drugs. It is

important to check that any drugs prescribed for the patient will not react with other drugs the person is taking.

The list of common medical treatments presented here is very superficial and reference to other resources on pharmaceutical treatments including the handbook "**Standard treatments and essential drugs for HIV-related conditions**" (WHO DAP/97.9) would be helpful (see reference list). Other useful resources might include the National AIDS Control Programme and Ministry of Health for national guidelines for treatment of opportunistic infections developed in your country.

Tuberculosis: Isoniazid (for prevention), and rifampicin, pyrazinamide, streptomycin, ethambutol (for treatment, see DOTS programme, Fact Sheet 13)

Other sexually transmitted diseases (STDs): antibiotics, antifungal agents, gentian violet, antiviral treatments (topical, oral). Treatment will depend on the STD diagnosis

Septicaemia: antibiotics

Pneumonia (usually pneumocystis carinii): This requires complex treatment. The first line of treatment is usually sulfamethoxazole and trimethoprim (which can also be used as prophylaxis). Later treatments might include petamidine, prednisolone, dapsone, eflornithine and methylprednisolone. Simple pneumonia is treated with antibiotics.

Recurrent fungal infections of the skin, mouth and throat: gentian violet application, polyvidone iodine and chlorhexidine mouth wash, and antifungal tablets and lozenges.

Other skin diseases: calamine, topical steroids, antibiotics orally or topically

Unexplained fever: aspirin, paracetamol

Chronic diarrhoea with weight loss (often known as "slim disease"): lopamide, diphenoxylate

Meningitis: antibiotics

Antiretroviral therapy (ARV)

ARV is very expensive and unavailable to many PLHA worldwide. However, where ARV is accessible and affordable certain guidelines must be followed. A joint publication by WHO and UNAIDS "Guidance Modules on antiretroviral treatments" (WHO/ASD/98.1 & UNAIDS/98.7) provides comprehensive guidelines.

The minimum requirements for introducing ARVs include:

1. Availability of reliable, inexpensive tests to diagnose HIV infection.
2. Access to voluntary and confidential counselling and testing.
3. Reliable, long-term and regular supply of quality drugs.
4. Sufficient resources to pay for drugs on a long-term basis (a life-long commitment).
5. Support from a social network to help PLHA stay with the treatment regimen.
6. Appropriate training for health care workers in the correct use of ARVs.
7. Laboratory facilities to monitor adverse reactions.

8. Capacity to diagnose and treat opportunistic infections with the availability of affordable drugs.
9. Access to functioning and affordable health care services.
10. Joint decision-making between health care worker and patient in all aspects of ARV treatment (including the decision to begin ARV).

Basic nursing care for PLWHA with an opportunistic infection

Infection control:

Maintain good hygiene. Always wash hands before and after caring for the PLHA. Make sure linen and other supplies are well washed with soap and water. Burn rubbish or dispose of it in leak proof containers. Avoid contact with blood and other body fluids and wash hands immediately after handling soiled articles.

Skin problems:

Wash open sores with soap and water, and keep the area dry. Use the medical treatment, and prescribed ointment or salve. Local remedies, oils and calamine lotion might also be helpful.

Sore mouth and throat:

Rinse mouth with warm water mixed with a pinch of salt at least three times a day. Eat soft foods that are not too spicy.

Fevers and pain:

Rinse body in cool water with a clean cloth or wipe skin with wet cloths. Encourage the person to drink more fluids than usual e.g. water, tea, broth or juice. Remove thick clothing or too many blankets. Use antipyretics and analgesics such as aspirin, paracetamol etc.

Cough:

Lift head and upper body on pillows to assist with breathing, or assist the person to sit up. Place the patient where he/she can get fresh air. Vaporisers, humidifiers, and oxygen might be helpful.

Diarrhoea:

Treat immediately to avoid dehydration, either using oral rehydration or intravenous therapy if necessary. Ensure that the person drinks more than usual, and continues to take easily digestible nourishment. Cleanse the anus and buttocks after each bowel movement with warm soap and water and keep the skin dry and clean. Antibiotics used to treat other infections can worsen the diarrhoea. Always wash hands and, where possible, wear gloves when handling faecal or soiled materials.

Nutrition:

Where available, encourage foods that are high in fat and protein as they will help reduce weight loss.

Local Remedies:

There are often local remedies that alleviate fevers, pains, coughs, cleanse sores and abscesses. These local remedies can be very helpful in alleviating many of the symptoms associated with opportunistic infections. In many countries, traditional healers and women's associations or home care programs are collecting information about remedies which alleviated symptoms and discomfort.

Questions for reflection and discussion

1. What are some common symptoms which might lead you to consider the person could have HIV (where HIV testing is unavailable, or unacceptable to the person)?
2. What are some of the important reasons to treat active TB in an HIV-positive patient?
3. patient?
4. What minimal requirements should be in place before commencing ARV?
5. What are some of the basic nursing care treatments for common opportunistic infections?
6. Which sources would you consult for basic medical and drug treatments for opportunistic infections?

References

Gilks, C. et al. (1998). Sexual health and health care: Care and support for people with HIV/AIDS in resource-poor settings. Department of International Development (DFID), London.

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World Health Organization (1997). Standard treatments and essential drugs for HIV-related conditions. Access to HIV-related drugs (DAP/97.9)

World Health Organization (1993). HIV Prevention and Care: Teaching Modules for Nurses and Midwives. WHO/GPA/CNP/TMD/93.3

Further reading: Primary AIDS Care: Third Edition, C. Evian, January 2000. Available from Jacana, South Africa. Tel (+2711) 648-1157; Fax (+2711) 648-5516. Email: marketing@jacana.co.za



Worksheet 4.1

Role Play: Educating Patients about Cryptosporidiosis

Role Play Instructions—The Patient:

You will play the role of a patient at Tambaram Sanatorium with HIV. You will take on the characteristics in the scenario listed below. As much as possible, try to act like the patient described in the scenario. Your partner will play the part of a health care provider. He or she will need to ask you questions to find out about your lifestyle, and will then need to advise you on how to avoid contracting *Cryptosporidium*.

HIV Patient Scenario:

You are a woman in her 30s infected with HIV. You have three children, ages 4 months, 3 years, and 5 years. You are responsible for the care of your children, including feeding, cleaning, and changing diapers. You grow some of your own food in your garden.

Your home is near a river which is used by many people in the community for bathing and supplying water for animals to drink. About once a week, you and your family go to the river to bathe. This is something the children really love to do, especially when the weather is hot. You would strongly resist the idea of giving up bathing in the river.

You have been to Tambaram Hospital twice before with diarrhoea. You tell your doctor, "While I am here, I am ok. The diarrhoea goes away. When I go home, I get diarrhoea again."

Worksheet 4.1 (continued)

Role Play: Educating Patients about Cryptosporidiosis (continued)

Role Play Instructions—The Nurse:

You will role play the part of a nurse to practice counselling and educating patients. Your partner will take on the role of a patient infected with HIV. She has been given specific characteristics as a patient. As a health care provider, you will need to:

- Explain what cryptosporidiosis is, and how it can be contracted.
- **Find out about the patient's lifestyle and what may put her at risk of contracting cryptosporidiosis.**
- Give specific advice to the patient to reduce their risk of contracting the disease.
- Answer any questions the patient may have.

Here are some other tips you might give the patient to prevent diarrhoea:

- Use only boiled water for drinking.
- Do not eat hotel foods or eat outside the home. If you must do so, follow the advice below.
- Avoid spicy food.
- Eat only well-cooked food.
- Don't eat curd or chutney.
- Don't eat leftovers from the day before.
- Keep temperate (moderate) habits.



PowerPoint Slides

Refer to companion document for copies of the Unit 4 PowerPoint presentation slides.



Govt. Hospital of Thoracic Medicine
Chennai
T. J. Varadachari Sanatorium

Opportunistic Infections

Unit Four

I-TECH
INTERNATIONAL
TRAINING &
EDUCATION
CENTER ON HIV

Unit 4 should take approximately 1 ¼ hours.

- **Step 1:** Opportunistic Infections; Slides 4.1-4.49 (30 minutes)
- **Step 2:** Educating Patients on Cryptosporidiosis; Slides 4.50-4.51 (15 minutes)
- **Step 3:** Opportunistic Infections; Slides 4.52-4.86 (25 minutes)
- **Step 4:** Presentation of Key Points; Slides 4.87-4.89 (5 minutes)



Learning Objectives

By the end of this session you will be able to:

- Define the term opportunistic infections (OI)
- Describe why people living with HIV/AIDS are susceptible to OIs
- Describe common OIs and their causes, diagnosis, treatment, nursing implications, and prevention
- Describe the correlation between CD4 cell counts and OIs

Opportunistic Infections

Slide 2

Step 1: Opportunistic Infections; Slides 4.1-4.49 (30 minutes)

- Being by reviewing the unit aim.
- The aim of this unit is to provide information about treating infections related to HIV and AIDS.
- Review the unit learning objectives using the PowerPoint presentation.
- Ask the participants if they have any questions about the objectives before continuing.



Opportunistic Infections

- OIs are infections caused by organisms that would not cause a disease in a person with a healthy immune system
- As the CD4 level declines, the risk of contracting OIs increases
- Many people with HIV/AIDS first learn they are HIV infected when they are diagnosed with an OI
- OIs may be bacterial, viral, fungal, or protozoal

Opportunistic Infections

Slide 3

- OIs are leading causes of morbidity and mortality in HIV-infected persons.
- Most of the common OIs are preventable as well as treatable.
- However, in resource-limited settings, it may be difficult to manage OIs.



Most Common OIs in India

- Pneumocystis carinii pneumoni (PCP)
- Candidiasis
- Cryptococcosis
- Cryptosporidiosis
- Microsporidiosis
- Herpes Simplex
- Varicella (Herpes) Zoster
- Molluscum contagiosum
- Tuberculosis
- Pneumonia
- Lymphoma

Opportunistic Infections

Slide 4



Common OIs: Fungal Infections

- Pneumocystis Carinii Pneumonia (PCP) is no longer classified as protozoal, now referred to as pneumocystis jiroveci, although PCP still used, CD4 < 200
- Candidiasis (Thrush) oro-pharyngeal: mouth and throat, CD4 < 300
- Oesophageal candidiasis, CD4 < 100
- Vaginal Candidiasis, CD4 < 300
- Cryptococcal disease, most common systemic fungal infection in HIV disease, CD4 < 50

Opportunistic Infections

Slide 5

- Briefly describe each fungal infection



Pneumocystis Carinii Pneumonia (PCP)

- Patients usually present with:
 - Dry cough
 - Progressive shortness of breath
 - Fever
 - Patient becomes increasingly ill with fever, severe dyspnoea/hypoxia, cyanosis, resp rate > 24, tachycardia, sweating, confusion
- Can lead to death if not treated early

Opportunistic Infections

Slide 6

- PCP is the most common OI worldwide.
- Incidence has decreased in industrialised countries as a result of better prophylaxis and ART
- Symptoms are insidious and slowly progress over the course of a few weeks.
- Risk of developing PCP correlates with CD4 count < 200.



Diagnosis of PCP

- Lung sounds may be normal
- Chest x-ray may be normal or may show patchy infiltrates in both lung fields
- Classic chest x-ray: ground glass opacification in middle zones
- Confirmed when cysts of Pneumocystis are found in induced sputum or in bronchial lavage aspirate

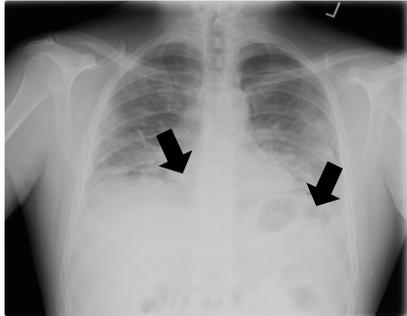
Opportunistic Infections

Slide 7

- In many settings, induced sputum or bronchial lavage tests may not be readily available and diagnosis is made on clinical symptoms and chest x-ray.



X-Ray of PCP



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Opportunistic Infections

Slide 8

- Patchy infiltrates.



X-ray of PCP



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Opportunistic Infections

Slide 9

- Ground glass opacification appearance.



PCP First Line Treatment

- Trimethoprim/sulphametho-xazole (TMP-SMX) 15-20mg of TMP/kg (1 tablet for every 4 kg of weight of the patient) TID po for 21 days
- For patients with respiratory failure or for patients who are vomiting and cannot take PO meds, give IV Cotrimoxazole (CTZ) 15-20 mg/kg 3 to 4 times per day until patient can tolerate orally
- For patients allergic to CTZ, give Dapsone 200 mg QD in AM for 21 days
- For severe PCP give prednisone IV, IM or po

Opportunistic Infections

Slide 10

- After successfully treating the acute episode of PCP, it is necessary to continue secondary prophylaxis with trimethoprim 160 mg/sulphamethoazole 800 mg on a long-term basis (Zim, Specific OI's)



Nursing Implications for PCP

- Monitor for side effects or adverse effects of medications such as rash, photosensitivity, peripheral neuropathy, and liver function abnormalities
- Provide oxygen and respiratory support
- Treat fever
- Psychological support

Opportunistic Infections

Slide 11

- Make sure TB has been ruled out.



Oro-pharyngeal Candidiasis

- Oro-pharyngeal: white or yellow plaques on the oropharyngeal mucosa and on the tongue



HIV Web Study (www.HIVwebstudy.org) Supported by HRSA
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Opportunistic Infections

Slide 12

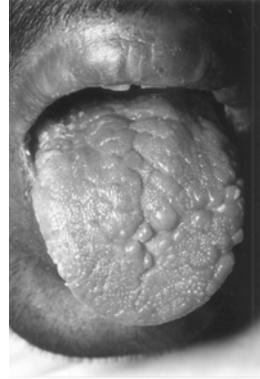
- In 1981, the first reports of AIDS included pts with PCP and mucosal candida. Since those reports, candida infection has been found to affect most HIV infected patients at some point in their illness.
- Candida organisms are everywhere in the environment.
- Candida infection in HIV individuals is mostly mucosal, usually caused by *Candida albicans*, other strains may occur at later stages, or in patients who have been onazole antifungals for a long time.
- Diagnosis of oral candida (otherwise known as thrush) is made on appearance alone, and diagnosis of esophageal thrush is based on presentation and response to empiric treatment.
- What leads to the development of infection is not clear, it may be caused by medication, antibiotics, smoking, poor hygiene, etc. Recurrence is common 30%.
- Fluconazole can reduce risk of recurrent vaginal, oropharyngeal and esophageal infection
- Potential for resistance, high cost, possibility of drug interactions, low mortality associated with these infections.



Oro-pharyngeal Candidiasis



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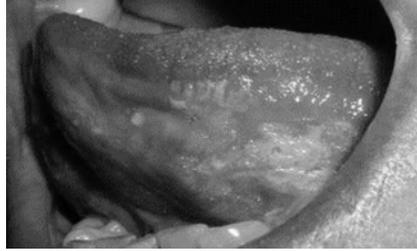
Opportunistic Infections

Slide 13

- Symptoms may include burning pain, altered taste sensation and dysphagia.



Oral Hairy Leukoplakia



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Opportunistic Infections

Slide 14

- Leukoplakia appears as white plaques that cannot be scraped away, unlike thrush



Oral Candidiasis First Line Treatment

- Fluconazole 100 mg QD for 14 days
- Clotrimazole lozenges to suck, 10 mg, 5 times per day po for 14 days
- Gentian Violet 1%, 2 to 3 times per day topical for 14 days
- Nystatin lozenges to suck 200,000 units po for 14 days
- Hamylin mouth paint 2 to 3 times per day topical



Vaginal Candidiasis

- May be chronic in some women with immune suppression
- Symptoms include marked itching, watery to cottage-cheese thick discharge, external dysuria and vaginal erythema
- Treat with fluconazole 100 mg po single dose

Opportunistic Infections

Slide 16

- Diagnosis can be made on characteristic appearance or microscopic exam of discharge using Gram's stain or 10% potassium hydroxide (KOH) which reveals sheets of hyphae, pseudohyphae and yeast forms.
- May treat with topical clotrimazole intravaginally for 3 to 7 days.



Oesophageal Thrush

- Symptoms include difficulty swallowing, pain in chest, feelings of obstruction, and heartburn
 - Patient may be asymptomatic
 - Treat with Fluconazole 200 to 400 mg per day po times 14 to 21 days
- or**
- Ketoconazole 200 to 400 mg BID po times 14 to 21 days



Nursing Implications For Candidiasis

- Oral thrush: Frequent oral hygiene measures
- Vaginal candidiasis: advise women to avoid tight fitting underwear, avoid douching, and avoid foods high in sugar. Encourage women to consume yogurt that contains *Lactobacillus acidophylus* daily
- Oesophageal candidiasis: nutritional assessment and intervention

Opportunistic Infections

Slide 18

- Oral hygiene includes cleaning mouth before and after meals and soft, bland food.



Cryptococcal Disease

- Cryptococcal meningitis is the most frequent systemic fungal infection in HIV-infected persons
- It occasionally appears as pulmonary or disseminated disease
- Most common symptoms include headache, stiff neck, double vision, and indolent fever
- Nausea, vomiting, and altered mental status are present in terminal stages
- If untreated, it is slowly progressive and ultimately fatal – it is better prevented than treated

Opportunistic Infections

Slide 19

- Caused by a yeast: *Cryptococcus neoformans*
- CNS Symptoms can be insidious or acute and can wax or wane.
- Diagnosed by microscopic examination of cerebrospinal fluid to detect the yeast organisms.



Cryptococcal Meningitis First Line Treatment

- Amphotericin B 0.7 mg/Kg QD IV for 14 days
- plus**
- 5-flucytosine 15 to 25 mg/Kg QID po for 14 days
- then**
- Fluconazole 400 mg QD po for 8 weeks
- then**
- Fluconazole 200 mg QD po for life



Nursing Implications for Cryptococcal Meningitis

- Monitor for adverse effects and response to therapy
- Keep patient hydrated to minimise renal toxicity with use of amphotericin B
- Provide education on importance of maintenance therapy and possibility of relapse even with maintenance therapy. Patient should report any symptom of recurrence

Opportunistic Infections

Slide 21

- Before going on to next slide ask if there are any questions on fungal infections.



Common OIs: Viral Infections

- Herpes Simplex I & II (HSV), any CD4, chronic HSV < 100
- Herpes Zoster (VZV), any CD4
- Molluscum Contagiosum: small non-pruritic papule with a central dimple, any CD4
- Cytomegalovirus (CMV), CD4 < 50
- Human Papillomavirus Infection (HPV), any CD4
- Progressive Multifocal Leukoencephalopathy (PML) end-stage complication of HIV, no treatment available, CD4 < 50

Opportunistic Infections

Slide 22

- Briefly describe each viral infection.



Herpes Simplex Virus I & II

- HSV lesions can occur on mouth, penis, vulva, vagina, and anorectal area
- HSV lesions may present as small localised red, painful, burning ulcerations or can spread to cover large areas
- Frequent recurrences can occur in immune suppressed patients
- Dissemination may lead to infection of the lungs, the oesophagus, and the brain, and may also cause meningoencephalitis

Opportunistic Infections

Slide 23

- HSV I is usually oral and initial infection is often during childhood.
- HSV II is usually acquired through sexual transmission.
- HSV II is a significant risk factor for acquisition and transmission of HIV.
- Transmission of HSV is by direct contact, during which virus is inoculated onto mucosal surfaces or breaks in the skin.
- Virions travel from the site of inoculation along sensory nerves to the corresponding nerve root ganglia where infection is permanently established.
- Reactivations/recurrence can occur by a variety of stimuli such as stress or trauma.
- The degree of immunosuppression influences the rate and severity of reactivated disease.



Herpes Simplex Lesions: Mouth



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Opportunistic Infections

Slide 24



Herpes Simplex Lesions: Penile



Courtesy of Public Health Image Library, CDC, Dr. NJ Flumara, and Dr. Gavin Hart

Opportunistic Infections



Seattle STD/HIV Prevention Training Center
Source: Connie Celum, Walter Stamm
Courtesy of STD/HIV Prevention Training Center, Connie Celum and Walter Stamm

Slide 25



Herpes Simplex Lesions: Vaginal



Courtesy of Cincinnati STD/HIV Prevention Training Center

Opportunistic Infections

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Herpes Virus Mild Infection: First Line Treatment

- Acyclovir 400 mg TID po for 7 to 10 days
- For recurrences give acyclovir 800 mg BID po for 7 to 10 days
- For severe infection give acyclovir 15 to 30 mg/Kg QD IV for 7 to 10 days



Nursing Implications for HSV

- Local care of lesions includes keeping lesions clean and dry
- Pain can be severe, give analgesia as needed

Opportunistic Infections

Slide 28

- Teach prevention of HSV transmission through use of condoms.
- Consider stool softeners for patients with anorectal lesions.



Varicella Zoster Virus (VZV) (1)

- It is a virus that causes chickenpox and shingles in children and adults and is spread by aerosolized viral particles
- Presents with painful burning sores on a red patch of skin in a localised neurodermatoma distribution



Varicella Zoster Virus (VZV) (2)

- Contagious period is 24 to 48 hours before rash is observed and lasts until all lesions are crusted over
- In immune suppressed persons, zoster is often multidermatomal and multi-segmental in distribution, persistent and extensive, and associated with severe pain and debility



Varicella Zoster Lesions (1)



HIV Web Study (www.HIVwebstudy.org) Supported by HRSA



HIV Web Study (www.HIVwebstudy.org) Supported by HRSA

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Slide 31

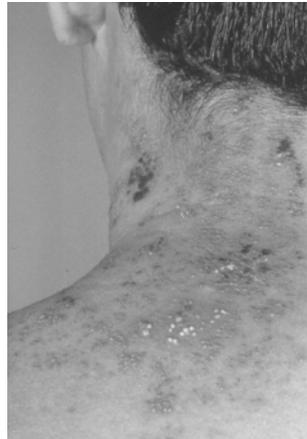
Opportunistic Infections



Varicella Zoster Lesions (2)



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HIV Web Study (www.HIVwebstudy.org) Supported by HRSA

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Opportunistic Infections

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Dermatomal Zoster First Line Treatment

- Acyclovir 800 mg QID po for 7 to 10 days
- For disseminated, visceral, or ophthalmic VZV, treat with acyclovir 30 to 35 mg/KG IV for 7 to 10 days



Nursing Implications for VZV

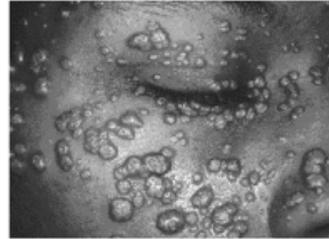
- Teach patients that varicella virus is highly contagious for people who have not had chicken pox until all lesions are crusted over
- Local care of lesions includes keeping lesions clean and dry
- REMEMBER: practice standard infection control precautions with wound contact
- Pain can be severe, give analgesia as needed



Molluscum Contagiosum Lesions



Courtesy of Cincinnati STD/HIV Prevention Training Center



Molluscum Contagiosum in a Patient with the Acquired Immunodeficiency Syndrome, New England Journal of Medicine, Volume 338:888, March 26, 1998, Number 13, Copyright © 2005 Massachusetts Medical Society. All rights reserved

Opportunistic Infections

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- Caused by the poxvirus and spread by direct contact. Common and self-limited in children. Among HIV-infected individuals it is typically more widespread and chronic.
- Characteristic lesions appear as flesh-colored, dome shaped, 2 to 5 mm papules with central umbilication. They typically first develop on the face and genitals, but may become widespread over time.
- Diagnosis based on clinical findings.



Treatment for Molluscum Contagiosum

- The goal of treatment is to remove the soft center from each lesion
- Various methods are available for the destruction of the lesion, including:
 - Curettage
 - Chemical destruction with concentrated phenol
 - Cryotherapy
 - Electrocautery



Nursing Implications for Molluscum Contagiosum

- Teach patients that lesions are highly contagious and are spread by direct contact with lesions
- Although lesions can appear unsightly, they are benign





Cytomegalovirus (CMV) (1)

- Symptoms include fever and diarrhoea from CMV colitis, dyspnoea from CMV pneumonitis, and blindness caused by CMV retinitis, although many patients are completely asymptomatic
- A fetus exposed to CMV can suffer severe consequences such as mental retardation or even death



Cytomegalovirus (CMV) (2)

- Cytomegalovirus (CMV) may affect multiple systems and organs in immunosuppressed individuals, especially the eyes (CMV retinitis)
- Can be spread perinatally or via contact with urine and saliva, kissing and sexual intercourse, and blood transfusion and organ transplantation

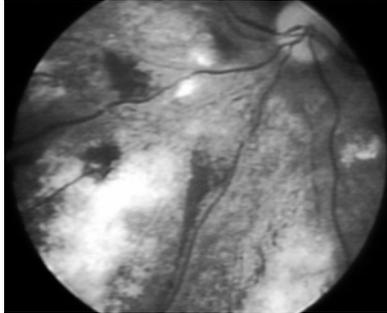
Opportunistic Infections

Slide 39

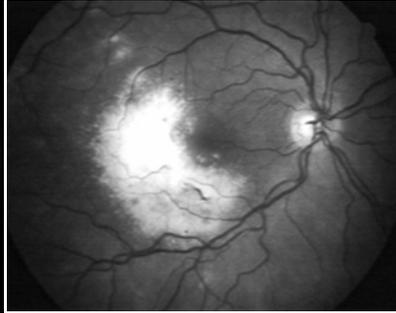
- Early signs of CMV retinitis include decreased vision, floaters, unilateral visual field loss which can lead to blindness.



CMV Retinitis



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Opportunistic Infections

Slide 40

- Cytomegalovirus (CMV) retinitis is the most common serious ocular complication of AIDS.
- It is characterised by full-thickness retinal necrosis and edema that is subsequently replaced by thin, atrophic scar tissue .
- Without antiviral treatment or immune reconstitution, the retinal lesions enlarge centrifugally. The portions of the retina destroyed by CMV do not regenerate functionally.
- Thus, the goal of therapy for CMV retinitis is to prevent further retinal necrosis and loss of vision.
- Late-stage AIDS illness (CD4 <100)



Nursing Implications For CMV

- For patients with advanced HIV disease, encourage them to seek eye exams and report immediately any decrease in vision or other visual disturbances



Human Papilloma Virus (HPV)

- HPV causes genital warts, flat warts and skin warts and is associated with cervical cancer and intraepithelial neoplasia of the cervix, vagina, vulva, penis, and anus
- Genital and non-genital strains exist
- Over 75 different strains of HPV exist, with each viral strain appearing in a particular site and producing specific features
- Some strains cause oral lesions, others cause genital warts, while others cause cervical cancer

Opportunistic Infections

Slide 42



Human Papilloma Virus (HPV)



Courtesy of Cincinnati STD/HIV Prevention Training Center

Opportunistic Infections

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- In females, the lesions may be in the external genital areas or intragenital (intravaginal or cervical).
 - The lesions are soft, whitish, and sessile.
- Genital warts often enlarge and become friable during pregnancy and in some cases, may mechanically obstruct the vaginal canal during labour.



Treatment of HPV

- Women who are HIV-infected should have a Papanicolaou (PAP) smear every six months for the first year after the diagnosis of HIV
- If these smears are negative, women with no other risk factors for cervical cancer should have a PAP smear done once a year
- The use of condoms can reduce the risk of transmission of STIs and may reduce the risk of transmitting HPV
- Treatment of HPV: TCA, podophyllin, podofilox, cryotherapy, laser, cidofovir or vaccine



Nursing Implications for HPV

- Educate patients about safe sex practices
- Consider referring women to gynecologist for pap smear



Opportunistic Infections

Slide 45

- Before going on to next slide ask if there are any questions about viral infections.



Common OIs: Parasitic Infections

- Cryptosporidiosis: *cryptosporidium parvum*, CD4 < 100
- Microsporidiosis: *microsporidi*, CD4 < 100
- Toxoplasmosis: *toxoplasma gondiia*, CD4 < 50

Opportunistic Infections

Slide 46

- Briefly describe each parasitic infection.



Cryptosporidiosis

- Caused by a cryptosporidium parvum
- Lives in the intestine of humans and animals
- Transmitted through water, food, animal-to-human and human-to-human contact
- Parasites form cysts that survive outside the body for long periods of time and are resistant to chlorine disinfection
- Primary symptoms include diarrhoea, abdominal pain & mild fever



Microsporidiosis

- Microsporidia are intracellular protozoan parasites that are found in domestic animals
- The domestic animal produce resistant spores that commonly cause intestinal infection in humans
 - Most common manifestation: profuse, watery, non-bloody diarrhoea, abdominal cramping, nausea, vomiting, and weight loss



Cryptosporidiosis & Microsporidiosis

Recommended Treatment

- Albendazole 400 mg BID po for 4 weeks
- Treatment includes rehydration IV and/or oral and anti-diarrhoeal agents such as codeine phosphate or loperimide



Role Play

- Educating patients on cryptosporidiosis:
 - Break into groups of 3 or 4
 - Choose one person to play the nurse and one the patient
 - The others are observers
 - Discuss how you will counsel the patient. Be prepared to present the role play to the large group

Opportunistic Infections

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Step 2: Educating Patients on Cryptosporidiosis; Slides 4.50-4.51 (15 minutes)

- Ask participants to refer to the Educating Patients on Cryptosporidiosis worksheet located in the Participant's Handbook (Worksheet 4.1.)
- After allowing time for groups to practice, they will present their role play to the large group.



Questions for Role Play

- What are the aspects of the patient's life that put her at risk for cryptosporidiosis?
- What information should you give to help her prevent recurrent diarrhoea?



Nursing Implications for Cryptosporidiosis & Microsporidiosis

- Diarrhoea
 - Immediate rehydration with oral or IV fluids
 - Inform that treatment may increase diarrhoea
 - Anti-diarrhoeal medications
 - Teach good hygiene measures
 - Counsell on dietary measures
 - Advise on local remedies
- Educate patient on how it is contracted and how to reduce risk of contracting again including water and food safety
- Always wash hands and wear gloves when handling faeces

Opportunistic Infections

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Step 3: Opportunistic Infections; Slides 4.52-4.86 (25 minutes)

- Continue presentation on Opportunistic Infections.



Toxoplasmosis (1)

- Protozoal infection caused by *Toxoplasma gondii*
- Most common HIV-related neurological complication
- Usually occurs from ingestion of cysts excreted in feces of infected cats or from eating undercooked beef or lamb
- Commonly invades the brain, lymph nodes, spleen, and central nervous system; less commonly, the lungs, liver, and myocardium

Opportunistic Infections

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- Disease is likely through reactivation of latent infection.
- Infection most frequently involves the CNS.
- Infection occurs when CD4 cells < 100.



Toxoplasmosis (2)

- Patients present with flu-like symptoms: headache, fever, confusion, myalgia, arthralgia, often lymphadenopathy
- In patients with AIDS, focal seizures, altered sensorium or coma leads to encephalitis and necrosis of the brain
- Diagnosis made by CT scan or MRI



Toxoplasmosis Treatment

- Pyrimethamine 200 mg loading dose then 75 mg QD po
- plus**
- Sulfadiazine 100 mg/kg QD in 4 divided doses up to 8 gm QD po or IV for at least six weeks to 3 months
 - Folic acid also added to this regimen to protect against hematologic toxicity of pyrimethamine
 - May need anticonvulsant treatment for seizure prevention

Opportunistic Infections

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Nursing Implications for Toxoplasmosis

- Emphasise teaching HIV patients how to prevent infection
- Teach patients to avoid contact with potentially contaminated sources:
 - Avoid handling cat feces or gardening without gloves
 - Eat only completely cooked or cured meats
 - Wash hands and kitchen surfaces after handling raw meat

Opportunistic Infections

Slide 56

- Before going on to next slide ask if there are any questions on parasitic infections.



Common OIs: Bacterial Infections

- *Mycobacterium tuberculosis*: most common cause of death in people with HIV worldwide, any CD4
- Bacterial pneumonia: any CD4
- Mycobacterium Avium Complex (MAC): not commonly encountered in India; prevalence in HIV-infected immunosuppressed persons in other parts of developing world not known, CD4 < 50



TB and HIV Co-infection Overview (1)

- TB is the leading killer of patients with HIV in developing countries, accounting for one-third of all AIDS deaths
- In India, TB accounts for nearly 50% of OIs
- Latent TB is 30 times more likely to be reactivated in people with HIV
- TB is more severe, progresses faster, and is more life-threatening in people with HIV
- TB co-infection increases HIV viral load, decreases CD4 count, and may lead to faster progression to AIDS



TB and HIV Co-infection Overview (2)

- Pulmonary TB is the most common form of TB
- TB can spread beyond the lungs in advanced HIV to:
 - Lymph nodes, causing swelling and fever
 - Intestines, causing diarrhoea and fever
 - Liver, causing jaundice and fever
 - Bones – most seriously in the spine
 - Around the heart
 - Brain, causing meningitis with symptoms of confusion



TB and HIV Co-infection Overview (3)

- Initial signs of TB disease may become apparent at any time during the evolution of HIV-infection
- Can come well before other manifestations of HIV infection or after patient has become symptomatic
- Most important symptoms include:
 - A cough lasting more than 3 weeks and not responding to usual antibiotic treatment
 - Production of purulent, sometimes blood-stained sputum
 - Evening fevers
 - Night sweats
 - Weight loss



TB Diagnosis

- Tuberculin test
- Sputum microscopy
 - Usually positive with mild immunosuppression
 - Often negative with severe immunosuppression
- Chest x-ray
 - Classical pattern is upper lobe infiltrates with cavitation
 - However, no chest x-ray is absolutely typical of PTB patients with HIV infection
 - In severe immunosuppression, the appearance is often atypical



TB and HIV Coinfection Treatment (1)

- HIV infected patients should be treated according to national guidelines and in cooperation with local authorities such as the district medical officer (DMO) and the district TB supervisor
- Aims of treatment:
 - To cure the patient of TB
 - To prevent death from active TB or its late effects
 - To prevent TB relapse
 - To decrease TB transmission to others

Opportunistic Infections

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- The major issues in clinical management of patients with HIV and active TB are when to start ART, and which regimen to use in order to avoid drug interaction and added risk of liver toxicity.
- Check with local medical officers regarding guidelines for treating HIV and TB co-infection.
- TB treatment with DOTS should be started promptly in cases with active TB and HIV.



NACO Regimens for TB in HIV Patients (1)

I	<ul style="list-style-type: none"> • Newly diagnosed pulmonary TB <ul style="list-style-type: none"> ◦ Irrespective of sputum smear result & severity of illness • New smear negative, pulmonary TB, seriously ill • New extra-pulmonary TB, seriously ill <ul style="list-style-type: none"> ◦ Irrespective of severity of illness 	2(EHRZ)₃ (24 doses)	4(HR)₃ (54 doses)

Opportunistic Infections

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- This table provides treatment regimens for the different categories of treatment and types of TB in an HIV patient.
- New cases of smear-positive pulmonary TB and clinically severely ill smear-negative pulmonary or extra-pulmonary TB cases should receive a six-month supervised short course chemotherapy (SCC).
- The same applies for new, not-seriously-ill cases of smear-negative pulmonary and extra-pulmonary TB.
- Re-treatment of smear-positive relapses, previously-treated cases, and failures should receive an 8-month supervised SCC.
- Patients with TB who refuse or are unable to take directly observed SCC or who cannot comply with SCC due to drug toxicity, should receive a 12-month self-administered standard regimen. (Technical Guidelines for TB Control, p. 17)
- Although this regimen should be used in exceptional non-HIV cases, in HIV patients, such a protocol is advisable because of issues related to stigma and discrimination often associated with the disease.
- The most important drugs used in the treatment of TB are:
 - Isoniazid (H)
 - Rifampicin (R)
 - Pyrazinamide (Z)
 - Streptomycin (S)
 - Ethambutol (E)
 - Thiacetazone (T)



NACO Regimens for TB in HIV Patients (2)

[Redacted]			
II	<ul style="list-style-type: none"> • Sputum smear positive relapses • Sputum smear positive treatment failure cases • Sputum smear positive 'cases, treatment after default 	2(SEHRZ) ₃ + 1 (EHRZ) ₃ (24+12 doses)	5(HRE) ₃ (66 doses)
III	<ul style="list-style-type: none"> • New smear negative, pulmonary TB, not seriously ill • New smear negative, extra-pulmonary TB, not seriously ill 	2(HRZ) ₃ (24 doses)	4(HR) ₃ (54 doses)

Opportunistic Infections

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- The use of rifampicin or streptomycin for diseases other than mycobacterial diseases should be limited to very few indications and only be given after careful consideration.
- Though these drugs are powerful antibiotics, their indiscriminate use in other diseases may lead to development of drug-resistant strains of *M. tuberculosis*. (Technical Guidelines for TB Control, p. 18)
 - Prefix = number of months Suffix = number of doses in one week
 - H-Isoniazid E-Ethambutol
 - R-Rifampicin S-Streptomycin
 - Z-Pyrazinamide

(Table from Treatment Guidelines for TB in HIV infected. (2002, July). National AIDS Control Organisation (NACO) & Central TB Division, Ministry of Health and Family Welfare, New Delhi.)

- For adults, drugs will be given in the recommended number of pills/capsules irrespective of body weight.
- However, for patients weighing more than 60 kilograms, an additional capsule of rifampicin 150 mg will be added to the treatment regimen. (Technical Guidelines for TB Control, p. 18)
- Duration of therapy: Treatment regimens recommended under RNTCP are the same irrespective of patient's HIV status. The duration of therapy will be as per treatment regimen and category. IF REQUIRED, DURATION OF THERAPY MAY BE EXTENDED WITHIN THE CURRENT RNTCP GUIDELINES.



TB and HIV Co-infection Treatment (1)

- Monitoring during treatment
- Bacterial monitoring is only possible for patients with smear positive PTB
- Sputum smear exam should be done as follows:
 - At the time of diagnosis
 - At the end of initial phase
 - During the continuation phase—at the end of month 5
 - On completion of treatment—month 6 or 8
- Chest X-ray as a monitoring tool is unnecessary and wasteful



TB and HIV Co-infection Treatment (2)

- Directly Observed Treatment Strategy (DOTS) is a strategy for TB control which aims to detect 70 percent of active TB cases and to successfully treat 85 percent of them
- The essential features of DOTS include:
 - Government commitment to sustained TB control activities
 - By sputum smear microscopy among symptomatic patients self-reporting to health services
 - Directly observed, standardised treatment regimen for six to eight months



Acquired TB Drug Resistance and HIV

- Naturally occurring mutants resistant to one anti-tuberculosis drug exist in very small numbers
- Approximately 4-5% of HIV+ patients suffer from multiple drug-resistant TB
- The purpose of a long course of treatment with multiple drugs is to prevent MDRTB



Nursing Implications For TB

- Early detection and treatment
- Extra precautions during high risk procedures
- Good ventilation
- Patient placement and flow
- Cough hygiene



Respiratory Infections

- Bacterial lower respiratory tract infections are more frequent and severe in immunosuppressed persons with HIV
- Pneumonia caused by *Streptococcus pneumoniae* may be the first indication of HIV infection
- Other causes of pneumonia in persons with HIV include *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, and *Staphylococcus aureus*



Diagnosis

- Diagnosis of pneumonia is usually made on clinical grounds
- Symptoms of acute respiratory infection may include fever, productive cough, chills, dyspnea, pleuritic chest pain, orthopnea, fatigue, and malaise
- Radiologic changes on chest x-ray vary
- Causative agents may be identified by sputum examination and blood culture
- Bacterial pneumonias are often the cause of death in persons with advanced immunosuppression and AIDS



Bacterial Infections First-Line Treatment

- Amoxicillin 500 mg TID po for 7 days
- **or**
- Cotrimoxazole 800mg/160 mg BID po for 7 days

Opportunistic Infections

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Nursing Implications For Bacterial Respiratory Infections

- Monitor for side effects or adverse effects of medications
- Provide oxygen and respiratory support as necessary
- Treat fever
- Provide oral and/or IV hydration
- Provide nutritional support
- Provide psychological support

Opportunistic Infections

Slide 72

- Before going on to next slide ask if there are any questions on bacterial infections.



Common OIs: Neoplasms (Malignancies)

- Lymphoma, CD4 <200
- Cervical cancer, any CD4
- Kaposi's Sarcoma (KS), CD4 < 200

Opportunistic Infections

Slide 73

- Briefly describe each cancer.



Lymphoma

- Lymphoma is a disease in which cancer cells are found in the lymph system
- Lymphoma can spread to almost any of the body's organs or tissues including the liver, bone marrow, spleen, or brain
- Lymphomas are divided into two general types:
 - Hodgkin's lymphomas
 - Non-Hodgkin's lymphomas – more commonly found in HIV patients



Example of Lymphoma



Courtesy of Public Health Image Library: CDC, Rober S. Craig,

Opportunistic Infections

Slide 75

- Large facial tumor due to malignant Burkitt's lymphoma, a non-Hodgkin's lymphoma (NHL).



Treatment of Lymphoma

- Two types of treatment are used:
 - Chemotherapy (using drugs to kill cancer cells and shrink tumors)
 - Radiation therapy (using high-dose x-rays or other high-energy rays to kill cancer cells and shrink tumors)
- Treatment of AIDS-related lymphomas depends on the stage, histology, and grade of the disease, as well as the general health of the patient (i.e., white blood cell count and other diseases present)

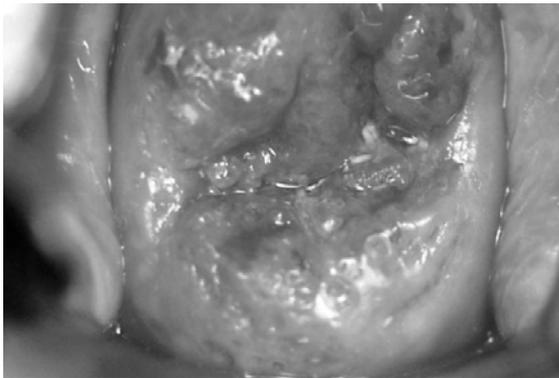


Cervical Cancer

- Incidence of cervical dysplasia and risk of cervical cancer is increased in HIV-infected women
- Malignant cells form slowly in the tissues of the cervix and surrounding areas
- Human Papilloma Virus (HPV) infection is associated with cervical cancer
- Cervical Cancer is a common cancer of women throughout the world, accounting for about 30% of all cancers and 80% of all gynecologic cancers



Cervical Cancer Malignancy



Courtesy of Public Health Image Library, CDC

Opportunistic Infections

Slide 78



Treatment of Cervical Cancer

- Surgery
 - Conization
 - Hysterectomy
 - Bilateral salpingo-oophorectomy
 - Radical hysterectomy
 - Pelvic exenteration
 - Cryosurgery
 - Laser surgery
 - Loop electrosurgical excision procedure (LEEP)
- Radiation
- Chemotherapy

Opportunistic Infections

Slide 79

- Before going on to next slide ask if there are any questions on cervical cancer.



WHO Staging and Disease Correlation

WHO Stage	Some Typical Diseases*	CD4 Count	Viral Load**
I Asymptomatic	No symptoms or signs of any illness Persistent Generalized Lymphadenopathy	>500	10 ³ to 10 ⁶ ***
II Minor Symptoms	Cutaneous Manifestation Folliculitis, Dermatomal Herpes (Varicella) Zoster	500 to 350	10 ³ to 10 ⁴
III Moderate Symptoms	Oral Candidiasis, Oral Hairy Leukoplakia, Pulmonary Tuberculosis	350 to 200	10 ⁴ to 10 ⁵
IV AIDS-defining Illness	Kaposi's Sarcoma (KS), Oral KS MAC, Severe Chronic Herpes Ulcers, Toxoplasmosis, Cryptococcus	<200	10 ⁵ to 10 ⁶

*Staging of diseases is approximate and not the same for all individuals

**HIV RNA copies per ml of plasma

***Viral load spikes shortly after infection and then drops quickly when antibodies are formed

Opportunistic Infections

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- This table depicts how the CD4 count and viral load are connected, and how as one goes up (viral load), the other will decrease (CD4). When CD4 counts begin to decrease, HIV disease progresses.
- The viral load is very high shortly after primary HIV infection. It falls steeply when the body develops antibodies and rises again after a number of years as the CD4 count drops.
- High viral load leads to higher transmission risk. Most often, after a number of years, high viral load is also a sign of more severe disease as people develop AIDS.
- Different HIV-related diseases (opportunistic infections) are related to declines in immune function. This is one way to assess (without the use of CD4 counts) the severity of immune suppression.
- It is rare to see esophageal candidiasis at CD4 counts greater than 200, therefore we know that person is quite sick and needs ART. The same is true for tuberculosis, although immune suppression is less severe the client is still eligible for ART.
- Herpes Zoster occurs while the CD4 count is still too high to be eligible for ART, however, this client should be watched closely because zoster indicates that the immune system is compromised.



Ruling Out HIV

- If any of the following conditions are present, HIV co-infection should be considered:
 - Oral / oesophageal candidiasis
 - Chronic diarrhea for more than one month
 - Herpes- zoster, especially multidermatomal
 - Recurrent pneumonia
 - Pneumocystis carinii pneumonia (PCP)
 - Oral hairy leukoplakia
 - Present or past genital ulcerations
 - Kaposi's sarcoma
 - Weight loss more than 10% within past 6 months
 - Generalised dermatitis

Opportunistic Infections

Slide 81

- Often times, nurses are the first to assess patients and need to be aware of these conditions that may represent HIV infection.



Opportunistic Infection Prophylaxis

- Treatments to prevent the development of infection are known as prophylaxis
- People with no access to anti-HIV therapy, or low CD4 counts, can be given prophylaxis to prevent opportunistic infections
- Most opportunistic infections are preventable and treatable
- With antiretroviral (ARV) drugs, it is possible to delay the onset of AIDS and the development of opportunistic infections
- Indications for prophylaxis may vary but generally when CD4 drops below 200



Cotrimoxazole Prophylaxis **(CTZ: Bactrim, Septra)**

- Prevents a variety of infections for a very low cost
- Recommended all persons with symptomatic HIV infection and those with CD4+ lymphocyte counts of less than 200/mm³ should receive:
 - Cotrimoxazole (sulphamethoxazole 800 mg and trimethoprim 160 mg) once daily orally
 - Treatment is continued indefinitely



Safety of CTZ

- The most common reactions are rash, fever, nausea, low white blood count (leukopenia), and hepatitis
- Rash could lead to a fatal allergy called Stevens-Johnson syndrome
- Stop drug or reduce dose; reinitiate and desensitise by gradually, escalating dose
- Monitor closely
- CTZ alternatives:
 - Dapsone (100 mg per day) or atovaquone (with or without pyrimethamine and leucovorin) for PCP prophylaxis
 - Do not provide the same protection against other organisms



Prevention of Other Common OIs

- Recurrences of cryptococcal meningitis: Fluconazole 200mg orally daily for life
- Oro-pharyngeal candidiasis and oesophageal candidiasis: Fluconazole 200mg orally daily
- Genital and anal herpes: acyclovir 400 mg BID

Opportunistic Infections

Slide 85

- Before going on to next slide ask if there are any questions on OI prophylaxis.



Nursing Implications for Treatment of HIV in India

- Nurses already have knowledge and experience caring for people with chronic, progressive diseases
- Understanding the common conditions seen in HIV infected patients can help nurses to identify patients who may need to be tested
- Understanding opportunistic infections will help nurses provide competent care to patients with HIV-related illness

Opportunistic Infections

Slide 86

- Nurses plays a vital role in care and treatment of HIV by:
 - o Recognising and reporting symptoms
 - o Referring for VTC
 - Educating patients
 - Understanding lab tests and results
 - Explaining lab tests to patients
 - Providing support and counselling for patient and family
 - Ensuring follow up of patients
 - Educating the general public



Key Points (1)

- An OI is caused by organisms that would not produce significant disease in a person with a well-functioning immune system
- People with HIV/AIDS are susceptible to OIs because their immune systems have been suppressed and are not capable of fighting disease
- There are several fungal, parasitic, viral, bacterial, and malignant opportunistic infections common to HIV-infected patients

Opportunistic Infections

Slide 87

Step 4: Presentation of Key Points; Slides 4.87-4.89 (5 minutes)

- Summarise presentation, present key points in this unit, and answer any final questions.



Key Points (2)

- In India, TB accounts for nearly 50% of OIs and contributes significantly to HIV mortality
- Monitoring CD4+ white blood cells can help health care providers know what OIs to watch for and what treatment options to consider
- Primary prophylaxis is used to prevent OIs in individuals with HIV/AIDS



Thank You!



 **Notes**



HIV Basics Course for Nurses

Participant's Handbook

Unit 5
Symptom Management
and Palliative Care

Unit 5: Symptom Management and Palliative Care

Aim: The aim of this unit is provide information on managing common symptoms often experienced by people living with HIV and how nurses can provide helpful palliative care.

Learning Objectives: By the end of this unit, participants will be able to:

- Understand that patients with HIV experience a wide spectrum of challenging symptoms throughout the course of their disease
- Explain that the underlying causes of symptoms are varied and require careful assessment
- Provide effective symptom management of common clinical manifestations of HIV disease
- Define the principles and practises of palliative care
- Recognize the leadership role nurses play in the continuum of care of the HIV patient

Key Points:

1. Symptom management is core to the care of the patient with HIV/AIDS.
2. Effective management of difficult symptoms depends on a careful and comprehensive nursing assessment
3. Incorporating palliative care principals and philosophy is an important part of the continuum of care for HIV/AIDS patients.
4. Improved quality of life is the goal of all nursing care.



Handout 5.1

Guide to Common Symptoms and Possible Aetiologies

Symptoms Requiring Attention	Possible Causes
Dyspnea	Pulmonary infection (e.g., pneumonia-bacterial or fungal)
	Invasive pulmonary disease (e.g. pulmonary)
	Obstructive airway disease
	Emphysema
	Severe anemia
New Fever or Change in Fever Pattern	Central nervous system (CNS) mass lesion-often accompanied by headache
	Meningitis
	Sinusitis
	Esophagitis
	Lymphoma
	Fungal infections-often caused by characterized by hepatomegaly; if respiratory, characterized by cough
	Mycobacterium avium complex (MAC) - often accompanied by chronic diarrhea and abdominal pain
	Bacterial parasites - Clostridium difficile, cytomegalovirus (CMV), often accompanied by diarrhea
	Pneumonia - often accompanied by dyspnea
	Tuberculosis - often accompanied by dyspnea
	Pneumocystis - often accompanied by cough
	Drug reactions
	Advanced HIV disease
New or Persistent Headache	Medications
	CNS lymphoma
	Cryptococcus
	Meningitis
	Toxoplasmosis
Altered Mental State	AIDS dementia
	Complex CNS infection
	Tumors
Seizures or Loss of Consciousness	CNS lymphoma
	Medications
	AIDS dementia
	Toxoplasmosis
Peripheral Neuropathy	Medications
	HIV infection
	CMV
	Herpes Zoster


Handout 5.1 (continued)
Guide to Common Symptoms and Possible Aetiologies (continued)

Symptoms Requiring Attention	Possible Causes
Visual Changes	CMV retinitis (most common)
	VZV
	HSV
	Toxoplasmosis
	Syphilis
New or Persistent Diarrhoea	Medications
	Diet
	Bacterial infections - Salmonella, shigella, campylobacter, C. difficile
	Invasive diseases affecting the bowel - M. avium-intracellulare, lymphoma, CMV
	Wasting syndrome
Gastrointestinal Bleeding	Herpes simplex
	CMV
	Candidiasis
	Kaposi's sarcoma
	Lymphoma
	Cryptosporidium
	Salmonella
C. difficile	
Dysphagia and Odynophagia	Candidiasis
	Herpes simplex
	CMV
	Neurologic impairment
Edema	Obstruction of venous or lymphatic vessels (e.g., from Kaposi's sarcoma, venous thrombosis, lymphoma)
	Hypoalbuminemia
	Renal failure
	Congestive heart failure
	Liver disease
Nauseous and Vomiting	Medications
	Infections
	Massive disease of GI tract
	CNS disease
	Adrenal insufficiency
Inadequate Oral Intake	Anorexia
	Nauseous and vomiting
	Dysphagia
	Odynophagia
	Inadequate access to food
	Altered nutrition

 **Handout 5.1 (continued)**

Guide to Common Symptoms and Possible Aetiologies (continued)

Symptoms Requiring Attention	Possible Causes
Skin, Mucous Membrane lesions	Drug reactions
	Dry skin
	Viral infections - Molluscum, herpes simplex or zoster
	Bacterial infections - Bacillary angiomatosis, folliculitis, Impetigo, ecthyma, abscesses
	Fungal infections - Tinea, candida
	Malignancy - Kaposi's sarcoma
	Pressure ulcers

Adapted from Kirton, C. Talotto, D. & Zwolski, K. (2001). Handbook of HIV/AIDS Nursing



Worksheet 5.1

HIV Symptoms Case Studies

Case Study Instructions:

1. Divide into four groups.
2. Read together the case study you've been given and answer the questions.

HIV Symptoms Case 1

A 40-year-old businessman is complaining of fever, dry cough, and shortness of breath for the past 10 days. He was diagnosed with HIV infection eight years ago.

He is married and has three children. His wife and children are healthy. His wife was tested for HIV infection three years ago and found to be HIV negative.

He was successfully treated for pulmonary TB four years ago. His CD4 count last year that was 80, and through the help of an NGO, he started on triple combination therapy of zidovadine, laminudine, and efavirenz. He also started on cotrimoxazole. Three months after starting on ART, he had to stop, as the NGO could no longer afford to sponsor him.

Recently, he was given amoxicillin and erythromycin for his cough, but he has had no improvement. Because of severe shortness of breath, he has been admitted to GHTM. His temperature is 37.8 C. Lung auscultation is normal. A chest x-ray shows a bilateral interstitial shadowing.

Questions:

1. What is the most likely diagnosis?
2. What further investigations should be performed?
3. What are the patient's nursing needs?
4. What treatment should be offered?



PowerPoint Slides

Refer to companion document for copies of the Unit 5 PowerPoint presentation slides.



Unit 5 should take approximately 1 hour.

- **Step 1:** A Complete Nursing Assessment Symptoms & HIV Symptom Management; Slides 5.1- 5.27 (30 minutes)
- **Step 2:** HIV Symptoms Case Studies; Slides 5.28- 5.33 (10 minutes)
- **Step 3:** Palliative Care; Slides 5.34- 5.41 (10 minutes)
- **Step 4:** Presentation of Key Points; Slides 5.42- 5.43 (5 minutes)



Learning Objectives

- By the end of this unit you will be able to:
 - Understand that patients with HIV experience a wide spectrum of challenging symptoms throughout the course of their disease
 - Explain that the underlying causes of symptoms are varied and require careful assessment
 - Provide effective symptom management of common clinical manifestations of HIV disease
 - Define the principles and practices of palliative care
 - Recognise the leadership role nurses play in the continuum of care of the HIV patient

Symptom Management & Palliative Care

Slide 2

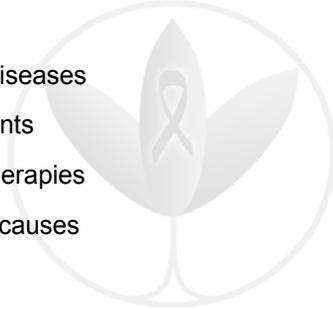
Step 1: A Complete Nursing Assessment Symptoms & HIV Symptom Management; Slides 5.1- 5.27 (30 minutes)

- Begin by reviewing the unit aim.
- The aim of this unit is to provide information on managing common symptoms often experienced by people living with HIV and how nurses can provide helpful palliative care.
- Review learning objectives with participants.
- Ask participants if there are other topics related to symptom management and palliative care that they would like to discuss during the session.



Underlying Causes of Symptoms

- Symptoms can be caused by:
 - HIV
 - Associated diseases
 - ARV treatments
 - Traditional therapies
 - Overlapping causes



Symptom Management & Palliative Care

Slide 3

- Patients will frequently present with more than one symptom and have more than one underlying etiology. This can create a complex set of problems for both the patient and the nurse.
 - For example, nausea can be caused by HIV as well as by some of the medications used to treat HIV.
 - Profound fatigue can result from depression and or chronic diarrhea which is caused by a parasite.
 - The nurse should keep an open mind and consider all possibilities.
- The best way to determine the cause and intervention is to take a complete look at the total patient...performing a baseline assessment.



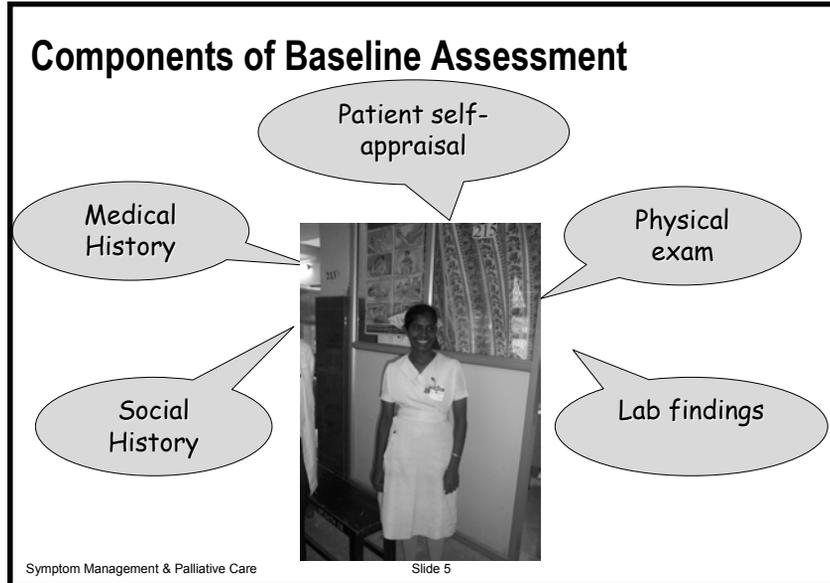
The Baseline Assessment

- Care of the patient with HIV is determined by the impact that the disease has on the patient, clinically and psychologically
- The baseline assessment is an organised and systematic approach to determining:
 - Disease progression
 - Symptom management needs
 - Psychosocial concerns

Symptom Management & Palliative Care

Slide 4

- Before a nurse can begin to design a plan of care, a thorough assessment of the patient should be done.
- This an organised way for the nurse to get a complete picture of what is going on, possible causes, eliminate irrelevant possibilities and begin to think about appropriate treatment and nursing interventions.



- The "whole" patient has to be considered in order to get a complete and accurate picture of the situation.
- Each portion of the assessment - medical social histories, how the patient perceives his condition, the lab results - all impact the final conclusions and will determine the appropriate interventions.
- The nurse acts as a "detective" trying to uncover the true cause of the patient's symptoms.



Medical History

- What is the chief complaint?
- When was the Pt diagnosed with HIV? Any complications?
- Other diseases? Malaria, TB, STD?
- Is patient taking any medications? Traditional remedies?
- History of mental illness? Depression?
- Previous hospitalisations? Surgery?



Symptom Management & Palliative Care

Slide 6

- The chief complaint is KEY ...what brings the patient to the hospital or clinic? There may be a variety of complaints, consider and document all of them. Putting the chief complaint into context with a patient's medical history can help facilitate the development of a plan of care.
- Considering other disease processes is important to rule out any HIV associated complications, or as in the case of active TB, consider disease progression.
- Side effects from medications or traditional remedies must always be evaluated. Little is known about the interaction between traditional remedies and western medications. We do know that the majority of our patients seek the care of traditional healers in combination with western medicine so this is a factor not to be overlooked.
- Psychiatric conditions can have significant impact on the clinical picture and resulting physical symptoms. How one copes with disease, especially HIV, can result in depression, loss of appetite, weight loss, etc.
- Finding out about previous hospitalisations and surgeries may provide you with an insight into the overall physical condition/health status of the patient.



Social History

- Family structure? Married, children?
- Is anyone else in the family ill? Have HIV?
- Does anyone else know the patient's HIV status?
- Employment? Living situation?
- Can the patient identify church or community group where they receive support?
- Does the patient use alcohol? Illegal drugs? Smoke?
- Is the patient sexually active? Monogamous relationship or multiple partners? Condom use?

Symptom Management & Palliative Care

Slide 7

- Including a patient's social history is very important. Excluding the psycho-social creates an incomplete picture. One interacts with the other and impacts all. The social history of a patient lends a lot to the clinical evaluation. Isolation, discrimination, lack of access to food, housing, support all affects physical health.
- Alcohol use/abuse, the regular use of drugs...affect the immune system and can cause many of the symptoms associated with HIV disease progression. The use of these substances also interfere with adherence to ARVs and can cause resistance.
- A non-judgmental approach is essential so that the patient can be open and honest about his/her alcohol or drug use. Otherwise, you may never get the complete, accurate picture!
- If the patient reports to be sexually active remember to assess for STDs. Also use this as a moment to educate the patient regarding HIV transmission. Educate, educate, educate!



Patient Self-Appraisal: How Is S/he Feeling?

- Patient self-appraisal: How is s/he feeling?
 - Change in weight
 - Mood changes
 - Weakness or fatigue
 - Respiratory symptoms (cough, SOB)
 - GI symptoms (nausea, vomiting, loss of appetite, diarrhea, thrush)
 - Neurological symptoms (memory loss, headaches, visual changes)
 - Dermatological (rash, itching)
 - Pain

Symptom Management & Palliative Care

Slide 8

- Asking the patient to describe their symptoms is an important component to a complete assessment. Healthcare providers can never fully identify symptoms as well as the patient. Remember the patient is the expert reporter. Encourage the patient to explain how they “feel”...respect and affirm their reporting.
- Ask specific and clear questions. Review all systems....avoid yes and no answers.
- Example: You say you have a hard time breathing. Tell me when this happens? What do you do to get relief? When did this start?



Physical Exam

- Note general appearance
- Weight, height, temperature
- Head & neck, including mouth & oral cavity (candidiasis, hairy leukoplakia)
- Cardiac, Lungs
- Lymph nodes
- Abdomen
- Skin (fungal infection, KS, etc)
- Neuro-muscular



Symptom Management & Palliative Care

Slide 9

- Not all nurses do the physical exam...in many clinical settings this is the role of the physician. If this is the case where you work, make sure you see the findings from the exam and the conclusions that the physician draws.
- If you are involved with performing the physical exam..use this as an opportunity to talk with your patient, make them feel comfortable, safe...evaluate the patient's general appearance and affect.
- Physical findings are always put into context with other aspects of the baseline assessment. Remember to take each physical finding and measure it against what you know to be the normal progression of HIV disease.



Laboratory Values

- If needed, confirmatory HIV test
- CD4 count
- Viral load
- Hemogram (CBC)
- Full chemistry panel
- PPD – chest X-ray
- Others, if needed



*When laboratory tests available

Symptom Management & Palliative Care

Slide 10

- Laboratory findings complete the total assessment....they can confirm, rule out, or discover the underlying cause of the patient symptoms.
- Although they are an important part of the assessment some of these tests are not available in all healthcare settings.
- Your clinical evaluation and that of other members of your team are frequently enough for you to have a clear and concise evaluation.



Importance of Symptom Management

- Managing symptoms associated with HIV/AIDS is one of the major challenges for people living with HIV and their care providers
- Symptom management is a CORE domain of nursing
- Symptom management is an important component of the continuum of care in all settings – hospital, clinic, community, home

Symptom Management & Palliative Care

Slide 11

- Symptoms are usually indications of underlying etiology. Rarely singular...more than one.
- Ask participants to refer to Guide to Common Symptoms and Possible Etiologies (Handout 5.1) located in the Participant's Handbook.



Weight Loss (1)

- Definition: involuntary loss of body weight
- Assessment: due to loss of appetite, difficulty in swallowing, nausea & vomiting, diarrhea, depression, inadequate nutrition
- Determine and treat underlying cause:
 - If oral/ pharyngeal lesions/chronic diarrhea: treat
 - If depression: provide counselling and support
 - If nausea & vomiting: give anti-emetic as prescribed
 - Refer to community-based support groups & NGOs for access to food programs

Symptom Management & Palliative Care

Slide 12

- We will review just a few common symptoms This is not meant to be an exhaustive list of symptoms but only to serve as an example of how each symptom must be considered in the context of possible causes, appropriate interventions and desired outcomes.
- Weight loss: a very common problem and can result from multiple factors - both medical and psycho-social possibilities have to be considered.



Weight Loss (2)

- Nutritional interventions:
 - Small frequent meals
 - High protein, high calorie foods
- May want to consider vitamin supplements and foods rich in vitamins such as:
 - sprouted foods
 - green leafy
 - carrots
 - citrus fruits
 - dark orange and green fruits
- Vitamin B foods: cereals, pulses, nuts, milk products, eggs, meat and green leafy vegetables



Symptom Management & Palliative Care

Slide 13

- The goal is to determine cause, stop the weight loss and help the patient regain and maintain normal weight. Medical, nutritional and social interventions must all be considered.
- Remember, no matter what medical resolution is implemented, without access to an adequate diet, nutritional support, weight gain can not be maintained.



Weight Loss (3)

- High Protein Foods:

- Dahl
- Grams
- Eggs
- Protein drinks
- Fish
- Meat
- Milk
- Yogurt

- High Calorie Foods:

- Nuts
- Ground nuts
- Dried fruits
- Custards
- Ghee
- Butter
- Cooking oils
- Whole fat milk products



Weight Loss (4)

- Social interventions include:
 - Fatigue = inability to prepare meal or seek family or community support
 - Community health workers with food baskets and/or prepared meals

***Desired outcome: weight gain
and weight maintenance***



Diarrhoea (1)

- Diarrhoea – one of the most common problems:
 - Definition: 3 or more loose or watery stools per day:
 - Acute: lasts for less than 2 weeks
 - Persistent: more than 2 weeks
 - Assessment: Stool analysis – cause difficult to determine (bacteria, viruses, protozoa, amoeba); medications, wasting.
 - Treat underlying cause, if possible
 - Anti-diarrheals such as Imodium, Kaopectate

Symptom Management & Palliative Care

Slide 16

- Diarrhoea is one of the most common and difficult of symptoms.
 - Patients are often completely debilitated, exhausted, and embarrassed.
 - Caregivers are frequently frustrated and overwhelmed.
- Determining the underlying cause can some times be very difficult. This is one symptom that at the time the key interventions will be anti-diarrheals and diet rather than zeroing on the specific cause.



Diarrhoea (2)

- Nursing Intervention:
 - Aggressive re-hydration IV replacement, if needed
 - BRAT diet: bananas, rice, applesauce, toast
 - Skincare: keep rectal area clean and dry
 - Have all caregivers wear gloves, when possible; always wash hands before and after care

Desired outcome: reduction in frequency and volume of stools

Symptom Management & Palliative Care

Slide 17

- Decreasing the amount of stool, preventing complications associated with diarrhea is the goal.
- Replacing lost electrolytes through hydration, encouraging food that binds. For example, the BRAT diet and maintaining skin integrity are all important nursing interventions.
- Treating diarrhoea takes patience and perseverance and lots of support for the caregiver.



Oral Ulcerations (1)

- Oral Ulcerations:
 - Definition: *painful lesions along the mucous membrane of the mouth and throat*
 - Assessment: secondary infections due to candidacies (thrush), virus (hairy leukoplakia, herpes), KS, malnutrition, dehydration
 - Determine and TX underlying cause:
 - Anti-fungals (Ketoconazole/Fluconazole)
 - Anti-virals (Acyclovir)
 - Increase fluid and food intake

Symptom Management & Palliative Care

Slide 18

- Oral manifestations of disease can be very painful and significantly impair quality of life.
- If a patient presents with oral ulcerations, the nurse should begin to think in terms of disease progression.
 - Many of these symptoms are secondary to infections resulting from immune suppression.
 - Pharmacological management depends on cause: antibiotics, anti-fungal, anti-virals.



Oral Ulcerations (2)

- Nursing Interventions:
 - Good oral hygiene before and after eating
 - If available, use topical pain medication prior to eating
 - Avoid spicy foods; bland and soft food encouraged
 - Avoid cold/hot foods and liquids
 - Limit tobacco and alcohol use
 - Keep lips moist and lubricated

Desired Outcomes: able to take oral nourishment and medications, pain is controlled, ulcerations resolved

Symptom Management & Palliative Care

Slide 19

- Topical pain (oral rinses) medications are often very helpful.
 - Once the pain is somewhat controlled, the patient should have an easier time taking in nutrition - ease in swallowing, able to drink and eat.
 - It is important to treat underlying cause and this usually means life long treatment and/or the initiation of Bactrim.
 - ARVs, if available, are also an option to be considered at this point.
- The goal is improve integrity of oral mucosa, adequate intake and medications can be taken without difficulty.



Fever (1)

- Fever:
 - Definition:
 - *High body temperature*
 - *Low-grade fever (37-38 degrees C)*
 - *Above 38 degrees C for prolonged periods, cause for concern*
 - Can be caused by HIV infection or can be secondary to underlying bacterial, viral infections, TB, or malaria
 - Determine cause and treat accordingly with appropriate medications



Symptom Management & Palliative Care

Slide 20

- Fever can herald many HIV related conditions:
 - HIV infection itself
 - OIs
 - Drug side effects
- Or fever can indicate a co-infection such as malaria or TB.
- There are also situations when the fever has an unknown origin (FUO).
- Once again return to your assessment for help in determining possible underlying causes and appropriate medical treatment.



Fever (2)

- Nursing Interventions:

- Encourage patient to drink fluids: tea, broth, juices, water
- Keep patient covered, avoid drafts and chilling
- Tepid sponge baths should be used sparingly; may promote shivering and actually raise temperature
- Medications (antipyretics) can be used around the clock rather than prn for chronic/frequent fevers (aspirin, paracetamol)

Desired Outcomes: Patient remains afebrile.

Symptom Management & Palliative Care

Slide 21

- The goal of your nursing interventions is to provide comfort, adequate hydration and suppression of fever.
- The use of anti-pyretics, when not contraindicated, will help alleviate discomfort.
- Fever can be a recurrent/chronic problem for many so patient education and support is important.
- Refer participants to Handout 6.1: Guide to Common Symptoms and Possible Causes.



Common Skin Manifestations (1)

- Fungal skin and nail infections
 - Occur commonly in HIV infected and non-HIV-infected individuals
 - Symptoms include dry, itchy, scaly rash
 - Lesions that may be found anywhere on the body
 - Fingernails and toenails that are distorted in color and shape (called onychomycosis)
 - Topical applications of antifungal ointments and creams will usually clear lesions and rash



Common Skin Manifestations (2)

- Seborrhoeic dermatitis
 - Rash on face, around nasolabial folds, eyebrows, scalp, chest, axillae, upper trunk, and genitals
 - Rash is erythematous, scaly, harmless, but may be extensive, persistent, and recurrent in persons with HIV
 - Frequent skin washing to remove scales is advised, and shampooing with selenium sulphide shampoo is effective
 - Topical applications of 1% hydrocortisone are probably the most effective
 - Ketoconazole 2% cream has also been shown to be effective



Common Skin Manifestations (3)

- *Staphylococcal folliculitis*
 - Skin infection localised to the hair follicle
 - Lesions are small (less than 5mm in diameter), multiple, itchy erythematous follicles that may have a centre of pus
 - Usually the condition is caused by *Staphylococcus aureus*, although other organisms may also cause the infection
 - In HIV-infected persons, a pustular perifolliculitis commonly occurs
 - Treatment is with antibiotics such as cephalexin or cloxacillin 500mg PO QID for 7-21 days



Common Skin Manifestations (4)

- Scabies
 - Mites burrowing under the skin cause a rash most frequently found on the hands in the web spaces between the fingers
 - Also found on folds of wrist, elbow or knee, ulna margins of forearms, penis, the breast, and shoulder blades
 - Severe itching, especially at night
 - *Norwegian scabies* is a severe form more common among immunocompromised persons
 - Complications due to infestation are usually caused by secondary bacterial infections from scratching



Common Skin Manifestations (5)

- Scabies (continued)
 - Treatment of choice is the topical use of 1% gamma benzene hexachloride
 - Permethrin or lindane application are also useful
 - Household precautions:
 - All clothes, bedding, and towels should be washed in hot water, and dried and ironed
 - All members of the household should also be treated

Desired outcome for common skin manifestations:
-Patient learns how to treat and manage skin problems.
-Skin infection/rash resolves



Other Symptom Management Strategies

- **Cotrimoxazole Prophylaxis:** Greatly reduces the risk of bacterial and parasitic diarrhea, bacterial pneumonia, PCP, candidiasis, and other common manifestations of progressive HIV disease
- **ARV Treatment:** Many symptoms of HIV disease will be resolved or seen less frequently
- **Local Remedies:** Many herbal and traditional remedies are known to alleviate the symptoms related to HIV/AIDS
 - What are some local remedies for symptom management here in India?

Symptom Management & Palliative Care

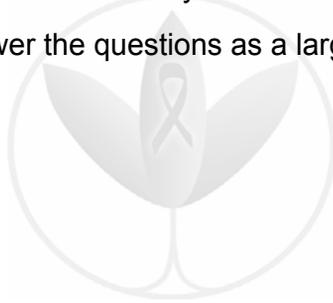
Slide 27

- As symptoms occur and become more significant the nurse should always consider recommending the initiation of cotrimoxazole prophylaxis.
- Recalling how HIV progresses will help in making this decision; you should see a reduction in associated diseases and symptoms.
- As ARVs become available and are initiated you should also see a reduction in OI's and HIV related symptoms. Unfortunately neither guarantees that all symptoms will be resolved.
- Don't forget that many local remedies have been known to effectively resolve symptoms - just make sure you are aware of what the patient is taking to avoid possible interactions.



Case Studies

- Read the case studies on your own
- We will answer the questions as a large group



Symptom Management & Palliative Care

Slide 28

Step 2: HIV Symptoms Case Studies; Slides 5.28- 5.33 (10 minutes)

- Ask participants to refer to the HIV Symptoms Case Studies worksheet located in the Participant's Handbook (Worksheet 5.1.)
- Allow participants to read the case studies on their own.
- Discuss answers to the cases as a class using the slides in the PowerPoint presentation.



Case Study #1 (1)

- A 40-year-old businessman is complaining of fever, dry cough, and shortness of breath for the past 10 days. He was diagnosed with HIV infection eight years ago
- He is married and has three children. His wife and children are healthy. His wife was tested for HIV infection three years ago and found to be HIV negative
- He was successfully treated for pulmonary TB four years ago. His CD4 count last year that was 80, and through the help of an NGO, he started on triple combination therapy of zidovadine, laminudine, and efavirenz. He also started on cotrimoxazole



Case Study #1 (2)

- Three months after starting on ART, he had to stop, as the NGO could no longer afford to sponsor him
- Recently, he was given amoxicillin and erythromycin for his cough, but he has had no improvement. Because of severe shortness of breath, he has been admitted to GHTM
- His temperature is 37.8 C. Lung auscultation is normal. A chest x-ray shows a bilateral interstitial shadowing



Case Study #1: Questions

1. What is the most likely diagnosis?
2. What further investigations should be performed?
3. What are the patient's nursing needs?
4. What treatment should be offered?



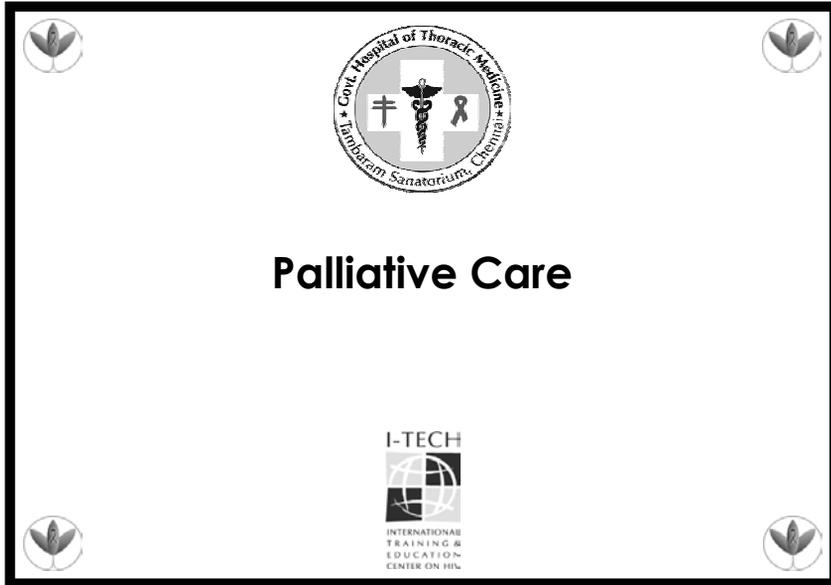
Case Study # 2

- Mr. M is 27 years-old and unmarried. He has come to the hospital because he has been suffering from recurrent episodes of diarrhoea and vomiting
- During your interview with him he tells you that he does not drink boiled water and usually takes food from street vendors
- He also shares with you that he had unprotected sex with a commercial sex worker three years ago. He does not know his HIV status



Case Study #2: Questions

- What infection(s) or disease(s) might Mr. M be suffering from?
- What interventions would you recommend?
- How do you treat him?



Step 3: Palliative Care; Slides 5.34- 5.41 (10 minutes)

- Continue lecture on palliative care.



The Continuum of Care: Palliative Care

- Nursing care of the patient with HIV/AIDS must include care associated with death and dying
- Palliative care is indicated when:
 - Medical treatment is no longer effective
 - Side effects of aggressive treatment outweigh the benefits
 - The patient decides that he/she no longer wants aggressive treatment

Symptom Management & Palliative Care

Slide 35

- Ask participants about palliative care:
 - What do they believe is appropriate and effective care for people who are dying?
 - How do they care now for patients who are in the latter stages of their lives?
 - How does HIV and AIDS change care for the dying?
- Palliative care is an essential part of caring for the patient with AIDS. It is an important part of the continuum. Nurses will find that they can act as advocates for palliative care, insisting that symptom management continues to be a responsibility as someone is dying.
- In spite of the arrival of ARVs, people will still die from HIV/AIDS. ARVs are not a cure. Sometimes the treatment does not work, or the side effects are such that a patient can no longer cope. There will be times that the patient decides to not take ARVs or decides to discontinue.
- Palliative care can happen anywhere - hospital, community, the home.



Palliative Care: Primary Goal

The primary goal of palliative care is relief of suffering and the enhancement of the quality of life through ***effective symptom management***



Symptom Management & Palliative Care

Slide 36

- Palliative care recognises that quality of life is important right up to the time of death. No longer are we concerned with the underlying etiology - we focus on the alleviation of discomfort thorough effective symptom management.
- This usually involves a multidisciplinary team approach, one that includes family and community care givers when appropriate.



Philosophy of Palliative Care

- Affirms life and makes dying a normal process
- Neither hastens nor postpones death
- Provides relief from pain and other symptoms
- Takes a holistic approach to care...integrates the clinical with the psychological & spiritual
- Provides support to both the patient and family

Symptom Management & Palliative Care

Slide 37

- There are basic and clear principles that define palliative care, all based on a philosophy that respects death as part of the continuum of life. Advocates of palliative care believe that dying is a normal process.
- No intervention hastens or prolongs death. Symptomatic relief from pain/discomfort is a primary objective.
- Those who provide palliative care realise that discomfort can be caused from a broad range of factors - clinical, spiritual, psychological - and all need to be addressed.
- The family is integrated into the care plan along with the patient...family centered approach to care!



Pain Control is Key

- Medication should be given on a regular basis:
 - Nonopiate: aspirin, paracetamol, nonsteroidal anti-inflammatory
 - Mild opiate: codeine with/without nonopiate
 - Strong opiates: morphine
- Massage, back rubs, cool cloths, touch
- Keep room quiet, well ventilated
- Address any emotional & spiritual concerns that may impact pain and discomfort

Symptom Management & Palliative Care

Slide 38

- Pain control is the corner stone to effective palliative care. Advocating for the right to administer pain medication in the home is a role that nurses can play.
- Teach the family how to administer medication and/or coordinate with homebased care nurses where available, so that patients remain comfortable and pain free.



Challenges of Palliative Care

- Majority of people with AIDS are young; death of a young person is always difficult
- Stigma and fear associate with HIV/AIDS:
 - Illness not openly discussed
 - Lack of family and community support
 - Isolation
- Others in the family may be infected with HIV
- Care often left to family/friend who is untrained
- Home care is very expensive (e.g., loss of income, cost of supplies)
- Physical and emotional burden high

Symptom Management & Palliative Care

Slide 39

- Palliative care is difficult and challenging, especially for those dying from complications of AIDS.
- The majority of people affected are young, there may be children who are also infected or orphaned. The person dying might be the one who generated the family income.
- The course of end-stage HIV is difficult to manage. Chronic diarrhea, dementia, depression, skin lesions, pain. The caregiver may not have the skills to provide care, or could also be infected. Too often the only person left to care is an older family member, such as a grandmother.
- The nurse's responsibility in these situations is paramount!



The Nurse's Role

- Educate caregivers about symptom management, universal precautions, nutritional needs, and basic physical care
- Help mobilise NGOs, community church groups, and volunteers to assist with care
- Provide support, both emotional and spiritual
- The nurse's relationship with the patient and family, together with knowledge and skill, is central to palliative care nursing

Symptom Management & Palliative Care

Slide 40

- The nurse is well positioned to meet the challenges of making palliative care work - the role of educator is key.
- Reaching out to the community for support..church groups, NGOs homebased care volunteers. The nurse is a valuable resource person to whom the community can look to for guidance and direction.
- The nurse also has a clear understanding of all the concerns and issues that a family and patient face. The nurse can help them seek out spiritual and psychological support by working to develop a team approach to care.



The Ultimate Goal of Palliative Care

Patient is comfortable and dignity is preserved.



Caregivers feel confident that they are providing proper care.

Symptom Management & Palliative Care

Slide 41

- With the ultimate goal of palliative care in mind the nurse can strive to keep the patient as comfortable as possible through effective symptom management and pain control.
- Working with the family and other caregivers, the nurse can educate and support so that they feel confident that everything possible is being done. Maintaining dignity is the one gift both the nurse and the caregivers can provide during this very difficult and sad time.
- Palliative care is a concept that needs to continue to be explored. It is part of the continuum of care and how to integrate it into the healthcare system will be a challenge - but one that is worthwhile .



Key Points

- Symptom management is core to the care of the patient with HIV/AIDS
- Effective management of difficult symptoms depends on a careful and comprehensive nursing assessment
- Incorporating palliative care principals and philosophy is an important part of the continuum of care for HIV/AIDS patients
- Improved quality of life is the goal of all nursing care

Symptom Management & Palliative Care

Slide 42

Step 4: Presentation of Key Points; Slides 5.42- 5.43 (5 minutes)

- This is time to review the key points of the session and ask for questions.



Thank You!

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 **Notes**



HIV Basics Course for Nurses

Participant's Handbook

Unit 6

Introduction to Antiretroviral Therapy

Unit 6: Introduction to Antiretroviral Therapy

Aim: The aim of this unit is to provide information about antiretroviral medications (ARVs) used to treat and care for HIV positive patients.

Learning Objectives: By the end of this unit, participants will be able to:

- Describe the benefits of antiretroviral (ARV) therapy and general principles regarding their use
- Explain the nursing considerations involved in caring for patients on ARV therapy
- Identify possible adverse effects and drug interactions with ARV use
- Explain the limitations and barriers to success with the use of ARV therapy

Key Points:

1. ARV therapy is not a cure for HIV/AIDS; elimination of HIV from the body has not been achieved using the most powerful antiretroviral therapies available.
2. HIV can still be transmitted, even when an individual is on ARV therapy or HIV RNA levels are below the limits of detection.
3. ARV therapy can significantly reduce HIV-related mortality and morbidity.
4. For therapy to be effective, ARV medications must be used in combination.
5. Patients on ARV therapy require close monitoring and frequent evaluation.
6. Decisions about ARV therapy are complex and require consideration of potential adverse effects, drug interactions, resistance issues and the need for proper adherence.



Handout 6.1

Nucleoside Reverse Transcriptase Inhibitors

Zidovudine (ZDV)

Dosing: 300 mg bid, or 200 mg tid

Interactions: no food interaction

Toxicity:

- **Sx:** Fatigue, insomnia, nauseous, abdominal discomfort, headaches, myalgia
- **AE:** Granulocytopenia, neutropenia, anaemia, pigmentation of nail beds (melanonychia), lactic acidosis, hepatic steatosis

Lamivudine (3TC)

Dosing: 150 mg bid

Interactions: no food interaction

Toxicity:

- **Sx:** Mild abdominal discomfort, occasional nauseous
- **AE:** Minimal

Stavudine (D4T)

Dosing: 40 mg bid for weight > 60 kg, 30 mg bid for weight < 60 kg

Interactions: no food interaction

Toxicity:

- **Sx:** Pain, tingling, and numbness in extremities; nauseous
- **AE:** Peripheral neuropathy, nauseous, lactic acidosis, steatosis, pancreatitis, hepatitis

Abacavir (ABC)

Dosing: 300 mg bid

Interactions: alcohol increases ABC 41%

Toxicity:

- **Sx:** Fever, rash, flu-like symptoms, dizziness, insomnia, diarrhoea, nauseous, headache
- **AE:** Fever, rash, malaise, nauseous, vomiting, myalgias, arthralgias (hypersensitivity reaction, which usually occurs within the first 6 weeks of therapy), lactic acidosis, hepatic steatosis

Didanosine (ddI)

Dosing: 400 mg qd for weight > 60 kg, 250 mg qd for weight < 60 kg

Interactions: take on an empty stomach 1 hr. before or 2 hrs after a meal.

Toxicity:

- **Sx:** Nauseous, vomiting, diarrhoea, headache
- **AE:** Peripheral neuropathy, pancreatitis, lactic acidosis, anaemia, leukopenia



Handout 6.2

Non-nucleoside Reverse Transcriptase Inhibitors

Efavirenz (EFV)

Dosing: 600 mg HS

Interactions: take on empty stomach (fat increases absorption)

Toxicity:

- **Sx:** Insomnia, vivid dreams, poor concentration, mood change, dizziness, rash, nauseous, dysequilibrium
- **AE:** Rash, hepatitis, depression, psychosis

Nevirapine (NVP)

Dosing: 200mg QD X 2 weeks then 200mg BID

Interactions: no food interaction

Toxicity:

- **Sx:** Rash, fever, nauseous
- **AE:** Rash, Stevens-Johnson syndrome, hepatitis

Protease Inhibitors

Nelfinavir (NFV)

Dosing: 750 mg TID or 1,250 mg BID

Interactions: take with meal or snack

Toxicity:

- **Sx:** Diarrhoea, nauseous
- **AE:** Fat redistribution, lipid abnormalities

Lopinavir (LPV/r)

Dosing: 3 caps (400 mg lopinavir) BID

Interactions: take with food

Toxicity:

- **Sx:** Diarrhoea, nauseous
- **AE:** Fat redistribution, lipid abnormalities

Saquinavir (SQV)

Dosing: 1,200 mg TID

Interactions: take with large meal

Toxicity:

- **Sx:** Diarrhoea, nauseous, flatulence
- **AE:** Fat redistribution, lipid abnormalities



Handout 6.3: Common Questions about ARVs

- 1. How do ARV drugs affect HIV disease?**
- 2. Name the three main classes of ARV drugs.**
- 3. Where do the different classes of ARVs work in the HIV Life Cycle?**
- 4. What are the two main enzymes which current ARV drugs inhibit?**
- 5. What is the main goal of ARV therapy?**
- 6. What are the main advantages of ARV drugs?**
- 7. When should ARV drugs be started?**
- 8. What are main challenges of ARV drugs?**
- 9. What main factors are taken in to consideration before starting patients on ARV drugs?**



Handout 6.4

Educating Your Patients about Common Side Effects of ARV Therapy

All antiretroviral drugs, as well as drugs used to treat and prevent OIs, have some side effects. These side effects may vary from person to person. Some may experience few or no side effects, while others have mild to severe side effects. Side effects often occur after starting a new drug or therapy; they may decrease or disappear entirely after several weeks or may persist throughout the therapy.

Below are the more common side effects associated with first-line regimen ARVs. In addition, advice a caregiver can give to the patient on managing these side effects is included. Local practices and remedies should be assessed and integrated as appropriate.

Fatigue

- Symptoms of fatigue can be physical (it may be hard to get out of bed or to walk upstairs) or psychological (patient may find it hard to concentrate; suffer depression, anxiety, and/or stress).
- Fatigue may result from sleep problems (having trouble falling asleep, staying asleep, suffering sleep disturbances).
- Fatigue can also be a symptom of anaemia.

Advise the patient to:

- Try going to sleep at night and waking in the morning at the same time every day; changes in sleep patterns can make a person feel more tired.
- Avoid caffeine, alcohol, or nicotine for 4-6 hours before going to bed. A light snack, chamomile tea, warm milk, and relaxation techniques before bedtime are often helpful.
- Try to get a little exercise. Exercise eases stress and makes a person feel stronger and more alive.
- Have someone help with day-to-day chores such as cooking. Keep easy-to-prepare foods on hand for times when cooking is too tiring.
- Eat snack foods throughout the day and fresh fruits that don't require preparation.

Anaemia

- Anaemia may be caused by HIV itself or be a side effect of drugs.
- Give intramuscular injections of vitamin B12 every 1-2 weeks, if necessary or feasible.



Handout 6.4 (continued)

Advise the patient to:

- Return to the clinic to check hemoglobin count regularly.
- Eat a diet of locally available foods that are high in folic acid, including spinach and other green leafy vegetables, and high in iron and vitamin B12, such as fish, meat and poultry, if available.
- Take multivitamins and/or supplements of folic acid or iron

Headache

Headaches are generally treatable with nonprescription drugs and by stress reduction.

Advise the patient:

- For on-the-spot relief, try resting in a quiet, dark room with your eyes closed; place cold washcloths over your eyes; massage the base of your skull with your thumbs and massage both temples gently; take hot baths or showers.
- To prevent headaches from recurring, try to anticipate when the pain will strike. Avoid or limit those foods known to trigger headaches, especially caffeine (in coffee, tea, soft drinks), chocolate, alcohol, citrus fruit (if more than half a cup a day), food additives (monosodium glutamate), nuts, onions, hard cheese and vinegar.

Nauseous and vomiting

- Persistent vomiting can lead to serious medical problems, such as dehydration, chemical imbalances or even tearing of the esophagus. Advise the patient to come to the clinic if nauseous or vomiting persists and/or interferes with his/her taking the medications.
- Give anti-nauseous medications, as needed.
- Nauseous often improves if antiretrovirals are taken with food, and most ART drugs can be taken with a meal or snack. Ritonavir or saquinavir should be taken with foods that are high in fat. Indinavir can be taken with a light, fat-free, low-protein meal or snack. Only ddI must absolutely be taken on an empty stomach.

Advise the patient to:

- Eat a diet of bananas, rice, applesauce, toast and tea, if possible (known as the BRAT diet).
- Eat small amounts of bland, odorless foods such as toast, crackers, clear soup or broth, which are easier to keep down. Eat simple boiled foods such as porridge, potatoes and beans.
- Avoid hot, spicy, strong-smelling and greasy food.
- Keep some dry crackers at your bedside. Before getting out of bed in the morning, eat a few dry crackers and sit in bed for a few moments.
- Eat small snacks throughout the day, and avoid large meals.
- Try peppermint, chamomile or ginger tea (or the local equivalent).



Handout 6.4 (continued)

Diarrhoea

Watch for signs of dehydration and weight loss. If patient is dehydrated, teach him or her how to make an oral rehydration solution.

Advise the patient to:

- Eat a diet high in soluble fiber (which slows the diarrhoea by absorbing liquid). These include the BRAT diet (see d. above) and soft white rice, oatmeal (or oat bran), cream of wheat or other locally available porridge and soft bread (not whole grain).
- Avoid foods high in insoluble fiber, such as corn, popcorn, fruits (dried and raw), vegetables, nuts, seeds and most grains. These can make diarrhoea worse.
- Decrease high fat foods.
- Avoid milk products and greasy, high fiber or very sweet foods. These tend to aggravate diarrhoea.
- Prevent dehydration by drinking lots of fluids. If dehydrated, drink rehydration solution.
- Drink rice or barley water made by boiling a half cup of rice or barley in one liter of water. Once the rice or barley is cooked, pour off the water and drink it in small sips.

Rash

- Many people get a rash when starting antiretrovirals, but most of the time it is mild and goes away after a couple of weeks.
- Rash seems to be a slightly more common side effect among women taking certain antiretroviral medications than among men. Nevirapine appears to be the main culprit, along with abacavir, efavirenz and amprenavir, as well as cotrimoxazole, isoniazid and many antibiotics. Women also seem more prone to severe rash.
- Sometimes the rash can be a sign of hypersensitivity that can include fever and flu-like symptoms, such as aches, pains, fatigue, headache, difficulty breathing, sore throat and cough.
- Be sure to monitor a patient's skin for discoloration and changes in its surface, as well as for signs of hypersensitivity, especially after starting a new medication; teach the patient to monitor for such signs.

Advise the patient to:

- Use creams, moisturizers or a topical ointment such as Benadryl to soothe and comfort the skin, if a rash should develop.
- Use unscented, nonsoap cleansers or oatmeal soaps.
- Avoid taking very hot showers or baths; they tend to irritate the skin.
- If a rash should develop, protect skin from sun exposure; the ultraviolet (UV) rays of the sun may exacerbate a rash.



Handout 6.4 (continued)

Peripheral neuropathy

- Peripheral neuropathy results from damage to the nerves, which may be caused by HIV itself or be a side effect of certain drugs. Signs of peripheral neuropathy include a sensation of burning, stinging, stiffness, tickling or numbness in the feet, toes or hands.
- Look for these signs during a patient's follow-up visits and advise the patient to watch out for these signs and report them to his or her caregiver.
- Treatment of peripheral neuropathy includes stopping or decreasing the offending drug. Once there is damage to the nerves, it cannot be reversed, therefore be sure to monitor for signs of peripheral neuropathy from the start of therapy.
- Because vitamin B deficiency can contribute to peripheral neuropathy, prescribe a B-complex supplement containing thiamine (B1), riboflavin (B2), niacin, pyridoxine (B6) and cobalamin (B12). Consider giving the patient a weekly B12 injection.

Advise the patient to:

- Wear loose-fitting shoes, roomy cotton socks and padded slippers around the house. Good air circulation around the feet helps.
- Keep feet uncovered in bed. Bedding that presses down on the toes can add to the problem.
- Walk around, but not too much. Walking helps blood to circulate in the feet, but too much walking or standing can make the problem worse.
- Soak feet in ice water (or the coldest water available) to reduce foot pain.
- Massage the feet; this reduces foot pain temporarily.
- Try ibuprofen (or the equivalent) to reduce pain and swelling
- Take vitamin B complex supplements.

Adapted from: Family Health International (2003), *HIV/AIDS Care & Treatment: A Clinical Course for People Caring for Persons Living with AIDS*; Arlington: USA. Visit www.fhi.org.



Handout 6.5: Common Questions about Resistance

- 1. What is “resistance”?**
- 2. How does resistance occur?**
- 3. What is the advantage of triple ARV therapy over monotherapy?**
- 4. Why may a patient who has developed resistance to D4T also be said to be resistant to AZT when he has never taken AZT before?**
- 5. What is the best way to prevent resistance?**
- 6. What is the effect of resistance at an individual level?**
- 7. What is the effect of resistance at a public health level?**



Worksheet 6.1: Role Play – Why Should I Take ARVs?

Role Play Instructions:

Patients need to know the benefits of taking ARV drugs. Nurses must be able to explain to patients the effect of ARV drugs on HIV disease.

1. Join another participant as a two-member team.
2. Role play the question, “Why should I take ARVs?” with one member of your team playing the role of the nurse providing a response and one person in the role of the patient.
3. Before beginning the role play, you should decide who the patient is (e.g., male/female, age, etc.) and what brought him or her to the clinic.
4. You should switch roles after five minutes.
5. Discuss your responses with the larger group and discuss what responses are more effective.

Respond to the questions below as preparation for your role play.

1. What will you say as the nurse in this exercise?

2. What concerns will you have as the patient in this exercise?



Worksheet 6.3

ART Case Study

Case Study Instructions:

1. Spend a few minutes reading the case.
2. Discuss the questions as a large group and answer the questions with the facilitator.

Case Scenario

Nadia is a 34 year old lady, diagnosed with HIV 18 months ago. For the first 14 months, Nadia was fairly well with a CD4 count between 350 and 500 cells/mm³. She had occasional chest infections and skin rashes. However, with treatment for these infections, good nutrition, exercise, and regular visits to the clinic, she was able to lead a normal life. However, 4 months ago, her health started deteriorating rapidly. Nadia had come to clinic with chronic diarrhoea, recurrent fever and shingles. She also had symptoms of TB. Blood tests revealed Nadia's CD4 count had dropped to 200 cells/mm³. TB was confirmed and she commenced on TB treatment. The doctor explained that after the intensive phase of TB, Nadia could commence ARV drugs to help control the HIV. Nadia was very reluctant however as she had heard many stories about ARVs making people even sicker.

When Nadia returned to clinic at the end of the intensive phase of TB treatment, the physician raised the issue of ARVs again. Still Nadia was worried about taking them in case they made her feel worse than without them. However, she trusted the doctor and the nurses who had explained to her the benefits of ARVs.

Nadia left the clinic having been told by the doctor, nurse, counsellor and pharmacist how important it is to take ARVs exactly as prescribed. Nadia was given a chart explaining which drugs to take and when, which she understood. That evening, Nadia took her first dose of ARVs. The following night, Nadia woke in the night having had extremely vivid dreams. She was afraid what the ARVs were doing to her. The next night, she experienced these dreams again and also started feeling nauseous.

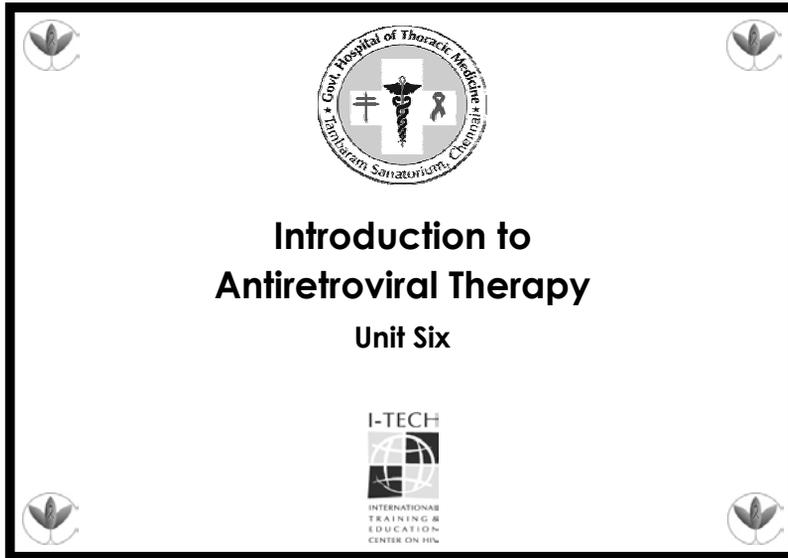
After a week, Nadia was exhausted and frightened. The dreams continued and she was now vomiting. Any improvement in her health that they had talked about at the clinic seemed to be a lie. Nadia felt she had been right all along and should never have trusted them at the clinic. The rumours were true and she must stop the ARVs immediately.



PowerPoint Slides

Refer to companion document for copies of the Unit 6 PowerPoint presentation slides.

 **Notes**



Unit Six should take approximately 1 ½ hours to implement.

- **Step 1:** Introduction to Antiretroviral Therapy; Slides 6.1-6.16 (15 minutes)
- **Step 2:** Why Should I Take ARVs Role Play; Slide 6.17 (20 minutes)
- **Step 3:** ARV Agents, NACO Guidelines for ART, and Side Effects of ARVs; Slides 6.18-6.35 (15 minutes)
- **Step 4:** Side Effects Small Group Exercise; Slide 6.36 (15 minutes)
- **Step 5:** Treatment Failure and Resistance; Slides 6.37-6.53 (15 minutes)
- **Step 6:** Antiretroviral Therapy Case Study; Slide 6.54 (10 minutes)
- **Step 7:** Presentation of Key Points; Slides 6.55-6.57 (5 minutes)



Learning Objectives

By the end of this unit, you will be able to:

- Describe the benefits of antiretroviral (ARV) therapy and general principles regarding their use
- Explain the nursing considerations involved in caring for patients on ARV therapy
- Identify possible adverse effects and drug interactions with ARV use
- Explain why ARV resistance occurs in some patients
- Explain the limitations and barriers to success with the use of ARV therapy

Introduction to ART

Slide 2

Step 1: Introduction to Antiretroviral Therapy; Slides 6.1-6.16 (15 minutes)

- Begin by reviewing the unit aim.
- The aim of this unit is to provide information about antiretroviral medications (ARVs) used to treat and care for HIV positive patients.
- Review the unit learning objectives using the corresponding slides PowerPoint presentation.
- Ask the participants if they have any questions about the objectives before continuing.



Important Terms

- **ART** AntiRetroviral Treatment
- **ARVs** AntiRetroVirals
- **HAART** Highly Active AntiRetroviral Treatment
- **Triple Therapy** Three Antiretrovirals

Basically it all means the same thing!

Introduction to ART

Slide 3

- Confusing terminology!
- All these different terms are confusing but they all refer to the same thing:
 - o The use of antiretroviral drugs.
 - o People use different abbreviations – that's all!



How Do ARVs Control HIV?

- ARVs reduce the ability of the HIV virus to replicate
- In turn, this increases the ability of the body to fight disease

As HIV
replication
decreases,



immune
response
increases!

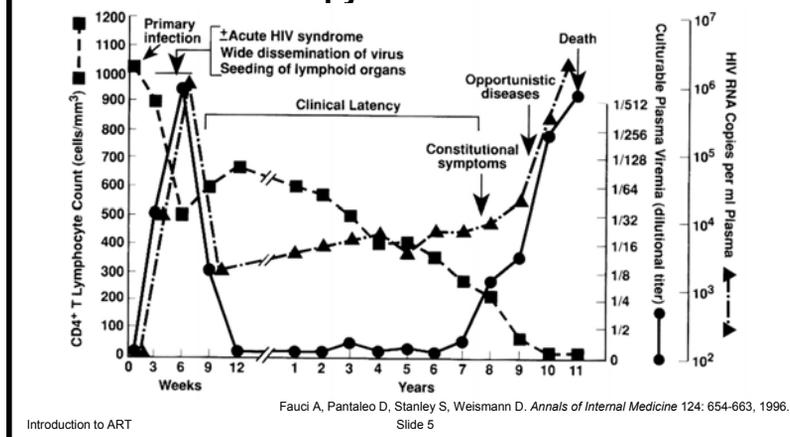
Introduction to ART

Slide 4

- Remember, as HIV replicates inside CD4 cells, it destroys those CD4 cells and gradually weakens the immune system.
- Therefore, by reducing the ability of HIV to replicate, ARVs control HIV infection and therefore protect the immune system which would otherwise be destroyed.
- With the immune system restored and protected, the body is then able to fight infections as in uninfected individuals.



Natural History of HIV Infection without Antiretroviral Therapy



- Typical course of HIV infection. Throughout the course of HIV infection, virus replicates and immunodeficiency progresses steadily, despite the absence of observed disease during the so-called clinical latency period.
- The normal course of disease is shown in this graph:
 - The viral load is very high within the first month of infection.
 - This high level of virus means the CD4 count drops steeply as it is being attacked by HIV.
 - Then, over the next few months, the immune system makes an attempt to fight the virus.
 - Viral load drops steeply & CD4 count is able to rise slightly.
 - After this initial stage, the HIV disease may then remain latent in the body during which a patient is asymptomatic.
 - This asymptomatic phase varies but may last up to 15 years in some patients.
 - Eventually however, the viral load starts increasing as replication continues.
 - The CD4 cells are progressively overwhelmed and the patient becomes symptomatic.
 - Towards the end, viral load gets extremely high as CD4 cell gets extremely low, dropping even as low as 0.



Benefits of ARV Therapy

- Prevents opportunistic infections
- Alters/reverses course of existing opportunistic infections
- Decreases hospitalizations
- Increases survival
- Improves quality of life
- Restores hope
- Reduces HIV transmission
- Benefits both adults and children

ARVs change HIV from a terminal (fatal) disease to a “chronic disease”

Introduction to ART

Slide 6

- There are many benefits to using antiretroviral therapy.
 - It helps to stabilize the immune system, reversing the progressive destruction of immune function and increasing the CD4 cell count.
 - Because the development of opportunistic infections is associated with severe damage to the immune system and very low CD4 cell counts, these infections should be prevented with antiretroviral therapy. If the infections are already present, their course may be shortened or made less severe with antiretroviral therapy.
- In the US and Europe, antiretroviral therapy has reduced hospitalizations for treatment of HIV-related infections, and the death rate from AIDS has been dramatically reduced.
 - Brazil, a country with a large number of HIV-infected individuals but limited resources, has reported an 80% decrease in HIV-related hospitalizations and a 40-70% reduction in AIDS deaths since introducing antiretroviral therapy. This reduction has resulted in a cost savings of 677 million U.S. dollars.
 - Improvement in morbidity and mortality have also been seen with the introduction of antiretroviral therapy in other developing countries including Thailand, Senegal, and Uganda. The quality of life of HIV-infected individuals has improved with therapy, and their hope is restored.
 - Antiretroviral therapy has been associated with major reductions in mother-to-child transmission in the developed world, and, by lowering the amount of virus in the blood, it is expected that other forms of HIV transmission may be reduced as well. Antiretroviral therapy has been shown to benefit both adults and children.
 - The availability of therapy may be an incentive for voluntary HIV counseling and testing, which increases identification of HIV-infected individuals, allowing them to access healthcare and prevent further transmission.



ARVs at Work....

- Remember – HIV uses the CD4 cell as an HIV factory
- ARVs get inside the factory, and reduce the ability of the virus to replicate
- So, less virus can be made



Introduction to ART

Slide 7

- ARVs inhibit replication in the CD4 cell. Use of the factory analogy may help trainees to understand this.
 - o Normally, HIV uses the CD4 cell like a factory.
 - o It needs the machinery inside the factory (CD4 cell) to replicate. So it enters the factory and starts replicating, using the CD4 cell's machinery.
 - o Millions of new viruses are released from the factory (CD4 cell).
 - o ARVs prevent the process from occurring in the CD4 cell, so that new viruses are no longer produced.
 - o There is therefore less virus around to infect and destroy other CD4 cells.



Classes of ARV

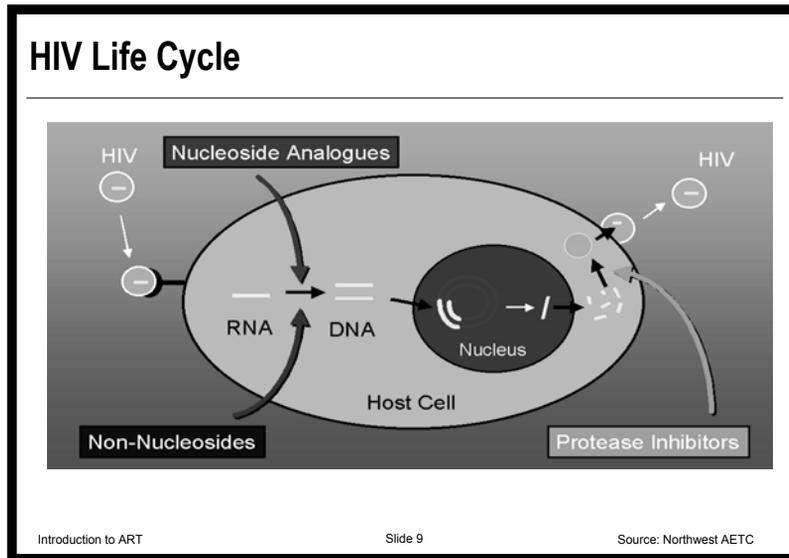
- Nucleosides Reverse Transcriptase Inhibitors (NRTIs)
- Non-nucleosides Reverse Transcriptase Inhibitors (NNRTIs)
- Protease Inhibitors (PIs)

Each class acts at a different stage and in a different way, to prevent HIV from replicating within the CD4 cell

Introduction to ART

Slide 8

- Refer participants to Handouts 6.1 and 6.2 as you discuss each class of ARV drugs and the specific types of drugs available.
- There are three enzymes involved in replication. Without them replication cannot occur.
 - o The first, Reverse Transcriptase, is needed at the beginning in order to make DNA copies of viral RNA.
 - o Protease is essential at the end, for assembling new viral particles into new viruses.
- ARVs stop these enzymes from working, thus slowing down the process of replication.



- Let's review how HIV attaches to the CD4 cell and replicates. HIV binds to and enters the host cell. Part of the virus, an enzyme called reverse transcriptase (RT), translates HIV's genetic material (single stranded RNA) into a form compatible with human DNA (double stranded DNA, the building block of all human cells). This is the first place that ARVs (**NRTIs** and **NNRTIs**) play a role.
- The viral DNA then becomes part of the CD4 cell's DNA within the nucleus and transforms the cell into a factory for making more HIV (think of the viral DNA combined with the host cell's DNA like a complete blueprint for making new virus).
- The complete DNA (i.e., the blueprint) undergoes translation and creates complex HIV proteins. These new HIV proteins are not infectious until the protease enzyme cuts each complex protein chain into smaller functional proteins that can be used to build the new virus (e.g., the core, the envelope). This is the stage at which **Protease Inhibitors** (PIs) work.
- The smaller functional proteins are then stuck together to form new HIV virus. The complete virus can then leave the CD4 cell and enter the plasma to infect new host cells.
- Gray = blood
- Blue circle = CD4 cell
- Purple circle = CD4 cell nucleus



When to Start ARV Therapy in Limited-Resource Settings

For HIV-infected adults and adolescents:

- | | |
|---|--|
| <ul style="list-style-type: none"> ● If CD4 testing available: <ul style="list-style-type: none"> ○ WHO Stage IV disease (clinical AIDS) irrespective of CD4 cell count ○ WHO Stage I, II, III with CD4 cell counts 200/mm³ or lower | <ul style="list-style-type: none"> ● If CD4 testing unavailable: <ul style="list-style-type: none"> ○ WHO Stage IV disease (clinical AIDS) irrespective of total lymphocyte count ○ WHO Stage II or III disease with a total lymphocyte count 1200/mm³ or lower |
|---|--|

Source: WHO, 2002.

Introduction to ART

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- Taking antiretroviral therapy requires a long-term commitment from the patient. Correct and consistent use is required for the drugs to be effective and the response to be durable or to last.
- Antiretroviral agents can have side effects that can make them difficult for some patients to take. Thus, the decision about when to start therapy is an important one.
 - Treating someone too early, before therapy is truly indicated, may lead to unnecessary toxicity and premature development of drug resistance.
- Antiretroviral therapy should be given to individuals with symptomatic disease, including those with wasting, opportunistic infections, or HIV-related cancers, recurrent or persistent oral thrush, and recurrent invasive bacterial infections, irrespective of CD4 cell count or total lymphocyte count.
- Therapy is also recommended for people with earlier symptomatic or asymptomatic HIV infection when the CD4 cell count falls below 200/mm³. When CD4 cell testing is not available, treatment is recommended for earlier symptomatic infection with a total lymphocyte count below 1200/mm³.
 - However, in the absence of symptoms, total lymphocyte count alone is less useful as a marker of disease severity or progression and should not be used as an indicator to begin antiretroviral therapy.



When to Start ARV Therapy:

WHO Stage III

- Treatment is also recommended for patients with advanced **WHO Stage III** disease:
 - Including recurrent or persistent oral thrush and recurrent invasive bacterial infections irrespective of CD4 cell

OR

- Total lymphocyte count
- Viral load not considered essential

Introduction to ART

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- Anemia is common in limited-resource settings and may be related to malnutrition, malaria or other parasitic diseases.
 - In women, anemia may be the result of menstruation or recent pregnancy-related hemorrhage.
 - Although not specifically part of the World Health Organization (WHO) staging system, anemia is also common in HIV-infected individuals and may be due to HIV itself or to underlying opportunistic infections. Anemia has also been shown to be an independent predictor of progression and death in HIV-infected individuals.
 - Therefore, anemia may be another potential indication for antiretroviral therapy, especially if there is no obvious cause or if it does not respond to therapy, and the total lymphocyte count is below 1200/mm³.
- Although high HIV-RNA level or viral load is associated with a more rapid decline in CD4 cell count and more rapidly progressive HIV infection, measurement of viral load is not considered necessary to start therapy.
 - A specific viral load in the absence of symptoms or low CD4 cell count should not be routinely used as an indicator to start antiretroviral treatment.



Factors to Consider When Starting Therapy

- NACO ARV guidelines
- Potential side effects
- Concurrent health conditions
 - Including abnormal laboratory values
- Drug interactions
- Potential for pregnancy
- ADHERENCE ability

Introduction to ART

Slide 12

- Review guidelines



Clinical Evaluation before Start of ARV Therapy

- Assess stage of infection
 - Identify past and current HIV-related illnesses that may require treatment (e.g., TB)
- Identify other co-existing medical conditions (e.g., chronic hepatitis)
- List current medications.
- Assess sexual and drug-using behaviors:
 - Condom and contraceptive access and use
 - Menstrual history
 - Assess possibility of pregnancy and plans/risk for pregnancy
- Assess readiness to start therapy

Introduction to ART

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- Before starting antiretroviral therapy, each individual should receive a careful evaluation. The clinical stage of infection, including past or current HIV-related illnesses that may require additional treatment, should be assessed with a careful history and physical examination.
- It is also important to identify other co-existing medical conditions, such as chronic hepatitis, that may affect the choice of drugs and the risk of adverse effects.
- All current medications, including herbal or traditional remedies should be listed. The clinician should discuss sexual and drug-related risk behaviors, as well as the importance of using condoms to prevent further transmission. Although antiretroviral therapy may decrease the risk of transmission of HIV to others, it does not eliminate that risk. HIV may still be transmitted, even if the viral load is suppressed below detectable levels. In women who are about to start therapy, the clinician should take a careful menstrual history and should ask about the use of contraception. It is important to rule out the possibility of pregnancy and to assess the ongoing risk of pregnancy because this may affect the choice of drug regimen.
- Finally, it is critical to assess the patient's readiness to start therapy and her commitment to taking these medications correctly and consistently, possibly for the rest of her life.



Patient Factors in Choice of Initial Regimen

- Stage of disease
- Likelihood of adherence
- Pregnancy or risk of pregnancy
- Concurrent TB and other illnesses (e.g., hepatitis B, C)
- Opportunity for reliable follow-up
- Disclosure status

Introduction to ART

Slide 14

- There are several patient-related factors that will also affect the choice of regimen:
 - stage of disease
 - likelihood of adequate adherence
 - presence of pregnancy or the risk of becoming pregnant
 - presence of concurrent tuberculosis and other illnesses
 - ability of the patient to return for regular, reliable follow-up visits



Key Point!

Starting antiretroviral medication is not an emergency!!

Introduction to ART

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- Because there are several factors to consider when starting a patient on ART, we cannot look at beginning ART as an emergency.
- In addition to biological factors associated with beginning a patient on ART, the patient must also be prepared to be successful on ART



Goals of Therapy

- Maximal and durable suppression of viral load
- Restoration and preservation of immunologic function
- Improvement of quality of life
- Reduction of HIV-related morbidity and mortality



Role Play: Why Should I Take ARVs

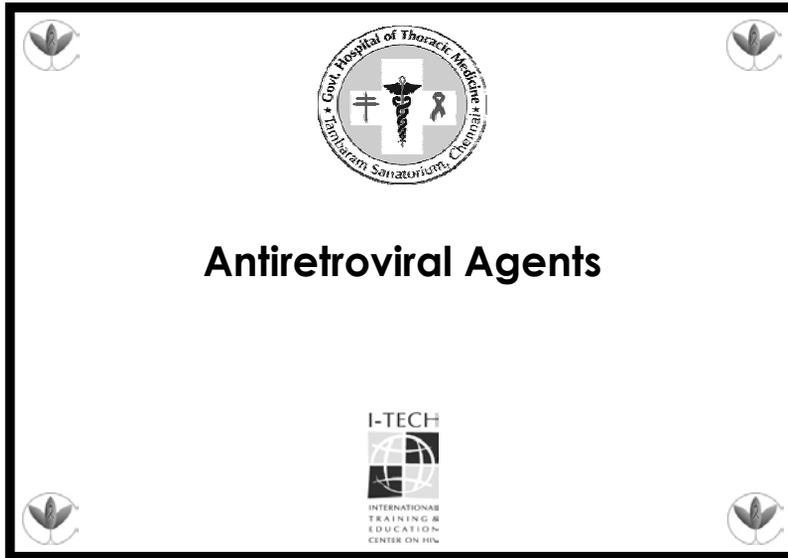
- Join another participant as a two-member team
- Role play the question, “Why should I take ARVs?” with one member of your team playing the role of the nurse providing a response and one person in the role of the patient
- Before beginning the role play, you should decide who the patient is (e.g., male/female, age, etc.) and what brought him or her to the clinic
- Switch roles after five minutes
- Discuss your responses with the larger group and discuss what responses are more effective

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Step 2: Why Should I Take ARVs Role Play; Slide 6.17 (20 minutes)

- Patients need to know the benefits of taking ARV drugs. Nurses must be able to explain to patients the effect of ARV drugs on HIV disease.
- Ask participants to refer to the Why Should I Take ARVs worksheet located in the Participant’s Handbook (Worksheet 6.1.) and show the corresponding slide in the PowerPoint presentation.
- Participants should practice the role play in pairs and switch roles after five minutes.
- Discuss responses and which responses are more effective as a class.



**Step 3: ARV Agents, NACO Guidelines for ART, and Side Effects of ARVs;
Slides 6.18-6.35 (15 minutes)**

- Continue presentation on Antiretroviral Agents and NACO Guidelines for ART.
- Ask participants to refer to Nucleoside Reverse Transcriptase Inhibitors and Non-nucleoside Reverse Transcriptase Inhibitors (Handouts 6.1-6.2) located in the Participant's Handbook.



Nucleoside Reverse Transcriptase Inhibitors

- Zidovudine (AZT, ZDV)
- Lamivudine (3TC, Epivir)
- Stavudine (d4T, Zerit)
- Didanosine (ddl, Videx)
- Abacavir (ABC, Ziagen)
- Tenofovir (TDF, Viread)

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Non-nucleoside Reverse Transcriptase Inhibitors

- Efavirenz (EFZ, Sustiva)
- Nevirapine (NVP, Viramune)
- Delavridine (DLV)

Note: Not effective against HIV-2 or HIV-1 Group O viruses

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Protease Inhibitors

- Nelfinavir (NFV, Viracept)
- Lopinavir/ritonavir (LPV/r, Kaletra)
- Saquinavir (SQV)
- Amprenavir (APV)
- Indinavir (IDV, Crixivan)
- Ritonavir (RTV, Norvir) *Recommended as a booster only*

Introduction to ART

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**NACO Guidelines for
Antiretroviral Therapy**



I-TECH
INTERNATIONAL
TRAINING &
EDUCATION
CENTER ON HIV



First-Line ART Combination Regimens (WHO 2003)

ARV Regimen	Usage in Women of Child Bearing Age or Pregnant	Major Potential Toxicities
D4T/3TC/ NVP	Can be used	D4T related neuropathy, pancreatitis and lipoatrophy; NVP related hepatotoxicity and severe rash
ZDV/3TC/ NVP	Can be used	ZDV related GI, intolerance, anaemia and neutropaenia NVP related hepatotoxicity and severe rash
D4T/3TC/ EFV	Should be avoided	D4T related neuropathy, pancreatitis and lipoatrophy EFV related CNS toxicity and potential for teratogenicity
ZDV/3TC/ EFV	Should be avoided	ZDV related GI intolerance, anaemia and neutropenia EFV related CNS toxicity and potential for teratogenicity

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ARVs Available at Tambaram

- D4T 30 mg / 3TC 150 mg*
- D4T 40 mg / 3TC 150 mg*
- D4T 30 mg / 3TC 150 mg / NVP 200 mg*
- D4T 40 mg / 3TC 150 mg / NVP 200 mg*
- NVP 200 mg
- ZDV 300 mg / 3TC 150 mg*
- ZDV 300 mg / 3TC 150 mg / NVP 200 mg*
- Coming soon: EFV (Efavirenz)

** Combination Drugs*

Introduction to ART

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- May need to change coming soon: EFV. Check to see if EFV is available.



Cost of Treatment

Primary Regimens	Cost
D4T/3TC/NVP	1300 Rs./month
ZDV/3TC/NVP	1500 Rs./month
D4T/3TC/EFV	Coming soon
ZDV/3TC/EFV	Coming Soon

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- These costs were calculated June 2004. Check to make sure these are up to date.
- Check about availability of last 2 combinations.



Monitoring ARV Therapy: Adverse Effects and Toxicity of Regimen

- Clinical signs/symptoms:
 - Rash
 - Jaundice
 - Abdominal pain
 - Numbness or pain in extremities
- Laboratory abnormalities

Introduction to ART

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- Individuals on antiretroviral therapy must also be monitored for evidence of adverse effects or toxicity. Some of the clinical signs or symptoms suggesting possible adverse effects include rash, jaundice, abdominal pain, or numbness or pain in the extremities. Significant toxicity may be detected through laboratory testing, even when signs or symptoms are absent.
- Ideally, after starting antiretroviral therapy, an individual should be seen approximately 1 month later and then every 3-4 months for clinical assessment and laboratory testing, if needed. In patients on a nevirapine-containing regimen, liver enzymes should be measured if possible after 2 weeks of therapy due to concerns about liver toxicity.



Laboratory Monitoring for Toxicity and Effectiveness of ARV Therapy

Minimum Tests	Basic Tests	Desirable Tests	Optional Tests
<ul style="list-style-type: none"> • HIV antibody test • Hemoglobin or hematocrit 	<ul style="list-style-type: none"> • White blood cell count/ differential • Liver enzymes • Serum creatinine and/ or blood urea nitrogen • Serum glucose • Pregnancy test 	<ul style="list-style-type: none"> • CD4 cell count • Bilirubin • Amylase • Serum lipids (triglycerides cholesterol) 	<ul style="list-style-type: none"> • HIV-1 RNA

Adapted from WHO, 2002.

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- This slide shows the types of laboratory tests that are used to monitor ARV use. The absolute minimum laboratory tests to have before starting antiretroviral therapy are HIV antibody test to document the presence of HIV infection and a hemoglobin or hematocrit level to screen for anemia before starting ZDV-containing regimens.
- Basic tests are needed to provide effective monitoring of most antiretroviral regimens. These include a white blood cell count and differential to measure the total lymphocyte count and assess decreases in white blood cells, which may occur from bone marrow suppression with ZDV; measurement of liver enzymes such as serum alanine or aspartate aminotransferase, to assess possible hepatitis co-infection and to monitor for hepatotoxicity; serum creatinine and/or blood urea nitrogen to assess baseline renal function and possible renal toxicity, which can occur with indinavir treatment; serum glucose with PI-containing regimens, because these have been associated with hyperglycemia and even overt diabetes; and pregnancy tests for women.
- Desirable tests, though not essential, include CD4 cell count, bilirubin, amylase and serum lipids, such as triglycerides and cholesterol. CD4 cell counts are the best indicator of immune system response to treatment. PIs can cause lipid elevations. Extremely high triglyceride levels may occasionally be seen and may place the patient at increased risk for pancreatitis, which causes elevations in amylase levels. Elevations in bilirubin can be seen with indinavir and may also indicate liver damage with other antiretroviral agents.
- Other laboratory testing may be needed when indicated by clinical signs or symptoms suggesting toxicity. Viral load testing is currently considered optional because of cost and limited availability.



Serious Adverse Effects of NRTIs (1)

- *Lactic acidosis/fatty liver
 - All NRTIs
- Loss of subcutaneous fat
 - All NRTIs
- Anemia
 - ZDV
- Myopathy
 - ZDV
- *Pancreatitis
 - ddl
- Neuropathy
 - ddl
 - d4T
- Ascending motor weakness
 - d4T
- *Hypersensitivity reaction
 - ABC

Introduction to ART
Potentially life-threatening

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- Although effective antiretroviral therapy can significantly reduce morbidity and mortality related to HIV, toxicity is not uncommon and may be serious or severe. Use of drugs with similar toxicities should be avoided when possible. Some toxicities are mild or transient and disappear or diminish with continued treatment. Several ARV agents, such as the buffered formulation of didanosine or ddl, lopinavir/ritonavir, saquinavir and nelfinavir, commonly result in gastrointestinal symptoms such as nausea or diarrhea. Although not serious, these side effects may result in decreased adherence to therapy and may increase risk for dehydration in tropical settings. Other adverse effects are potentially life-threatening and require discontinuation of the drug.
- Some serious adverse effects of antiretroviral agents apply to entire drug classes, but others are specific to certain drugs. All of the nucleoside analogs have been associated with an increased risk of lactic acidosis and fatty liver. Lactic acidosis often presents with nonspecific signs and symptoms, including fatigue, weakness, loss of appetite, nausea and vomiting. However, it can progress to abnormal heart rhythms, multi-organ failure, and death. Nucleoside analogs also may cause loss of subcutaneous fat, known as lipodystrophy.
- Zidovudine can cause bone marrow suppression and result in anemia and other abnormalities reflected in an abnormal complete blood count. ZDV has also been associated with the occasional development of myopathy, presenting with pain and aching in muscles.
- Both didanosine or ddl and zalcitabine can cause potentially life-threatening pancreatitis and these two drugs and stavudine or d4T can result in neuropathy, presenting with numbness, tingling, or pain in the extremities. Stavudine has also recently been associated with the rare occurrence of ascending motor weakness, similar to the Guillain-Barre syndrome and often accompanied by lactic acidosis. Zalcitabine has also been associated with occasional occurrence of oral ulcers.
- Abacavir can cause a hypersensitivity reaction in a small percentage of patients usually occurring in the first six weeks of therapy. This reaction typically presents with fever, muscle aches and other flu-like symptoms, and sometimes with a rash. Patients who experience this reaction should stop the drug and never take it again, as there have been deaths in patients who took abacavir again after having experienced a hypersensitivity reaction.



Serious Adverse Effects of NNRTIs (2)

- *Hepatitis
 - All NNRTIs
- Skin rash
 - All NNRTIs
- Central nervous system symptoms
 - Efavirenz
- *Stevens-Johnson syndrome
 - Nevirapine

*Potentially life-threatening
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- All of the NNRTIs can cause a skin rash. In most cases the rash is mild and resolves with continued use of the drug, but in rare cases it can be severe and even life-threatening, especially in patients taking nevirapine. The NNRTIs can also cause liver toxicity, including drug-induced hepatitis, which can sometimes be life-threatening.
- Efavirenz has been associated with disturbing dreams, dizziness, and difficulty with concentration, but these symptoms tend to decrease with duration of therapy.



Serious Adverse Effects of PIs

- Hyperglycemia and diabetes
 - All PIs
- Elevated serum lipids
 - All PIs
- Changes in body fat distribution
 - All PIs
- *Liver toxicity
 - All PIs
- Kidney stones
 - Indinavir
- Hypersensitivity rash
 - Amprenavir
- Pancreatitis
 - Lopinavir/ritonavir

*Potentially life-threatening

Introduction to ART

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- Protease inhibitors can cause hyperglycemia and diabetes, elevations in serum lipids, and liver toxicity. They are also associated with changes in body fat distribution, including both fat accumulation and loss of subcutaneous fat.
- Indinavir increases the risk of kidney stones. Patients must drink large amounts of water to avoid this complication, especially if they live in areas with hot climates. Amprenavir is the protease inhibitor most likely to cause a hypersensitivity rash. The combination of lopinavir and ritonavir has been associated with pancreatitis, which is potentially fatal. It should be noted that any protease inhibitor can cause pancreatitis as a result of its effects on triglycerides.



Antiretroviral Drug Interactions

- These are of clinical importance if they:
 - Increase likelihood of drug toxicity
 - Decrease therapeutic effectiveness of an administered drug
- Important interactions may be seen between ARV agents and:
 - Other ARV agents
 - Prescribed or non-prescription drugs (e.g., rifampin)
 - Herbal or traditional remedies
 - Certain foods, e.g. grapefruit juice
 - Certain illicit drugs

Introduction to ART

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- Many of the antiretroviral agents interact with other drugs. These drug interactions are of clinical importance if they increase the likelihood of drug toxicity or if they decrease the therapeutic effectiveness of an administered drug. Significant drug interactions may be seen between different antiretroviral agents, with other prescribed or nonprescribed drugs, or with herbal or traditional treatments. There can also be interactions between antiretroviral agents and certain foods or with certain illicit drugs.



Some Important ARV Drug Interactions for Limited-Resource Settings

- Rifampin – PIs (except SQV/r), NNRTIs (except efavirenz)
 - Should not be used together
- Oral contraceptives – ritonavir, nelfinavir, amprenavir, lopinavir, nevirapine, efavirenz
 - May decrease effectiveness of oral contraceptives
 - Use additional or alternative method
- Anticonvulsants – PIs, NNRTIs
 - May decrease ARV levels
- Cotrimoxazole, hydroxyurea, isoniazid, dapsone
 - May have overlapping toxicities with ARV agents

Source: Gallant, Anderson, & Bartlett for JHPIEGO

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- There are a number of drug interactions that are especially important in limited-resource settings.
- Rifampin, used to treat tuberculosis, should not be used in combination with protease inhibitors or with NNRTIs except for efavirenz.
- Several of the protease inhibitors and NNRTIs also decrease the concentration of ethinyl estradiol in oral contraceptive pills and therefore may decrease the effectiveness of oral contraceptives. It is recommended that women on antiretroviral regimens containing these specific drugs should use an additional or alternative method of contraception.
- Individuals who are taking anticonvulsants may have a decrease in the levels of protease inhibitors or NNRTIs. This may increase their risk of treatment failure and may promote the development of resistance.
- Cotrimoxazole, hydroxyurea, isoniazid, and dapsone, all commonly used in HIV-infected individuals, have toxicities that overlap with those of several antiretroviral agents; taking these medications together may increase the risk of serious adverse effects.



Tuberculosis and ARV Therapy

Status	When to Start ARV Therapy
Pulmonary TB and CD4 less than 50/mm ³ or extrapulmonary TB	Start TB therapy Start ARV as soon as TB therapy can be tolerated
Pulmonary TB and CD4 between 50 and 200/mm ³ or total lymphocyte count less than 1000-1200/mm ³	Start TB therapy Start ARV therapy after 2 mo. Of TB therapy
Pulmonary TB and CD4 greater than 200/mm ³ or total lymphocyte count greater than 1000-1200/mm ³	Treat TB Start ARV therapy according to general indications

Source: JHIPIEGO; Gallant, Anderson & Bartlett

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- Many patients who are candidates for antiretroviral therapy have active tuberculosis or TB, or they may develop TB while on antiretroviral therapy. We have already discussed the issue of drug interactions between some antiretroviral agents and rifampin, which can result in subtherapeutic drug levels of the antiretroviral drugs. There is also the theoretical concern that use of nevirapine may magnify the risk of liver toxicity with TB treatment.
- Another issue is when to start antiretroviral therapy in patients with both HIV and TB. TB treatment with directly observed therapy should be started promptly after diagnosis of active TB.
- For individuals who have evidence of advanced HIV infection with extrapulmonary TB or CD4 cell count below 50/mm³, antiretroviral therapy should be started as soon as the TB therapy is tolerated because they are at high risk for HIV disease progression and death.
- In those with TB and CD4 cell counts between 50 and 200/mm³ or with total lymphocyte counts less than 1000-1200/mm³, antiretroviral therapy should be given after the first 2 month intensive phase of TB treatment is completed, when the toxicity of TB treatment is greatest.
- For other HIV and TB co-infected patients, consideration should be given to delay antiretroviral therapy until TB treatment is completed. In this situation, standard drug regimens for both diseases can be utilized and drug toxicity is less.
- When antiretroviral therapy is started early in the course of TB treatment, TB symptoms can gradually worsen for 2-3 weeks after beginning antiretroviral therapy. This is referred to as the Immune Reconstitution Syndrome, and resolves on its own. In general, antiretroviral therapy should be continued

without interruption



Immune Reconstitution Syndrome

- Patients with advanced HIV disease and subclinical OIs, e.g., TB, toxoplasmosis, CMV
- When ARV therapy initiated, you may see:
 - New immunologic response to pathogen
 - Heightened immunologic or inflammatory response, which can cause symptoms
- OIs should be treated appropriately while maintaining the antiretroviral regimen
- Viral load measurement is helpful in clarifying the patient's condition

Introduction to ART

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- Immune reconstitution syndrome occurs in one of 2 scenarios:
 - A patient receiving treatment for a known OI subsequently initiates combination ART
 - Manifestations of a previously unrecognized OI appear or are “unmasked” with the initiation of ART



Nursing Implications for Immune Reconstitution Syndrome

- Knowledge of immune reconstitution syndrome will assist nurses in appropriate assessment and management of patients starting ART
- Observe patients with advanced HIV disease who start ART for new or worsening signs and symptoms of HIV and OIs
- Provide symptom management



Side Effects: Small Group Exercise

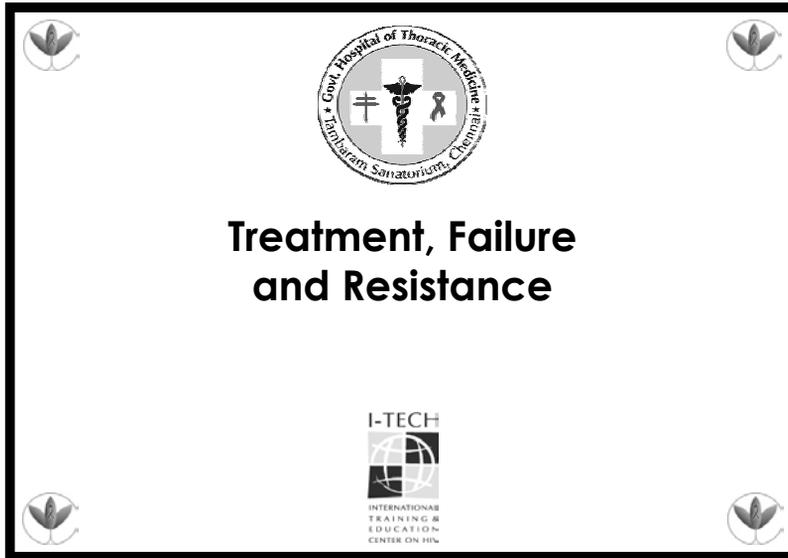
- Divide into small groups and answer the following questions:
 1. List the five ARVs used to treat HIV patients at GHTM
 2. List the main side effects of each medication
 3. Divide the side effects into 2 groups
 1. Side effects that require immediate attention
 2. Side effects that can be relieved by the patient at home
 4. Brainstorm about the remedies that patients can use to relieve the less serious side effects. Consider if there are any drugs interactions, toxicities, or problems with the remedies you suggest

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Step 4: Side Effects Small Group Exercise; Slide 6.36 (15 minutes)

- Ask participants to refer to the Side Effects Small Group Exercise worksheet located in the Participant's Handbook (Worksheet 6.2.) and show the corresponding slide in the PowerPoint presentation.



Step 5: Treatment, Failure and Resistance; Slides 6.37-6.53 (15 minutes)

- Continue lecture on Treatment Failure and Resistance.



Indications of Treatment Failure

- **Clinical** – Clinical progression of disease (weight loss, oral thrush, etc.)
- **Immunologic** – Decrease in CD4 cell count
- **Virologic** – Lack of sustained decrease in viral load to below limits of detection

Note: Indicates need to consider change in therapy

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- Antiretroviral therapy does not always work. It may be successful at controlling HIV infection for a period of time, but may eventually fail. Failure may be detected clinically by noting evidence of clinical progression of disease, such as weight loss, oral thrush, or development of a new opportunistic infection.
- Laboratory testing can detect failure much earlier than can be seen from observing clinical signs or symptoms. With effective antiretroviral therapy, CD4 cell counts generally increase, often more than 100 cells/mm³ in the first 6-12 months of treatment.
- A return to pre-treatment CD4 baseline or a decrease of greater than 30% from the peak CD4 cell count is an indicator of treatment failure.
- The most sensitive measure of treatment failure is the viral load test. If the viral load is not suppressed to undetectable levels after at least 6 months on therapy, the therapy is generally considered to be failing. When viral load measurement is available, it should be used as the basis for decisions about changing therapy.
- In general, because other illnesses or immunizations may cause a temporary increase in viral load and decrease in CD4 count, these tests should not be ordered during acute illness or shortly after an immunization. Ideally, when there are no clinical signs of failure, the viral load and CD4 count should be repeated before a change in treatment regimen is made to make sure the initial results are confirmed, since they may be somewhat variable. If evidence of treatment failure is confirmed, a change in therapy is needed to continue control of HIV.



Factors Contributing to ARV Failure (1)

- Suboptimal ARV regimen
 - Mono/dual NRTI
- Suboptimal drug level
 - Suboptimal dose
 - Bio-equivalence of generic drugs
 - Drug interactions
 - Malabsorption (e.g., intestinal parasites, nausea and vomiting)
 - Lack of proper adherence to therapy

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- There are a number of factors that may contribute to antiretroviral failure. The use of ineffective regimens, such as use of a single agent or a dual-nucleoside combination, may provide temporary benefit but will ultimately fail because they do not adequately suppress viral load for a sustained period of time.
- An effective regimen also may fail if it is given or taken at suboptimal doses.
- A variety of generic antiretroviral agents are now available in limited-resource settings and are much less expensive than standard agents. It is important, however, to ensure that these drugs are equal in quality and potency to the standard drugs.
- If a generic drug is used that is not as potent as the standard drug, the therapy may fail and resistance may occur.
- Suboptimal drug levels may also be caused by drug interactions between antiretroviral agents and other medications, malabsorption due to diarrhea or intestinal parasites, nausea and vomiting, or for other reasons. Perhaps the most common cause of suboptimal drug levels is non-adherence to therapy.



Factors Contributing to ARV Failure (2)

- Reasons for interruptions in treatment:
 - Cost
 - Drug stockouts
 - Side effects/toxicity
 - Lack of proper adherence to therapy

Introduction to ART

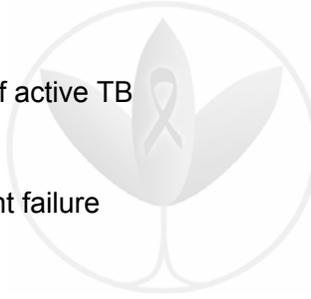
Slide 40

- Finally, interruptions in treatment play a major role in treatment failure. The high cost of antiretroviral therapy has been well publicized. In the United States an effective regimen costs an average of \$10,000-12,000 per year per person.
- There are many programs in several different countries that will make treatment more affordable to the people who need it. However, it is critical that individuals who start therapy do not miss doses or delay getting refills due to concerns about cost. It is also critical to ensure a continuous supply of drugs to prevent treatment interruptions.
- Side effects and drug toxicity are common reasons for temporary treatment discontinuation.
- Lack of proper adherence to treatment is the most common reason for treatment failure. Improper adherence is common, especially in patients taking complex regimens requiring a large numbers of pills, difficult dosing requirements and food restrictions.
- Some regimens are much easier to take than others, but it is still easy to forget or miss doses if the patient is afraid that others will find out he or she is infected.



Reasons to Change ARV Therapy

- Intolerance
- Drug toxicity
- Occurrence of active TB
- Pregnancy
- ARV treatment failure



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- There are many reasons to consider changing an antiretroviral regimen including intolerance of the regimen leading to poor adherence; drug toxicity; the development of active tuberculosis or pregnancy; and treatment failure.
- If the patient is responding well to therapy but develops toxicity specifically associated with a single drug, that drug may be changed to another antiretroviral agent without compromising effectiveness or having to change the entire regimen.
- However, if the reason for change is treatment failure, the entire regimen usually must be changed. If viral load testing is available and being used to define treatment failure, changes in the regimen can be made to “intensify” therapy without having to change the entire regimen.
- If a temporary interruption in therapy is needed to permit resolution of toxicity, all antiretroviral agents should be stopped at the same time to prevent the development of drug resistance.
- Women who become pregnant or who are likely to become pregnant should be changed from efavirenz to another drug, usually nevirapine. Patients who develop active TB on ARV therapy will need a change in regimen if they are to be treated with rifampin and are taking ARV drugs that interact with rifampin.



Recommended ARV Therapy after Treatment Failure with Initial Regimen

Initial Regimen	Second-Line Regimen	Alternative Second-Line Regimen
ZDV/3TC/EFV or ZDV/3TC/NVP	RTV-enhanced PI + d4T/ddI	RTV-enhanced PI* + ABC/ddI NFV + ABC/ddI NFV + d4T/ddI
ZDV/3TC/ABC	NNRTI** + LPV/r +/- d4T or ddI	RTV-enhanced PI* + d4T/ddI
ZDV/3TC/RTV-enhanced PI* or ZDV/3TC/NFV	NNRTI** + d4T/ddI	NNRTI** + ABC/ddI

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* IDV/r, LPV/r, or SQV/r
** EFV or NVP

- The second-line ARV regimen after failure of the initial regimen will need to use drugs that are still active against the patient’s virus strain. Ideally, this regimen will include at least three new drugs with at least one from a new drug class to increase the likelihood of treatment success and minimize the risk of cross-resistance.
- Cross-resistance means that resistance to a single drug may also confer resistance to other drugs within the same class and may make a drug the patient has never taken ineffective as well. When this happens, the number of effective treatment options is dramatically reduced. Eventually, there may be no regimen capable of suppressing the patient’s virus. The likelihood of cross-resistance varies among the different classes, with high likelihood of cross-resistance among NNRTIs, high to moderate likelihood among PIs.
- NRTI cross-resistance is an increasing concern. This table lists the second-line antiretroviral regimens to consider after failure of the initial regimen and takes into account these issues.



What Is Resistance?

- HIV reproduces very quickly, making billions of new viruses every day
- Because the virus often makes errors while copying itself, each new generation of viruses differs slightly from the one before
- Some changes to the structure of the virus can **improve** its ability to reproduce despite high levels of anti-HIV drugs being present
- These new changes to the structure of the virus make it able to reproduce even in the presence of ARVs and thus, are said to be resistant to those drugs

Introduction to ART

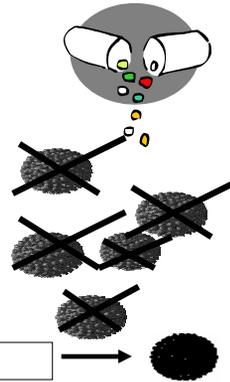
Slide 43

- Think back to the life cycle. HIV attaches to the CD4 cell & releases RNA & enzymes.
 - The enzyme Reverse Transcriptase makes DNA from the viral RNA.
 - New viral DNA is integrated using integrase into the CD4 cell's nuclear material. New viral components are then produced, using the cell's "machinery."
 - These are assembled together using the enzyme protease and released as new viruses.
- HIV replicates extremely rapidly. It is thought to produce 10 billion copies of virus a day!
- Sometimes, when Reverse Transcriptase copies viral RNA in to viral DNA at the beginning of the cycle, mistakes are made.
- These can become mutant forms of HIV, which are not sensitive to ARVs. In other words, the ARVs are no longer able to control HIV.



Mutating Viruses

- Left alone, HIV grows and multiplies inside the body
- As it grows, HIV can change itself. This is called **mutating**
- With **monotherapy** (one-drug therapy), the antiretroviral drug is able to kill all of the original (unmutated) HIV
- BUT the mutated virus is **RESISTANT** to the antiretroviral being used



Introduction to ART

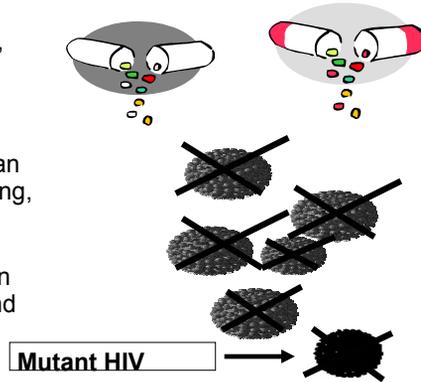
Slide 44

- Normally, HIV will continue to replicate within the CD4 cells. The viruses are all original virus, becoming more and more in number as they replicate.
- Over time, as mistakes are made during replication, mutant forms of virus arise (solid black in this diagram), a process known as mutating.
- If one ARV drug is given, it may be able to kill off all the original virus – BUT the ARV drug will have no effect on the mutant (purple) virus.
- This mutant virus is said to be resistant to that ARV drug being used.



Stopping the Mutated Viruses

- The mutated HIV grows and multiplies, even in the presence of the ARV drug, because it is RESISTANT
- Now we need another strategy... Two drugs together (**dual therapy**) can keep all HIV from multiplying, **even if it has mutated**
- So, if the mutated virus is resistant to one drug, it can be destroyed by the second drug



Introduction to ART

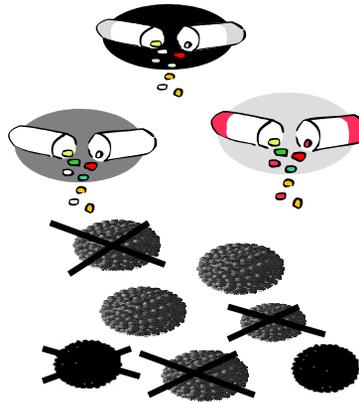
Slide 45

- The mutated virus then multiplies rapidly, untouched by the ARV drug being taken. This mutated virus will continue to infect CD4 cells, destroying them in the process and slowly weakening the immune system even though an ARV drug is being taken.
- But if you add in another, different ARV drug, a double-pronged attack on both the original virus and any mutant viruses occurs. Even if the virus is resistant to one drug, the second drug is able to destroy that virus. This is far more effective in controlling HIV reproduction and any subsequent attack on the immune system.



Triple Therapy

- Now we understand why **triple therapy** works. Two drugs can keep HIV from multiplying, even if it has mutated
- BUT, three drugs can work even better! Unfortunately, triple therapy is NOT able to cure HIV
- HIV is a very tricky virus. While most of it is getting killed by triple therapy, a few viruses find places to hide where they are safe from triple therapy



Introduction to ART

Slide 46

- In the early days of ARVs, monotherapy was used and while people's health improved, it was short-lived due to emerging resistance.
- We now know that triple therapy, the use of three different drugs, is the most powerful way to stop HIV replicating and allowing mutant viruses to proliferate.
- Triple therapy may have a powerful effect on reducing the number of viruses in the blood to a very low level but unfortunately, it will never remove HIV from the body completely.
- Levels of virus in the blood may drop and even be undetectable, (They cannot be found with the usual blood tests.) but the virus is still there somewhere. It gets in to many different parts of the body, hiding away, only to re-emerge at a later date.



A Big Concern!

If resistance develops:

- Drugs start failing as virus is able to replicate
- As virus replicates, immune system is damaged
- OIs occur, progressing to AIDS

Also, there are only limited drug options available!

Introduction to ART

Slide 47

- The threat of resistance and its role in treatment failure cannot be underestimated.
- If resistance occurs, people who have initially responded well to ARVs will become unwell again as the ARVs can no longer control the new mutant viruses. In turn, the mutant virus replicates, damages the immune system and OIs commence again.
- Also, if drugs fail, there are not many others to try after that.



Cross Resistance

Resistance to a drug in **one class** of ARV commonly results in resistance to other drugs within that **same class!**

Introduction to ART

Slide 48

- Importantly, if an individual becomes resistant to one ARV drug, they may well be resistant to other drugs in that same class.
 - For example, if resistance occurs to D4T, the individual may also be resistant to AZT, although they may have never taken AZT.
- AZT can therefore not be taken either and drug options are limited for that patient.



Everyone Is Different!

Important!!

People respond differently to ARV drugs

While one regimen may suppress viral replication well in one person, another person may develop resistance

Introduction to ART

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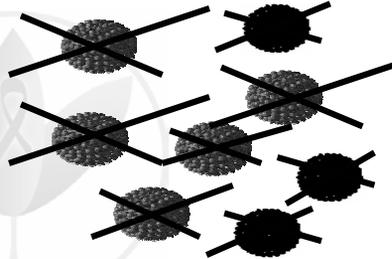
- While one regimen may suppress viral replication well in one person, it may not in another.
- Whenever we talk about HIV & ARVs, it must always be stressed that everybody is different. What may be true for one person, may not be true for another.
- One person may develop resistance very quickly and rapidly deteriorate, whilst another may not develop resistance and stays well for a long time.



Reducing Resistance

The BEST way to reduce the development of resistance is...

*to ensure maximum viral suppression using **three** drugs, taken as the **correct dose**, at the **correct time**, in the **correct way***



Introduction to ART

Slide 50

- If maximum suppression of the virus is maintained at all times, the chance of mutant viruses occurring is small indeed.
- The best way to get maximum suppression of the virus is through 100% adherence! If doses are missed or not taken properly, mutant virus will take the opportunity of this “gap” in ARV circulating in the blood and start replicating.
- Before long, those mutant viruses become plenty in number and resistant to the ARVs.



Public Health

- Resistant HIV may be transmitted to someone else!!
- If someone is infected with resistant HIV, they will be resistant to one or more ARVs, even though they have never taken them before
- Potentially, ARVs could become less helpful for people across Sub-Saharan Africa due to resistance, which is being seen in Europe and the US
- Abstinence and safer sex practices are the best ways to prevent this from occurring

Introduction to ART

Slide 51

- The importance of resistance does not stop at an individual level. ARV-resistant HIV may be transmitted to other people.
- So if someone has developed resistance to one or more ARV drugs, and transmits HIV to someone, that person will also have HIV that is resistant to those drugs.
- He/she will be unable to take those drugs when he needs to, even though he has never had them before.
- This emphasizes the importance of public health education about the transmission of HIV and the role of nurse in providing this education.



Why is HIV so Hard to Treat?

- 10 billion copies of the virus are made every day!
- Challenge of adherence
- Problem of resistance
- Difficulty of side effects

Introduction to ART

Slide 52

- HIV is exceptionally clever.
- Not only does it attack the very system that would usually destroy it, but it replicates so rapidly that it is extremely difficult to control.
- Three main issues provide great challenges to controlling HIV with ARVs.
 - o HIV may quickly become resistant to ARVs.
 - o Strict adherence is required for life.
 - o Side effects sometimes make it difficult for people taking the drugs, both in the short-term and the long-term.
- All these will be explored in further sessions.
- At this point in the session, refer participants to Handout 6.3: Common Questions about ARVs.
 - o Have participants get into pairs and quiz each other.
 - o Discuss questions participants have about the questions. Responses are in your own copy of Handout 6.2 in your Facilitator Guide.



Role of Nurses in ART

- Understand how HIV works and how ARVs are used to fight the disease
- Understand the challenges patients face in fighting HIV
- Help patients and their families deal with these challenges
- Educating patients about resistance
- Collaborate with physicians and pharmacists as a “health care team” in order to provide the best care for patients

Introduction to ART

Slide 53

- Patients taking ARVs face immense challenges.
 - We can only truly understand these if we have taken ARVs ourselves.
 - However, an understanding of the way in which these drugs work and how they affect patients can help us to meet their needs in the overall goal of reducing viral load, thus promoting immune responses and improved quality and length of life.
- “It is not like just giving 2 aspirins.” (National AIDS conference, RSA, August 2003)
- A realistic picture is essential.
 - ARVs are not like most drugs.
 - They have significant challenges which nurses must understand in order to support their patients effectively.
 - While they can work very well, they are often difficult to manage.



ART Case Study

- Spend a few minutes reading the case
- Discuss the following questions as a large group and answer the questions with the facilitator:
 - 1) Should Nadia stop taking the ARVs? Why or why not?
 - 2) What should Nadia have done when she started feeling unwell?
 - 3) Why did Nadia not go to the clinic?
 - 4) What should have happened?

Introduction to ART

Slide 54

Step 6: Antiretroviral Therapy Case Study; Slide 6.54 (10 minutes)

- Ask participants to refer to the ART Case Study worksheet located in the Participant's Handbook (Worksheet 6.4.) and show the corresponding slide in the PowerPoint presentation.
- Allow participants to spend a few minutes reading the case.
- Discuss the questions as a large group.



Key Points (1)

- ARV therapy is not a cure for HIV/AIDS; elimination of HIV from the body has not been achieved using the most powerful antiretroviral therapies available
- HIV can still be transmitted, even when an individual is on ARV therapy or HIV RNA levels are below the limits of detection
- ARV therapy can significantly reduce HIV-related mortality and morbidity

Introduction to ART

Slide 55

Step 7: Presentation of Key Points; Slides 6.55-6.57 (5 minutes)

- Summarize presentation, present key points in this unit, and answer any final questions.
- Common Questions about ARVs and Educating Your Patients about Common Side Effects of ARV Therapy (Handouts 6.3-6.4) are for participants' reference.



Key Points (2)

- For therapy to be effective, ARV medications must be used in combination
- Patients on ARV therapy require close monitoring and frequent evaluation
- Decisions about ARV therapy are complex and require consideration of potential adverse effects, drug interactions, resistance issues and the need for proper adherence
- Nurses have an important role to play in all aspects of ARV treatment, including managing side effects



Thank You!



I-TECH
INTERNATIONAL
TRAINING &
EDUCATION
CENTER ON HIV



HIV Basics Course for Nurses

Participant's Handbook

Unit 7
Adherence Counselling
and Antiretroviral Therapy

Unit 7: Adherence Counselling and Antiretroviral Therapy

Aim: The aim of this unit is to emphasise the importance of adherence to ARV therapy and explain how nurses can maximise adherence.

Learning Objectives: By the end of this unit, participants will be able to:

- Define adherence.
- Explain the importance of adherence in ARV therapy.
- List the major barriers to adherence and give options on how to address them with a patient.
- Assess patient readiness to initiate ARV.
- Identify and implement nursing strategies that maximise adherence.

Key Points:

1. Adherence is a critical component of ARV treatment and vital to the successful care of patients with HIV/AIDS.
2. Poor adherence is the most frequent cause of treatment failure and the development of resistant strains of HIV.
3. Assessing for readiness to initiate ARV treatment is essential for successful adherence.
4. There are multiple factors that influence adherence and they change over time.
5. Adherence is difficult but there are effective strategies that can significantly maximise adherence.
6. Nurses play an essential role in the promotion of successful adherence.



Handout 7.1

Medication Adherence Checklist

Patient Name _____

Date _____

1. Review Treatment History

- _____ current regimen
- _____ previous medications
- _____ side effects
- _____ other treatments

2. Discuss Current Health Status

- _____ overall health and current problems
- _____ latest laboratory tests (including CD4 count)
- _____ goals for health

3. Assess Medication Knowledge, Behaviors and Attitudes

- _____ knowledge of HIV medications
- _____ understanding of drug resistance and implications
- _____ criteria for evaluating medications
- _____ attitude about taking medications

4. Review Patient/Family Living Situation

- _____ daily activities: work, school and travel schedule
- _____ eating patterns
- _____ access to health center
- _____ special factors: disclosure of HIV diagnosis, medication storage issues

5. Describe Proposed Medication Regimen

- _____ drug names
- _____ dosing
- _____ food requirements
- _____ special instructions/how to give
- _____ side effects
- _____ storage

6. Assess Readiness for Regimen

- _____ review possible drug interactions
- _____ review barriers to adherence (support system, work, living situation)

7. Document the Treatment Plan

- _____ give information on drug names, dosing, frequency, food and storage requirements
- _____ discuss potential side effects and a plan for response, including prescriptions
- _____ review logistics of filling and refilling prescriptions



Handout 7.2

Factors That Influence Adherence

Adherence is difficult. Rates of adherence are between 20 and 50 percent for other diseases such as asthma, diabetes, and heart disease. These studies show us how hard it is to adhere to therapy.

Primary Factors that Hinder Adherence

- **Complexity of the regime.** Patients have a great deal of trouble taking pills. The number of pill, the number of times a day, and the duration of treatment all effect whether or not a patient will adhere to therapy. Effective and durable HIV treatment requires that more than one medication be taken every day and must be taken for life.
- **Side Effects.** If drugs make a patient ill or cause uncomfortable side effects it is likely that they will not take medications on a regular basis.
- **Dietary restrictions.** It is difficult for people to alter their eating habits. If this is a condition for effective therapy it could cause a problem for many patients.

Additional Factors that Hinder Adherence

- **Patients forget to take their pills:** This can include falling asleep and missing a nighttime dose or waking late and missing a morning dose. Patients also can run out of their medications, forget to have their prescription re-filled or forget to take them to work or on trips they make take.
- **Privacy concerns:** In not wanting people to see them taking medication, some patients will miss a dose.
- **Self-esteem, depression, and mental illness.** These are all factors definitely hinders adherence. Research shows that people are more likely to take their medication on a regular basis if they feel good about themselves.
- **Some patients lack the desire to take medication all the time.** The regime can feel burdensome and people feel like they need a break from their medication...especially if they experience side effects.
- **Active alcohol use.** Alcohol use has been know to adversely effect how people take their medications. People who are active alcohol users need to be carefully evaluated as to whether they are able to effectively adhere to their therapy. They may need a strong support system, or need help dealing with their alcohol use.

Factors that Do Not Always Hinder Adherence

- Research shows that **age, socio-economic status, education level, culture or ethnicity or a history of alcohol use** can not predict a person's ability to adhere to medication.



Handout 7.2 (continued)

Factors That Influence Adherence (continued)

- A person with a university degree is just as likely to not take medication as someone with a primary school education. The same can be said of a person with a high income versus a person living in poverty.
- Therefore, these factors should not be used to **predict** a patient's ability to adhere. It is appropriate, however, to take these differences...culture, educational level, socio-economic status...into account when developing an effective adherence plan and support system for each patient.

Factors that Enhance Adherence

- **Assessing patient readiness:** Before starting ARV therapy, patients should work closely with their healthcare provider to assess whether or not they are ready to begin treatment. Assessment can take time...often multiple encounters...before a patient understands the importance of adherence and accepts the concept of life-long therapy. The healthcare provider and patient must "partner" as they develop an adherence plan.
- **Use treatment plan that best fits into the patient's life:** The approach needs to be individualized so that the regime fits into patient's daily activities and lifestyle. Walk through the daily schedule of the patient and make suggestions regarding when to take medications. Make plans for situations when a daily schedule is altered, e.g. travel, weekends.
- **Prepare patient for side effects.** If a patient knows what to expect and knows how to deal with expected side effects they are more likely to adhere to their prescribed therapy.
- **An educated patient:** Teaching a patient about the importance of adherence, how it impacts the treatment of HIV/AIDS, and what can happen as a result of poor adherence must be emphasized repeatedly. The better understanding a patient has about HIV, how the medications work, and the relation between adherence and resistance, the more likely the patient will successfully adhere.
- **A supportive healthcare provider/counsellor.** Research has shown that patients who have a trusting relationship and feel supported by their healthcare provider have greater adherence to ARV therapy.

- **The use of adherence "tools"**. When available, reminder tools can help a patient in taking their medications as prescribed.. This may mean helping the patient develop a written schedule, providing pictures of the medications, giving the patient a pillbox, etc.
- **Use of a holistic approach to address support and education, including all of those involved with the patient's HIV care.** The support system should include the entire health care team, nurse, counsellor, physicians, and pharmacist....as well as, family and friends identified by the patient. A "buddy" is a great support, as is community based support group and NGOs.
- **Positive feedback!** If a patient is adhering to their medications make sure to congratulate them. This is very hard work!!



Handout 7.3

Common Questions about Resistance

1. What is “resistance”?
2. How does resistance occur?
3. What is the advantage of triple ARV therapy over monotherapy?
4. Why may a patient who has developed resistance to D4T also be said to be resistant to AZT when he has never taken AZT before?
5. What is the best way to prevent resistance?
6. What is the effect of resistance at an individual level?
7. What is the effect of resistance at a public health level?



Worksheet 7.1

Assessing Readiness Case Studies

Case Study Instructions:

1. Spend a few minutes reading the case study.
2. Discuss the case as a large group.
3. Answer the questions with the facilitator.

Case 1 - Assessing Readiness

A 28 year old woman is brought to the clinic having just learned of her HIV status. She is overwhelmed by the diagnosis. She gives a history of zoster and some weight loss and recently has had pain with swallowing.

On examination, you find oral candidiasis, some enlarged lymph nodes and no evidence of active TB. You have medications available and she meets the NACO criteria for eligibility.

Question:

Do you:

1. Prescribe medications today?
2. Tell her she is OK, treat her candidiasis and see her in 3 months?
3. Begin to explore her knowledge around HIV, assess her social support, link her with a clinic-based educator, and have her come back whenever she feels she is ready to start treatment?
4. Do all the steps of option #3 but ask her return to the clinic in 1-2 weeks?



Worksheet 7.1 (continued)

Assessing Readiness Case Studies

Case Study Instructions:

1. Spend a few minutes reading the case study.
2. Discuss the case as a large group.
3. Answer the questions with the facilitator.

Case 2 - Assessing Readiness

Mrs. R is a young woman in her late 20s who has recently been diagnosed with severe vaginal and oral candidiasis and PCP. She has been started on Cotrimoxazole. She is also eligible for ARV therapy.

She has been referred to you to assess for readiness. During your session with her she explains her religion calls for extensive fasting during which time she would be unable to take her medications. She recognizes this as a potential barrier and asks you for your help.

Question:

1. What are the issues that might impact her readiness to start treatment, and how will you help?



Worksheet 7.2

Addressing Barriers Case Study

Case Study Instructions:

1. Spend a few minutes reading the case study.
2. Discuss the case as a large group.
3. Answer the questions with the facilitator.

Case 3 - Addressing Barriers

Your patient is about to start on ARV therapy. He has been very ill and is taking other medications—cotrimoxazole for PCP prophylaxis and fluconazole for oral candidiasis.

He already has nausea and mild diarrhea. He is worried that the ARVs will make him feel sicker. He thinks he will have problems organizing all his medications and remembering when you take them.

Question:

1. How will you help him to address these barriers?



Worksheet 7.3

Patient Education and Counselling Case Study

Case Study Instructions:

1. Spend a few minutes reading the case study.
2. Discuss the case as a large group.
3. Answer the questions with the facilitator.

Case 4 - Patient Education and Counseling

Your patient is about to start on ARV therapy. She has many competing priorities.

She works as a housekeeper from early morning until the late evening. She has 3 children and an extended family to care for. She has not told her employer about her HIV status, and her husband is the only family member who knows.

Question:

1. How would you counsel her?



Worksheet 7.4

Monitoring Case Studies

Case Study Instructions:

1. Spend a few minutes reading the case study.
2. Discuss the case as a large group.
3. Answer the questions with the facilitator.

Case 5 - Monitoring

Your patient has been on ARV treatment for 3 months. He missed his last monthly appointment and you contact the NGO that is helping him.

You learn that he has to travel a long distance to see you and get his medications. It is difficult for him to find the time and money to come.

The last time he visited your clinic, he felt that some of the staff were judgmental and discriminatory. He does not want to come back.

Question:

1. What do you do?



Worksheet 7.4 (continued)

Monitoring Case Studies (continued)

Case Study Instructions:

1. Spend a few minutes reading the case study.
2. Discuss the case as a large group.
3. Answer the questions with the facilitator.

Case 6 - Monitoring

A 40-year old male has been followed at the clinic regularly for over a year. He is presently taking ZDV/3TC and EFV and has tolerated this regime well with excellent clinical outcomes.

You spent a lot of time assessing his readiness to initiate treatment and addressed identified barriers to adherence. Things have been going well. Today, he arrives at the clinic for a regularly scheduled check-up and medication refill.

You note there are pills left in his medication container. He tells you he is receiving pressure from his family to stop treatment. They feel he is cured. They want him to start on a traditional treatment with a local healer.

Question:

1. What are the issues this patient is facing and how will you help him?



Worksheet 7.5

Role Play for Adherence Counselling

1. Divide into small groups.
2. Choose one person to be the patient and another person to be the counsellor.
3. The other group members are to be observers.
4. Here is the role play scenario:

The patient has been HIV+ for 5 years and has been healthy except for an episode of oral candidiasis. The patient's most recent T-cell count was 150, and s/he has been referred to you to start on ARV therapy.

*The regimen will be:
Stavudine (1 pill BID)
Lamivudine (1 pill BID)
Nevirapine (1 pill once daily for 14 days; then 1 pill twice daily)*

The patient has many questions about starting ARV therapy.

5. The patient and counsellor will meet as if they are having a regular visit. The observers will use the checklist below to give feedback to the counsellor after the role play.

Did the counsellor:

- Provide general education on ART?
- Give details of the ARV regimen?
- Tell the patient what to do if a dose is missed?
- Discuss safe sex with the patient?
- Assess potential barriers to adherence and help the patient address these barriers?
- Anticipate & plan for problems /contingencies?
- Anticipate & plan for side effects?
- Link patient to support systems?
- Have patient repeat back plans?
- Plan for follow-up (contact info, regular appointments)?

6. We will come back together as a large group to discuss how the role play went. When giving feedback:
 - a. Be respectful. Remember, it is hard to be in the counsellor position!
 - b. Emphasise the positive aspects of the counseling session.
 - c. Offer gentle, constructive suggestions to improve what didn't work so well.



PowerPoint Slides

Refer to companion document for copies of the Unit 7 PowerPoint presentation slides.



**Adherence Counselling &
Antiretroviral Therapy**

Unit Seven



Unit 7 should take approximately 1 ½ hours to implement.

- **Step 1:** Adherence and Assessing Readiness; Slides 7.1-7.20 (20 minutes)
- **Step 2:** Assessing Readiness Case Studies; Slides 7.21-7.24 (10 minutes)
- **Step 3:** Barriers to Adherence; Slides 7.25-7.31 (5 minutes)
- **Step 4:** Barriers to Adherence Case Study; Slide 7.32 (5 minutes)
- **Step 5:** Patient Education and Counselling; Slides 7.33-7.41 (10 minutes)
- **Step 6:** Patient Education and Counselling Case Study; Slide 7.42-7.43 (5 minutes)
- **Step 7:** Adherence Counselling and ART; Slides 7.44-7.45 (5 minutes)
- **Step 8:** Monitoring Case Study; Slides 7.46-7.49 (10 minutes)
- **Step 9:** Adherence in Children; Slides 7.50-7.51 (2 minutes)
- **Step 10:** Adherence Counselling Role Play; Slides 7.52-7.54 (15 minutes)
- **Step 11:** Presentation of Key Points; Slides 7.55-7.57 (minutes)



Learning Objectives

- By the end of this unit you will be able to:
- Define adherence
- Understand the importance of adherence in ARV therapy
- List the major barriers to adherence and give options on how to address them with a patient
- Assess patient readiness to start ARV therapy
- Identify and implement nursing strategies that maximize adherence

Adherence Counselling

Slide 2

Step 1: Adherence and Assessing Readiness; Slides 7.1-7.20 (20 minutes)

- Begin by reviewing the unit aim.
- The aim of this unit is to emphasise the importance of adherence to ARV therapy and explain how nurses can maximize adherence.
- Review the unit learning objectives using the PowerPoint presentation.
- Ask the participants if they have any questions about the objectives before continuing.



What Is Adherence?

- Broader term than compliance
- Engaged and accurate participation of the patient in the care plan
- Implies understanding, consent, and **partnership**
- Includes both *adherence to **care*** and *adherence to **medications***

Adherence Counselling

Slide 3

- There are many factors involved in ARV success. However, adherence is the single most important factor in achieving success.
- Adherence is the term used to describe the patient's ability to take the drugs EXACTLY as prescribed.



Compliance vs. Adherence

- Compliance: patient acts in accordance to demand by provider
- Adherence: patient participates and understands plan of care and treatment



Adherence Counselling

Slide 4

- Explain this cartoon.
- The term “compliance,” which was formerly used to describe the patient-provider relationship in regard to treatment plans, means acting in accordance to a command. The doctor/nurse tells the patient what to do and he must do it without question.
- The term adherence refers to the fact that the patient has participated in and understands the plan of care and treatment. The patient and his care providers are “partners”, both sharing the responsibility of adherence to treatment.
- Adherence indicated that all are working together to make behavior changes to improve health.



What Is ARV Treatment Adherence?

- The extent to which the patient follows medical instructions in taking their medications:
 - Correct dosage
 - Correct way
 - Every time



Adherence Counselling

Slide 5

- Adherence is multi-faceted. Taking the drugs exactly as prescribed means taking the right drugs, at the right time, in the right way.
- Patients **MUST** understand that they can not just take them when they feel like it!
- The nurse must ensure that all patients understand this before starting treatment.
- Scientists have spent years investigating each drug and the does of each drug in order to ensure maximum suppression of HIV
- A combination of different drugs is the result of numerous clinical trials.
- Maintaining a certain amount of the drug in the blood at all times is essential...right drug, at the right dosage...to prevent viral replication and resistance from occurring.
- The timing of the drug doses is also extremely important. If drug levels in the blood are allowed to fall, HIV suppression is reduced, allowing reproduction.
- Trials have demonstrated that a one hour window period is allowed (i.e. taking ARV's one hour later than normal) **BUT** this varies with drugs and people.
 - So stress exact times only!
- In addition to getting the times, doses and drugs right, some drugs have dietary restrictions.
 - If these are not adhered to, the amount of drug absorbed may be insufficient, meaning viral suppression is reduced.
- Not all drugs have dietary requirements, but those that do must be adhered to!



Remember...

Maintaining Adherence is the
MOST IMPORTANT
factor for successful ARV treatment
and improved health status



Overview of Adherence (1)

- Adherence to most drug regimes is poor across all populations and all diseases
- Most information we have about adherence comes from studies of diabetes, heart disease, and TB
- Healthcare workers are often unable to predict who will adhere correctly and who will not
- Healthcare workers usually overestimate the number of patients who will adhere correctly

Adherence Counselling

Slide 7

- Income, educational levels, age, and gender can not be used to predict adherence. Healthcare workers are usually unaware of poor adherence until the patient presents with poor labs or become symptomatic.



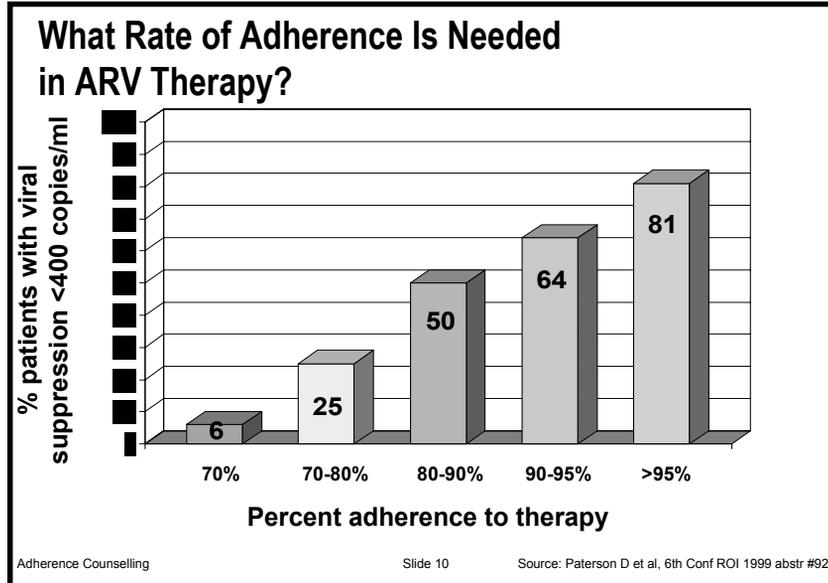
Overview of Adherence (2)

- The percent of patients who fail to take their medications as instructed can range from 20% to 100%. The average being 50%
- Adherence is considered successful for most other chronic diseases when the patient takes their medication >80% of the time



ARV Treatment Is Different!

- To be successful, ARV medications must be taken more than 95% of the time
- This means in a twice daily dosing regimen (bid), less than 1 dose per week can be missed



- This graph dramatically shows a visual of the percent of patients who achieve good viral suppression below 400 copies of HIV/ml according to their percent of adherence to ART.
- In other words, on the far right column, 81 percent of patient who are > 95% adherent to their ART regimen achieve successful HIV viral suppression. On the far left column, only 6% of patients who are 70% adherent to their ART regimen have successful viral suppression. Even patients who are 80 to 90% adherent to their ART regimens have only a 50% chance of good viral suppression.



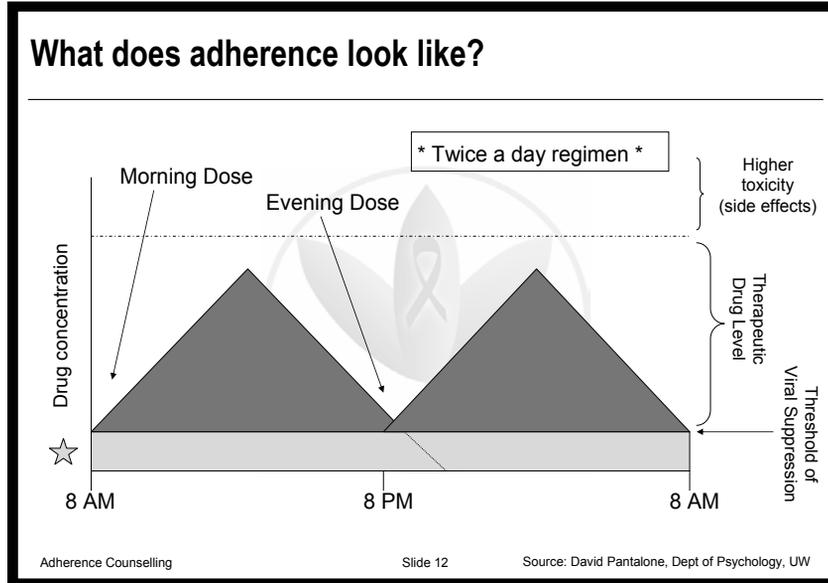
Why Is Greater Adherence Important in the Treatment of HIV/AIDS?

- There is a direct relationship between treatment adherence & treatment effectiveness
- In the absence of sufficient levels of drugs, the virus rapidly multiplies...a little bit of drug is NOT better than no drug
- With the increasing viral load, more mutations will occur that cause resistance to the prescribed drugs
- Once resistance develops, the drugs stop working
- Poor adherence is the most frequent cause of treatment failure and development of drug resistance

Adherence Counselling

Slide 11

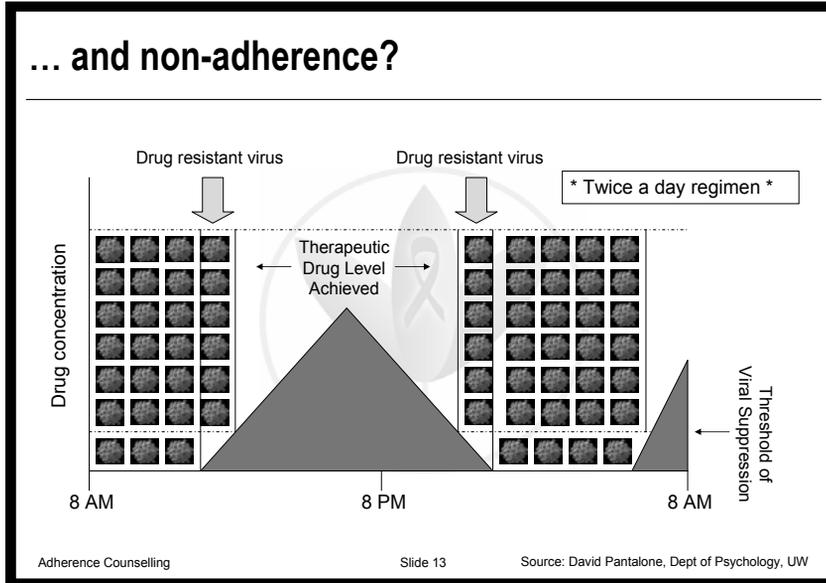
- Once therapeutic drug level drops, the virus has opportunity to break through and replicate, and mutate. New mutations are then resistant to the drug once able to control viral replication. Removal of all drug can prevent the virus from “recognizing” this class of medication which decreases chance of resistance.



- This is a cartoon-like graphic slide showing what happens when a patient with good adherence takes their ART drug at the appropriate time every time.
- Explain and show on the slide the therapeutic level of drug needed to keep the viral load continuously suppressed. The drug level peaks and troughs between each dose. The goal is to keep a therapeutic drug level high enough to continuously suppress the virus but not too high to cause a toxic effect. Explain and show the threshold of viral suppression which shows the lowest drug level needed to keep virus suppressed. If drug level goes below this line then virus will begin to replicate. Also show the broken line above the therapeutic drug level. If drug level goes above this line there may be a toxic effect or too much drug.
- Many patients have gone through clinical trials to determine the appropriate therapeutic doses of the antiretroviral drugs before they are approved for general use.



... and non-adherence?



- This slide shows what happens when a patient is non-adherent to their ART and this patient has missed the morning dose 2 days in a row.
- It shows how the virus begins to replicate when there is not a therapeutic drug level or no drug in the body to suppress the virus. The virus begins to mutate and drug resistant virus develops. Then the current drug regimen the patient is taking will no longer suppress the virus adequately. As you know, there are limited triple drug combinations to offer patients who become resistant to their very first regimen.
- Nurses play a key role in counseling patients re: adherence and resistance to try to ensure long term success using ART.



Effectiveness of Highly Active Antiretroviral Therapy (HAART)



Before HAART



On HAART

Adherence Counselling

Slide 14

- Dr Paul Farmer from Boston has worked in Haiti for the last 4-5 yrs. This is an example he shares of a patient who was able to adhere to ARV therapy in resource limited setting with great outcomes.



Adherence to ARVs in Resource-Limited Settings *

- Uganda: 88%
- Cote d'Ivoire: 75%
- Haiti: 88%
- Senegal: 78%, 42%, 88%
- South Africa: 89%
- Brazil: 57%, 87%, 69%
- Botswana: 54%, 53%, 58%
- Nigeria: 58%
- Kenya: 59%

Adherence is as problematic in resource-limited settings as it is in resource-rich settings. No evidence shows that it is more problematic

**(NB: small studies, differing definitions of adherence)*

Source: MTCT-Plus, Columbia University 2002

Adherence Counselling

Slide 15

- Different percentages for one country indicate the results of different studies.
- These percentages indicate the percentage of people adhering >95% of the time.
- Adherence is a challenge in all countries for all people with HIV needing ART.



Steps in Adherence Counselling

- Assess readiness to start treatment
- Address barriers to adherence
- Provide education & counselling
- Provide ongoing monitoring & support

Adherence Counselling

Slide 16

- It is important to understand that it is often necessary to have multiple meetings with a patient before treatment is initiated. Assessing the readiness of a patient is essential for successful outcomes.
- Promoting adherence begins prior to the patient starting treatment.
- If difficulties and challenges are discussed beforehand then that patient is given more time to consider any life style changes, interventions and strategies needed that may assist in his/her adherence.
 - This way, patients are involved in their treatment from the very beginning and know what to expect.



Assessing Readiness: Step 1

- Before any medications are started, the patient must be assessed for treatment readiness
- By working together, potential barriers to successful adherence are identified and a plan of action is developed
- Never rush to treat! It may take many sessions before both you and the patient feel ready to initiate treatment



Assessing Readiness: Step 2

- Determine level of understanding of:
 - HIV disease and it's implications
 - Purpose and effect of ARV treatment
 - Treatment options and limitations
- Seek information about:
 - Lifestyle: single, married, children
 - Educational level: able to read and understand info
 - Cultural beliefs and practices regarding disease and treatment
 - Previous experience with illness

Adherence Counselling

Slide 18

- As you document this information make note of findings you feel may interfere with a patient's ability to adhere so that as you work with the patient in developing an adherence plan, you can incorporate specific issues/concerns.
- In order to help determine patients level of understanding of HIV, ARV, etc., sample questions would be:
 - Tell me how HIV affects your body's ability to stay healthy?
 - What do these pills do?
 - Why do you take them?
- There are many religious practices and cultural beliefs that may challenge adherence. It is very important to acknowledge these factors and try to deal with them before ARV drugs are initiated.
- This is a good time to ask participants to identify what these factors are and how they would deal with the issues. These topics should be incorporated into the case studies:
 - Religious fasting
 - Traditional remedies (herbal or other)
 - Local/traditional healers



Assessing Readiness: Step 3

- Determine stability of environment:
 - Income, shelter, access to clean water, food
 - Work/job: ability to take time off to attend clinic
 - Need for transportation to return to clinic
 - Level of support available from family, friends, community at large
 - Potential for other family members to be ill or HIV+



Assessing Readiness: Step 4

- Evaluate current state of physical and mental health:
 - Ability to manage treatment on their own or need help of other caregiver
 - Depression related to HIV status, stigma and discrimination
 - Use of alcohol or other recreational drugs
 - HIV related neurological effects

Adherence Counselling

Slide 20

- Depression and alcohol use are two factors that have been shown to significantly interfere with adherence. They are often difficult to address effectively but must be recognized as important barriers.



Case Study #1 — Assessment

- A 28 year old woman is brought to the clinic having just learned of her HIV status. She is overwhelmed by the diagnosis
- She gives a history of zoster and some weight loss and recently has had pain with swallowing
- On examination, you find oral candidiasis, some enlarged lymph nodes, and no evidence of active TB
- You have medications available and she meets the NACO criteria for eligibility

Adherence Counselling

Slide 21

Step 2: Assessing Readiness Case Studies; Slides 7.21-7.24 (10 minutes)

- To be done as a large group.
- Ask participants to refer to the Assessing Readiness Case Studies located in the Participant's Handbook (Worksheet 7.1.) and show the corresponding slides in the PowerPoint presentation when reviewing the answers as a class.
- Allow participants to spend a few minutes reading the cases.
- Discuss the questions as a large group.



Review Question

- Do you:
 1. Prescribe medications today?
 2. Tell her she is OK, treat her candidiasis and see her in 3 months?
 3. Begin to explore her knowledge around HIV, assess her social support, link her with a clinic-based educator, and have her come back whenever she feels she is ready to start treatment?
 4. Do all the steps of option #3 but ask her to return to the clinic in 1-2 weeks?



Review Question Answer

Answer: 4

- She is likely in the process of accepting her HIV status and may have multiple competing social priorities and education needs
- The presence of oesophageal candidiasis is suggestive of more advanced disease and risk of progression
- She requires education and support to help her move to accepting her HIV status. She needs counselling to explore and address current and potential barriers before she can start on ARVs



Case Study #2 — Assessment

- Mrs. R is a young woman in her late 20s who has recently been diagnosed with severe vaginal and oral candidiasis and PCP. She has been started on Cotrimoxazole. She is also eligible for ARV therapy
- She has been referred to you to assess for readiness. During your session with her she explains her religion calls for extensive fasting during which time she would be unable to take her medications. She recognizes this as a potential barrier and asks you for your help
- **What are the issues that might impact her readiness to start treatment, and how will you help?**

Adherence Counselling

Slide 24

- Refer participants to Worksheet 7.1, Case 2



Barriers to Adherence

- Disease characteristics
- Treatment characteristics
- Patient characteristics
- Clinician or institution characteristics

Adherence Counselling

Slide 25

Step 3: Barriers to Adherence; Slides 7.25-7.31 (5 minutes)

- Continue presentation on Adherence Counselling and ART showing the corresponding slides in the PowerPoint presentation.



Disease Characteristics

- Severity & stage of illness
 - Feeling well
 - Too ill to take meds
- Co-infections
 - Taking other medications
 - Drug interactions
 - Debilitating symptoms



Medication Characteristics

- Physical difficulties—swallowing pills
- Side effects
- Interference with daily life
- Duration of treatment—commitment is lifelong
- Expense of the drugs, including expenses related to care



Patient Characteristics

- Does not understand purpose of therapy
- No belief in treatment efficacy
- Competing priorities—work, family, food access
- Lack of social support
- Stigma & disclosure issues
- Cultural or religious beliefs (fasting, mourning, traditions)
- Mental health issues
- Substance abuse issues

Adherence Counselling

Slide 28

- Ask participants if they can think of any other possible patient barriers to adherence.



Clinician or Institution Issues

- Confidentiality is not assured
- Location of centre is inconvenient, difficult or expensive to get to
- Inadequate staffing, insufficient time
- No appropriate education provided
- Language & communication barriers
- Attitude of clinician & care team

Adherence Counselling

Slide 29

- Ask participants if they can think of any other clinician or institution barriers to the patient's adherence.



Reasons for Missed Doses (USA)

- Just forgot (40%)
- Did not understand the regimen (38%)
- Slept through dose time (37%)
- Travel (34%)
- Change in daily routine, weekend (27%)
- Felt sick (10%)
- Depression (9%)

Adherence Counselling

Slide 30

Source: Chesney (1997) ACTG-Adherence to Combination Therapy

- Ask participants what other reasons they may have heard from patients for missing doses.
- Ask participants what reasons their patients may give for missing doses



Botswana Adherence Research

- Cost of medications (48%)
- Forgetting (24%)
- Ran out of medications (17%)
- Travel (13%)
- Side effects (12%)
- Too busy (12%)
- Did not understand instructions (8%)
- Too many pills (1%)

Adherence Counselling

Slide 31

- n=75



Case # 3 — Addressing Barriers

- Your patient is about to start on ARV therapy. He has been very ill and is taking other medications — cotrimoxazole for PCP prophylaxis and fluconazole for oral candidiasis
- He already has nausea and mild diarrhea. He is worried that the ARVs will make him feel sicker. He thinks he will have problems organizing all his medications and remembering when to take them
- **How will you help him to address these barriers?**

Adherence Counselling

Slide 32

Step 4: Barriers to Adherence Case Study; Slide 7.32 (5 minutes)

- Ask participants to refer to the Barriers to Adherence Case Study worksheet located in the Participant's Handbook (Worksheet 7.2.) and show the corresponding slide in the PowerPoint presentation.
- Allow participants to spend a few minutes reading the case.
- Discuss the questions as a large group.



Strategies to Help Patients Organize Medications

- Divide medications into labeled bags, cups or pill boxes to organize dosage and schedule
- Streamline regimens to minimize the number of pills and doses per day
- Draw up a medication schedule using words or pictures

Adherence Counselling

Slide 33

Step 5: Patient Education and Counselling; Slides 7.33-7.41 (10 minutes)

- Continue presentation on Patient Education and Counselling showing with the corresponding slides in the PowerPoint presentation.



Strategies to Remember Taking Medications

- Incorporate into the daily routine
 - Take medication at the same time every day
 - Associate with another daily activity—meals, tooth brushing, TV, bedtime, etc.
- Use timers, beepers, alarms
- Plan ahead for when more medication is needed
- Carry extra doses when away from home

Adherence Counselling

Slide 34

- Ask participants for suggestions that will help their patients remember to take medications.



Anticipating and Managing Side Effects

- Patient education:
 - Advise patient of typical side effects with his or her regimen
 - Explain that side effects may decrease as body adjusts
 - Advise when to self-manage and when to report



Objectives of Adherence Counselling

- Help patients to make decision on antiretroviral therapy
- Assist patients to cope with the therapy and provide appropriate information
- Assist patients to protect others and maintain positive sexual behavior changes



Patient-Centered Counselling

- Whose agenda?
- Ask open-ended questions
- Be warm, empathic, and non-judgmental
- Respond to patient's questions & concerns
- Involve the patient in seeking solutions
- Take your time



Pre-ARV Counselling at GHTM

Group Counselling:

- Education about combination therapy
- Education about adherence and the need for high motivation
- Nutrition
- Safe sexual practices
- Education about the need for ongoing care
- Answer questions & doubts

Adherence Counselling

Slide 38

- It is important to understand that it is often necessary to have multiple meetings with a patient before treatment is initiated. Assessing the readiness of a patient is essential for successful outcomes.
- Promoting adherence begins prior to the patient starting treatment.
- If difficulties and challenges are discussed beforehand, then the patient is given more time to consider any life style changes, interventions and strategies needed that may assist in his/her adherence.
 - This way, patients are involved in their treatment from the very beginning and know what to expect.



Initiating ART: Patient Education

Why treat with ART?

- It is not curative, but prolongs life
- Treatment is lifelong
- Treatment is free at GHTM
- High level of adherence is critical (>95% to 100%)
- Drugs should not be shared
- Beware of quacks



Pre-ARV Counselling: Individual Counselling

- Give details of ARV regimen
- Assess potential barriers to adherence
- Anticipate & plan for problems /contingencies
- Anticipate & plan for side effects
- Have patient repeat back plans
- Plan for follow-up (contact information, regular appointments)
- Link patient to support systems

Adherence Counselling

Slide 40



Social Support

- Enlist help of family members & friends to remind and encourage
- Link patient to NGOs
- Refer to Indian Network for People Living with HIV/AIDS (INP+) & support groups
- Medication partner / “buddy”

Adherence Counselling

Slide 41

- Access to a community of peers, who can assist medication adherence with practical and emotional support can prove beneficial to many patients.
- Providing patients with a medication partner- a peer, friend, family member or outreach worker who learns about medications along with the patient and takes responsibility for assisting the patient.
 - o In some cases this medication “buddy” might contract to observe the therapy, in others to provide reminders, assist with refills or other duties.



Case #4 — Patient Education & Counselling

- Your patient is about to start on ARV therapy. She has many competing priorities
- She works as a housekeeper from early morning until the late evening. She has 3 children and an extended family to care for. She has not told her employer about her HIV status, and her husband is the only family member who knows
- **How would you counsel her?**

Adherence Counselling

Slide 42

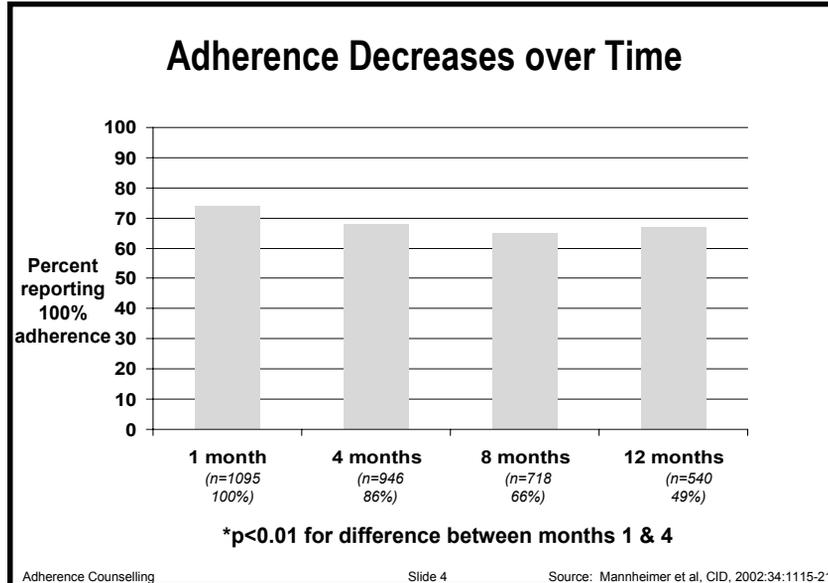
Step 6: Patient Education and Counselling Case Study; Slide 7.42- 7.43(5 minutes)

- Ask participants to refer to the Patient Education and Counselling Case Study worksheet located in the Participant's Handbook (Worksheet 7.3) and show the corresponding slide in the PowerPoint presentation.
- Allow participants to spend a few minutes reading the case.
- Discuss the questions as a large group.



Case #4 Answer

- Help patient identify priorities
- Anticipate problems such as what to do when away from home
- Help patient with obtaining social support
- Help patient with discussing health issues and needs with family



Step 7: Adherence Counselling and ART; Slides 7.44-7.45 (5 minutes)

- Continue presentation on Adherence Counselling and ART showing the corresponding slide in the PowerPoint presentation.
- Ask participants to refer to Common Questions about Resistance (Handout 7.3) located in the Participant's Handbook.
- Note that a little over 70% reported 100% adherence the first month of treatment. This dropped to 60% at month 8. Near perfect adherence is difficult and for any becomes more difficult over time.
- A patient's ability to adhere can change over time...a strategy that works at one time may not at another.
- Life changes: marital status, job, living situation, each change will impact adherence.
- Remember: Adherence can become more difficult with time. Pill fatigue is common, so someone who has had perfect adherence for quite awhile may lapse after time passes.
- Promoting adherence is: on-going, repetitive, revised, multidisciplinary
- Stress to participants the importance of adherence.
- It's not just the responsibility of the nurse
- It's also the responsibility of the WHOLE multidisciplinary team (physician, pharmacist too!) when they come into contact with the patient to discuss and encourage 100% adherence.



Adherence Counselling: During Treatment

- Schedule regular follow-up appointments
- Plan how to assess ongoing adherence
- Review problems encountered and address
- Review side effects and address
- Ongoing education & prevention counselling

Adherence Counselling

Slide 45

- Adherence counselling should occur at each visit



Monitoring & Follow-Up

- Check in at each visit:
 - What do you find most difficult about taking your medications?
 - In an average week, how often do you miss your medications?
 - What reminders have helped you?
 - What side effects have you had?

Adherence Counselling

Slide 46

Step 8: Monitoring; Slides 7.47-7.49 (10 minutes)

- Go over Monitoring and Follow-Up with the corresponding slide
- Ask participants to refer to the Monitoring Case Studies worksheet located in the Participant's Handbook (Worksheet 7.4) and show the corresponding slides in the PowerPoint presentation.
- Allow participants to spend a few minutes reading the cases.
- Discuss the questions as a large group.



Case #5 — Monitoring

- Your patient has been on ARV treatment for 3 months. He missed his last monthly appointment and you contact the NGO that is helping him
- You learn that he has to travel a long distance to see you and get his medications. It is difficult for him to find the time and money to come. The last time he visited your clinic, he felt that some of the staff were judgmental and discriminatory. He does not want to come back
- **What do you do?**

Adherence Counselling

Slide 47

- Refer participants to Worksheet 7.4, Case 5.



Case #6 — Monitoring (1)

- A 40-year old male has been followed at the clinic regularly for over a year. He is presently taking ZDV/3TC and EFV and has tolerated this regime well with excellent clinical outcomes
- You spent a lot of time assessing his readiness to initiate treatment and addressed identified barriers to adherence. Things have been going well. Today, he arrives at the clinic for a regularly scheduled check-up and medication refill

Adherence Counselling

Slide 48

- Refer participants to Worksheet 7.4, Case 6.



Case #6 — Monitoring (2)

- You note there are pills left in his medication container. He tells you he is receiving pressure from his family to stop treatment. They feel he is cured. They want him to start on a traditional treatment with a local healer
- **What are the issues this patient is facing and how will you help him?**

Adherence Counselling

Slide 49

- Refer participants to Worksheet 7.4, Case 6.



Adherence in Children

- Adherence to medication for children can be difficult
- Pediatric formulations are often unpalatable
- Child may be unwilling to take meds that cause discomfort & side effects
- Regimens may differ from parents
- Multiple caregivers involved who may not be aware of HIV diagnosis
- Older children may be responsible for taking medication themselves

Adherence Counselling

Slide 50

Step 9: Adherence in Children; Slides 7.50-7.51 (2 minutes)

- Continue with Adherence in Children in the PowerPoint presentation.
- Caregivers for children taking medication should be questioned about missed doses, problems administering medication and potential side effects. If the child is old enough, they should be included in the discussion about medications and adherence.



Strategies to Promote Adherence in Children

- Prepare family about bad tasting medications and how to disguise taste
- Give positive reinforcement for taking the medications
- Prepare family for common side effects and plan to handle them
- Teach families about young children's need for ritual, consistency and supervision in taking medicine
- Support group for children

Adherence Counselling

Slide 51

- It is vital that families understand side effects of medications and anticipate them so as to avoid stopping the medications when they occur. Adherence support may need to be modified for liquid formulations. Teach families methods for teaching children to swallow pills, using increasing sizes of easily digestible and safe small candies.



Role Play Instructions

- After reading the scenario, two volunteers will perform the role play for the large group
- One volunteer will play the nurse and the other volunteer will be the patient
- After the role play, we will have a discussion using the questions on your worksheet

Adherence Counselling

Slide 52

Step 10: Adherence Counselling Role Play; Slides 7.52-7.54 (15 minutes)

- Ask participants to refer to the Role Play for Adherence Counselling worksheet located in Participant's Handbook (Worksheet 7.5) and show the corresponding slides in the PowerPoint presentation.
- Divide class into small groups and give them time to do the role play. Make sure to relieve actors of their roles.
- Debrief the role play as a class.



Role Play — Adherence Counselling

- The patient has been HIV+ for 5 years and has been healthy except for an episode of oral candidiasis. The patient's most recent T-cell count was 150, and s/he has been referred to you to start on ARV therapy
- The regimen will be:
 - Stavudine (1 pill BID)
 - Lamivudine (1 pill BID)
 - Nevarapine (1 pill once daily for 14 days; then 1 pill BID)



Role Play: Adherence Counselling Questions

- What did the nurse do well in the role play?
- Did the patient get all his or her questions answered?
- Were all the barriers to adherence addressed?
- What else might the nurse have said?



Key Points (1)

- Adherence is a critical component of ARV treatment and vital to the successful care of patients with HIV/AIDS
- Poor adherence is the most frequent cause of treatment failure and the development of resistant strains of HIV
- Assessing for readiness to initiate ARV treatment is essential for successful adherence

Adherence Counselling

Slide 55

Step 11: Presentation of Key Points; Slides 7.55-7.57 (5 minutes)

- Summarize presentation, present key points in this unit, and answer any final questions.



Key Points (2)

- There are multiple factors that influence adherence and they change over time
- Adherence is difficult but there are effective strategies that can significantly maximize adherence
- Nurses play an essential role in the promotion of successful adherence

Adherence Counselling

Slide 56

- The nurse has a very important and unique opportunity in regard to the promotion of successful adherence.
 - o There are many healthcare systems that identify adherence as the nurses' number one responsibility when treating a patient who is receiving ARV treatment.
- Nurses play a key role in creating the right environment...safe, non-judgmental, confidential.
- Studies have shown that if the nurse has confidence in the effectiveness of the treatment, it is reflected in the nurse's attitude and positively influences and motivates the patient.



Thank You!

I-TECH
INTERNATIONAL
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EDUCATION
CENTER ON HIV

 **Notes**



HIV Basics Course for Nurses

Participant's Handbook

Unit 8
Antiretrovirals in Children

Unit 8: Antiretrovirals in Children

Aim: The aim of this unit is to provide information on the use of ARVs when treating and caring for children with HIV.

Learning Objectives: By the end of this unit, participants will be able to:

- Describe the use of ARVs in children and their impact on disease progression
- Identify the challenges and interventions associated with the use of ARVs in children
- Describe the differences in ARV use in children vs. adults
- Identify interventions required to support ARV and treatment adherence for children and their families

Key Points:

1. Diagnosis of HIV is more difficult in young children.
2. A different staging system for children than adults must be used.
3. Adherence for children is a critical challenge for ARV success.
4. Children with HIV require a family centered care approach.
5. Nurses play an essential role in supporting children with HIV infection.



WHO Staging System for HIV Infection and Disease in Children

Clinical Stage 1

- Asymptomatic
- Generalised Lymphadenopathy

Clinical Stage II:

- Unexplained chronic diarrhea
- Severe persistent or recurrent candidiasis outside the neonatal period
- Weight loss or failure to thrive
- Persistent fever
- Recurrent severe bacterial infections

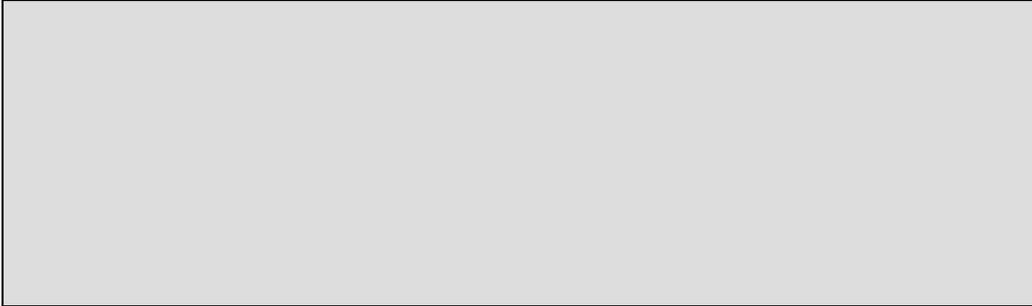
Clinical Stage III:

- AIDS defining opportunistic infections
- Severe failure to thrive
- Progressive encephalopathy
- Malignancy
- Recurrent septicaemia or meningitis



Worksheet 8.1

ARVs in Children Case Study



Case Study Scenario

Lakshmi is a 29 year old mother. Both Lakshmi and her two year old daughter, Shanthi, are HIV positive. Lakshmi has been very unwell over the past six months. After treatment for cryptosporidiosis, she started ARVs. Unfortunately, whilst she has recovered from cryptosporidiosis, her overall health has remained poor. She gets recurrent chest infections. At clinic, Lakshmi reveals that she frequently forgets to take her ARVs. In further discussion, she informs you that her husband died 8 months ago and she is feeling very depressed.

At the same clinic appointment, Shanthi is also seen by the doctor. The doctor informs Lakshmi that Shanthi also requires ARV treatment now as her CD4 count has fallen below 200 cells/mm³. Shanthi has also been unwell with recurrent chest infections, severe weight loss and now shingles.

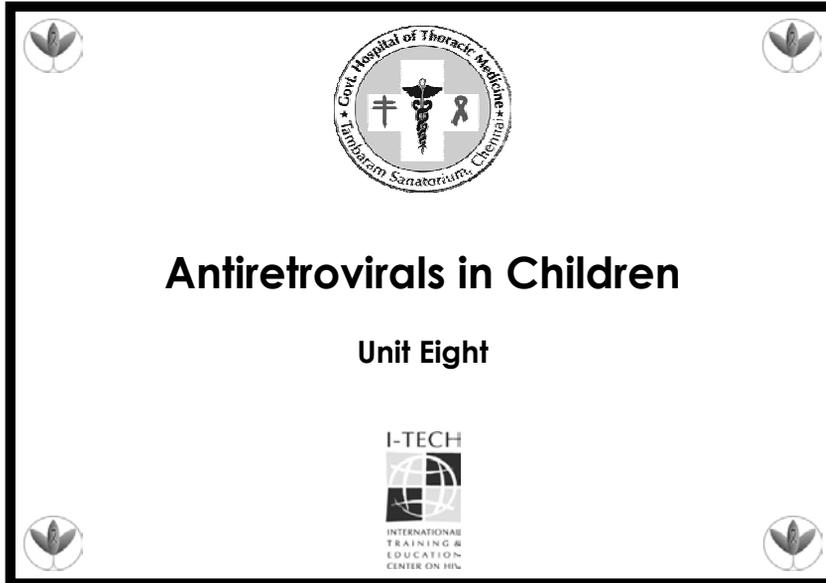
1) What concerns are there over Shanthi stating ARV treatment?

2) What measures are required to ensure that Shanthi receives the drugs she requires?



PowerPoint Slides

Refer to companion document for copies of the Unit 8 PowerPoint presentation slides.



Unit 8 should take approximately 1 hour to implement.

- **Step 1:** ARVs in Children; Slides 8.1-8.33 (35 minutes)
- **Step 2:** ARVs in Children Case Study; Slides 8.34-8.35 (15 minutes)
- **Step 3:** Presentation of Key Points; Slides 8.36-8.37 (5 minutes)



Learning Objectives

By the end of the unit you will be able to:

- Discuss the use of ARVs in children and their impact on disease progression
- Identify the challenges and interventions associated with the use of ARVs in children
- Describe the differences in ARV use in children vs. adults
- Identify interventions required to support ARV and treatment adherence for children and their families

ARVs in Children

Slide 2

Step 1: ARVs in Children; Slides 8.1-8.33 (35 minutes)

- Begin by reviewing the unit aim.
- The aim of this unit is to provide information on the use of ARVs when treating and caring for children with HIV.
- Review the learning objectives with participants.
- Ask them if there are other topics related to children, ARVs and HIV that they would like to discuss during the session.
- Write these additional topics on a whiteboard or flipchart paper so that they are displayed throughout the session.
- Ask participants what experience they have working with children who are HIV positive.



Changing Times!

- HIV in children is no longer considered to be a rapidly fatal disease
- Now it's a chronic, manageable disease with prolonged survival
- Children with vertically acquired HIV infection are now surviving into adolescence



ARVs in Children

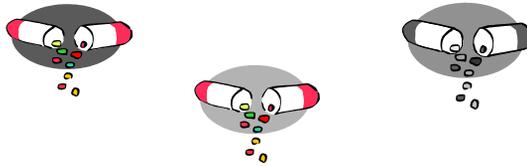
Slide 3

- In the United States, Europe, and many other countries of the world, children who were infected with HIV at birth are now surviving well into adolescence and early adulthood with antiretroviral treatment.
- Children and their families are learning to live successfully with chronic HIV infection managing treatment and lifestyle changes effectively.
- Explain the term “vertical” transmission, which means from mother to child.



What's Changed?

- 1996-1997: paediatric dual ARV therapy started
- 1997-1998: protease inhibitor-based triple ARV therapy started
- 1998-2003: a dramatic improvement in the health of HIV + children on triple ARV therapy!



ARVs in Children

Slide 4

- The use of ARV drugs in children got off to a slower start than their use in adults.
- Drug options and doses had to be checked for safety in children.
- The combined use of two drugs commenced in 1996-1997.
- This was shortly followed by much improved responses with triple therapy, once protease inhibitors had been approved in children.
- Children are doing extremely well on Triple ARV therapy.



Response in Children

- Most children treated with ARVs have excellent immune repopulation
- Morbidity and mortality is significantly reduced

As HIV replication decreases,



immune response increases!

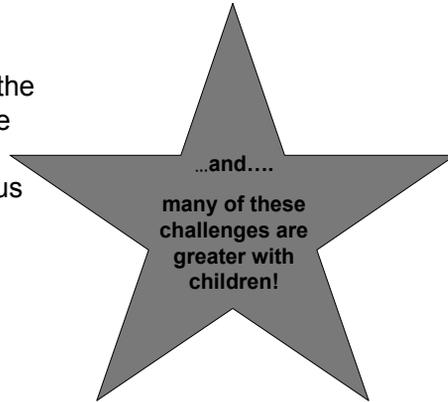
ARVs in Children

Slide 5

- The majority of children respond well to ARV drugs, experiencing a reduction in viral replication and a corresponding increase in CD4 cells.
- Immune repopulation refers to the regeneration of immune system cells.
 - The term “immune repopulation“ specifically means that children successfully treated with ARVs had a positive immune response which empowered and fortified their immune system. It is the reverse of immune suppression.
 - The result is a significant reduction in opportunistic infections, improved general health and quality of life, and increased length of life.

**But...**

Like adults, suppressing the virus and preserving the immune system is associated with numerous challenges!



ARVs in Children

Slide 6

- If children, like adults, are to achieve viral suppression and the subsequent increase in immune response, they also have to face numerous challenges associated with ARVs.
- While adults commonly find these exceptionally difficult, they are often exacerbated further in children.



Children Are Not Just Little Adults!

- Children have unique needs
- They are physically, developmentally, and psychologically different than adults
- They should be managed and treated differently



ARVs in Children

Slide 7

- It has long been understood that children are not just little adults.
- They have unique needs and an understanding of their physical, developmental and psychological make-up is essential in order to understand the different principles of ARV use in children.



Paediatric vs. Adult HIV/AIDS: Some Important Differences (1)

- Viral Load levels higher
 - Fewer children achieve non-detectable VL with ARV therapy
 - Adherence depends primarily on caretaker
- CD4% used instead of absolute CD4 count
 - More rapid immune restoration with ARV therapy in children

ARVs in Children

Slide 8

- We will discuss these issues in detail throughout the presentation, particularly adherence issues.



Paediatric vs. Adult HIV/AIDS: Some Important Differences (2)

- Disease progresses more rapidly
- Children have more frequent recurrent invasive bacterial infections
- OI's often present as primary diseases with more aggressive course because of lack of prior immunity



ARVs in Children

Slide 9

- The course of the infection in children differs from that in adults in several ways:
 - o It progresses more rapidly
 - o Children have higher viral loads
 - o Children have more frequent recurrent invasive bacterial infections
 - o Opportunistic infections often present as primary diseases with more aggressive course because of a lack of prior immunity



Paediatric vs. Adult ART: Some Important Similarities (1)

- Children's cellular immune responses to HIV are similar
- Children respond almost as well as adults to aggressive ARV therapy
- ARV therapy in children reduces opportunistic diseases, hospitalisations, prolongs survival, and improves the quality of life
- Similar ARV therapy regimens used

ARVs in Children

Slide 10

- In spite of these differences, children's cellular immune responses to HIV are similar to adults, and children respond almost as well as adults to HAART



Paediatric vs. Adult ART: Some Important Similarities (2)

- Similar drug side effects and toxicity
- Drug adherence is the most critical factor in treatment success
 - Poor adherence results in drug resistance and treatment failure
- Immune reconstitution syndrome can occur
- ARV therapy should be provided with comprehensive care

ARVs in Children

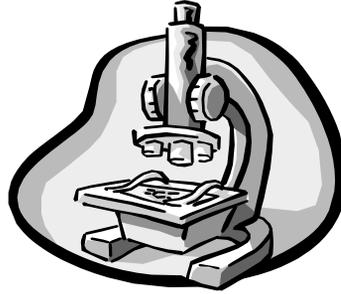
Slide 11

- Describe immune reconstitution syndrome as the reactivation of the child's immune system prompted by successful ARV treatment which may manifest itself in the re-occurrence of symptoms and reactions to previous infections.
- May appear if not accurately diagnosed as a poor response to ARV treatment, when indeed it reflects successful activation of the immune system.
- Requires essential nursing counseling and support to assist children and families through this period.



CD4 Counts

- Infants and children normally have higher CD4 counts
- As CD4 cell count varies with age, **CD4 percentage** is considered a more reliable marker of immunological status in children
- An understanding of this is essential in order to accurately assess disease progression



ARVs in Children

Slide 12

- Infants and young children usually have higher CD4 counts than adults.
- The normal count varies with age but is equal to the adult value by the time the child is 6 years old. CD4 percentages are therefore considered to be more reliable markers prior to this age.
- If this is not understood, blood results may be misleading which could be dangerous for the child.



Viral Load

- After starting ARVs, Viral load may decrease more slowly in children compared with adults
- Infants may take longer to reach an undetectable viral load
- Only 40% of children may experience a reduction in Viral Load to <500copies



ARVs in Children

Slide 13

- The reduction in viral load is often slower in children commencing ARVs than is seen in adults.
- Each child is different but in comparison to adults, children may take longer to reach undetectable viral load or may even never reach it. This is particularly so if the child is born with a very high viral load.



Aim of Therapy

To maintain the child's immunological status at a level that prevents disease progression



ARVs in Children

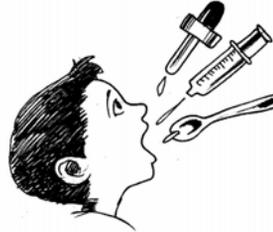
Slide 14

- The overall aim of therapy in children is to maintain the child's immune system at a level that protects them from developing opportunistic infections and disease progression.
- Like adults, ARV drugs will not cure HIV in children but help to “control” the virus by reducing viral replication thus preserving the immune system.



ARV Drug Options

- Range of available/licensed drugs for children compared with adults
 - e.g. EFV: cannot be used <3 years
- Most of usual NRTIs & NNRTIs are available
 - e.g. AZT, 3TC, ddI, d4T, NVP
- Question NVP Resistance following exposure in MTCT programme



ARVs in Children

Slide 15

- Great progress is being made in terms of drug choices for children.
- Due to the smaller population to recruit into studies and the ethics of testing drugs in children, it is usually more difficult to secure new drugs for children.
 - Fortunately, most of the main drugs are now available.
 - However, one concern for the future is that children exposed to Nevirapine before birth may be resistant to it in the future.
- Resistance to NVP fades in the absence of continued pressure; hence, the WHO (World Health Organisation) recommends that the benefits of PMTCT use of NVP outweigh the risks.



Paediatric Drug Options

- Paediatric formulations not always available
 - e.g. NFV: only available in tablets
 - PIs: extremely unpalatable
- ARV syrups more expensive than tablets
- Relatively little research on ARVs & pharmacokinetic data due to the smaller population of potential subjects



ARVs in Children

Slide 16

- Again, things are improving but many of the ARV drugs started off as (and continue to be!) big, chalky tablets that were difficult to swallow for adults.
- ARVs are slowly becoming available in syrup form but are unfortunately more expensive and often taste terrible!



Paediatric Doses

- Children have different metabolism from adults
- Higher doses of ARVS are usually necessary
- Drug distribution and metabolism/elimination varies with growth and development
- Older children: surface area more accurately reflects drug metabolism and clearance than body weight (but over estimates doses for infants)



ARVs in Children

Slide 17

- Doses are very different for children. Children usually need higher doses of ARVs.
- The way in which drugs are distributed and metabolised in children is different to adults and varies with growth.
 - o In this case, an adult dose would provide insufficient viral suppression.
 - o This formula is used by pharmacists and doctors to calculate the dose required for children



Side Effects

- Toxicities are of great concern and increasingly problematic for children and families, particularly as:
 - Children's bodies are still developing
 - Children may well be exposed to these drugs for much longer than adults



ARVs in Children

Slide 18

- Like adults, children experience side effects (toxicities) to ARVs.
- Unfortunately, however, these toxicities may cause more harm in children as their bodies are still developing and it is very early days in the world of ARVs for us to know the long term side effects on the body.
- Many long term studies are being carried out to investigate this.



Mild Side Effects

- Children commonly experience side effects
 - √ Nausea
 - √ Vomiting
 - √ Diarrhoea
 - √ Abdominal pain
 - √ Skin rashes
 - √ Headaches
- They are often transient and manageable with:
 - appropriate therapeutic intervention
 - essential support and encouragement for the child and family

ARVs in Children

Slide 19

- The more common side effects seen in children are similar to those seen in adults.
- They are commonly short-term and resolve after a few months of starting the drugs.
- It is essential that symptoms are controlled as early as possible and that the child and care giver are supported. Adherence must be promoted at all times.
- The caregiver must not reject the ARVs due to side effects which could be managed
- Careful assessment of symptoms and possible side effects must be made which include asking key questions to mom's and family caregivers.



Severe Side Effects

- Unfortunately, children on ARVs may also experience worrying long-term side effects
 - Lipodystrophy
 - Mitochondrial toxicity (NRTIs)
 - Bone density changes (PIs)
 - Lipidaemias with accelerated atherosclerosis (PIs)
 - Carcinogenicity (NRTIs)

ARVs in Children

Slide 20

- We are also seeing worrying long-term side effects in children including fat redistribution, disorders related to mitochondrial damage, changes in bone density, high lipids & cholesterol and even cancers.
- More and more studies are providing information on the side effects of different drugs and are directing doctors in deciding which drugs to use in the future



Monitoring

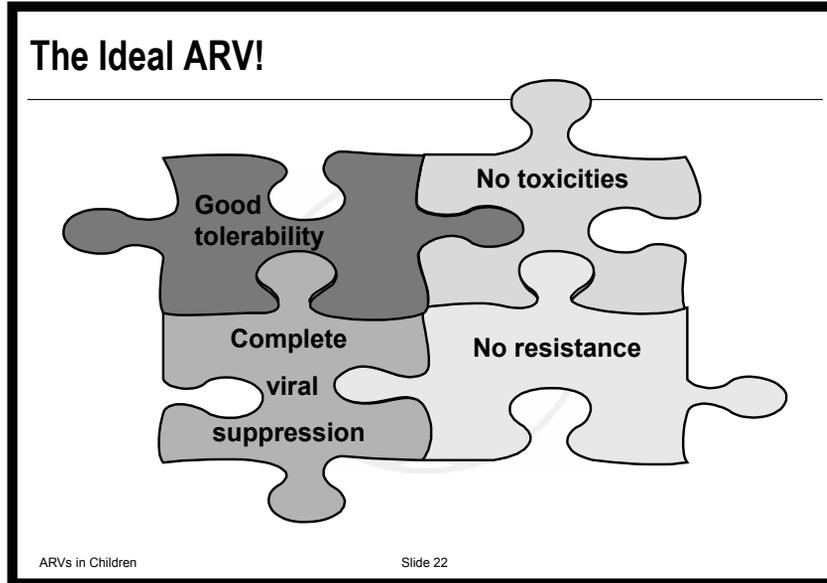
- Regular blood tests are essential to identify toxicities and to ensure appropriate intervention and management
- This presents another challenge:
 - Few children willingly give their blood!



ARVs in Children

Slide 21

- Whilst many side effects can be assessed by listening to the child and the care giver, or by examining the child, any effect of the ARVs on different organs can be assessed with various blood tests.
- Regular FBC, U&Es, LFTs should be taken to monitor potential toxicity.
- Blood tests are an immense ordeal for children who are afraid and do not understand what is happening



- ARVs are good but far from perfect.
 - We know them to dramatically improve people's health but they may simultaneously cause side effects.
 - Adherence is extremely difficult,
 - ARVs never remove the virus completely and
 - Resistance is a huge problem.



If This Ideal Were Available

- ...ARVs should be started as soon as a child is diagnosed!

BUT...

- It is still not clear whether the potential virological and immunological benefits of starting therapy **early** outweigh the problems with adherence, resistance and toxicity

ARVs in Children

Slide 23

- Should this ideal ARV drug be available, children would be started on ARVs immediately.
- However, we still don't know whether the early use of ARVs in children will result in such a dramatic reduction in viral load and improvement in immune response that outweighs the immense problems of adherence, resistance and toxicity.



Starting ARVs Is a Balancing Act

- Preserve Rx options
- Therapeutic benefits



- Psychological impact
- Resistance
- Toxicities

Start?

ARVs in Children

Slide 24

- So the decision to start children on ARVs is an extremely carefully thought out process.
 - The pros and cons must be weighed and balanced.
- Clinical trials are being conducted all over the world to investigate the optimal time to start ARVs in children.
- This conundrum must be explained to caregivers, who may wonder why doctors are delaying treatment for the child.



WHO Clinical Staging Classification of HIV/AIDS

Clinical Stage I:

- Asymptomatic
- Generalised lymphadenopathy

Clinical Stage II:

- Unexplained chronic diarrhoea
- Severe persistent or recurrent candidiasis outside the neonatal period
- Weight loss or failure to thrive
- Persistent fever
- Recurrent severe bacterial infections

Clinical Stage III:

- AIDS defining opportunistic infections
- Severe failure to thrive
- Progressive encephalopathy
- Malignancy
- Recurrent septicaemia or meningitis

ARVs in Children

Slide 25

- Refer participants to Handout 8.1 “WHO Staging System for HIV Infection and Disease in Children” in their Participant’s Handbook.



When to Start?

- **<18 months:**

- Paediatric Stage III, irrespective of CD4 cell %
- Paediatric Stage I or II with CD4 <20%



Source: WHO, 2002

ARVs in Children

Slide 26

- **>18 months:**

- Paediatric Stage III, irrespective of CD4 cell %
- Paediatric Stage I or II with CD4 <15%

- The US Centers for Disease Control and Prevention has set out these guidelines for commencement of ARVs in children.
 - ALL children with paediatric Stage III disease should be started on ARVS, irrespective of CD4%.
 - For children with Stage I or II, if they are <18months, a CD4 <20% indicates treatment. If they are >18months, a CD4 <15% indicates treatment.
 - If CD4 testing is not available, clinical symptoms must form the basis of the decision.



NACO Recommended Drugs by Class

Recommended paediatric ARV drugs
for children over 3 months in India

NRTIs	NNRTIs
<ul style="list-style-type: none"> ● Zidovudine (ZDV) <li style="text-align: center;">or ● Stavudine (d4T)* <li style="text-align: center;">plus ● Lamivudine (3TC)* 	<ul style="list-style-type: none"> ● Nevirapine (NVP)* <li style="text-align: center;">or ● Efavirenz (EFV) <p style="font-size: small; margin-top: 10px;">* If age <3 years or weight <10 kg, NVP; If >3 years or weight >10kg, NVP or EFV</p>

ARVs in Children

Slide 27



WHO Recommended Regimens

- **Preferred Regimen:**
 - 2 NRTI's + 1 NNRTI
 - 2 NRTI's + 1 PI
- **Alternative Regimen:**
 - 1 NRTI + 1 NNRTI + 1 PI
 - ABC + ZDV + 3TC

Source: WHO Guidelines for ARV for Infants and Children



Adherence

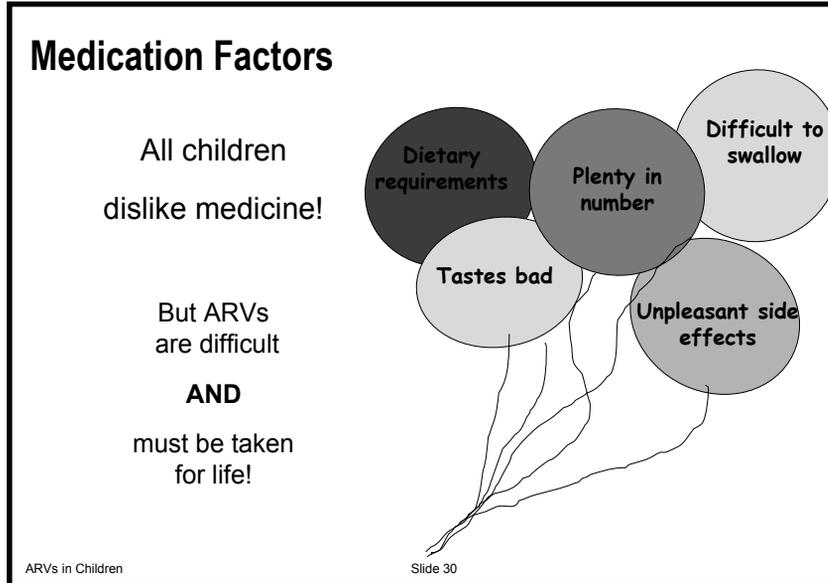
- Is a HUGE challenge for adults...
- It is even more difficult with children!



ARVs in Children

Slide 29

- Ask the group why it may be harder for children to adhere to ARV drugs.
 - What challenges do children face in remaining adherent?
 - What do their caregivers face?
 - What do nurses face in trying to help children remain adherent?



- The drugs themselves present numerous challenges for children.
- All children dislike medicine.
- Now they have been started on something they have to take for life.
- Improvements are being made but it often tastes bad, there are lots of them, they are often difficult to swallow, there may be dietary requirements AND they may make the child sick with side effects.



Child/Family Factors



- Child's lifestyle
- Child's lack of understanding
- Children are usually reliant on their parent or caregiver for ARVs

ARVs in Children

Slide 31

- It is usually extremely difficult for a child to understand why he has to put up with all this!
 - He is usually dependent on a care giver to receive them.
 - Are they actually given?
 - Or he may refuse to take them, draining the energies of a care giver, particularly if they are sick themselves.
 - The care giver has an enormous amount to deal with and may be unable to cope.
- Questions and issues that must be assessed by the nurse raised include:
 - How will ARVs fit into child's daily activities, school etc?
What about disclosure and stigma?
 - What does child understand about HIV and the need to take ARVs?
 - Is the parent sick/unable to administer ARVs?
 - Has the parent had any prior negative experience with ARVs?
 - Is the parent adherent themselves?
 - How id the parent/family coping with their own HIV diagnosis AND child's?
 - What is the parents perception of the child's illness?



Promoting Adherence (1)

- Assessment of child & family prior to child commencing ARVs
- Assist families in developing routine for ARVs; ARVs should NOT dictate every aspect of daily life
- Open, supportive approach
- Age-appropriate explanations to child re: need for medication
- Continuing support and re-assessment of each child and family's situation
- Support from other parents and children

ARVs in Children

Slide 32

- Promoting adherence is multi-faceted and must be a continuous process. This is a task that requires excellent skills, addressing both the child's needs and issues and those of the care giver.
- The child MUST be involved.
 - Children cope far better when they are able to understand what is happening to them and have a sense of control.
 - Use child-sensitive, age-appropriate explanations of the need for medicine to keep you strong and prevent infections..
- Discuss issues surrounding stigma and discrimination and ask participants how these can impact adherence.



Promoting Adherence (2)

- Trial runs
- Play therapy
- Sticker charts
- Art therapy
- Taking medication with parent
- Support groups



ARVs in Children

Slide 33

- A variety of strategies may be used to help encourage the child to take ARVs and to assist and support the care giver.
- Remember, children love to play!
 - Use art and fun games to provide incorporate some fun and provide the child with a sense of control in the process of taking ARVs.
- Taking ARVs at the same time as a parent or sibling can also help as the child wants to be like them.
- Games with other children in support groups help, too.



Case Study (1)

- Lakshmi is a 29 year old mother. Both Lakshmi and her two year old daughter, Shanthy, are HIV positive. Lakshmi has been very unwell over the past six months
- After treatment for cryptosporidiosis, she started ARVs. Unfortunately, while she has recovered from cryptosporidiosis, her overall health has remained poor. She gets recurrent chest infections
- At clinic, Lakshmi reveals that she frequently forgets to take her ARVs. She also informs you that her husband died 8 months ago and she is feeling very depressed

ARVs in Children

Slide 34

Step 2: ARVs in Children Case Study; Slides 8.34-8.35 (15 minutes)

- Ask participants to refer to the ARVs in Children Case Study worksheet located in the Participant's Handbook (Worksheet 5.1.).
- Allow participants to read the case on their own.
- Discuss answers to the case as a class using the slides in the PowerPoint presentation.



Case Study (2)

- At the same clinic appointment, Shanthi is also seen by the doctor. The doctor informs Lakshmi that Shanthi also requires ARV treatment now as her CD4 count has fallen below 200 cells/mm³. Shanthi has also been unwell with recurrent chest infections, severe weight loss, and now shingles
 - What concerns are there over Shanthi starting ARV treatment?
 - What measures are required to ensure that Shanthi receives the drugs she requires?



Key Points

- Diagnosis of HIV is more difficult in young children
- A different staging system for children than adults must be used
- Adherence for children is a critical challenge for ARV success
- Children with HIV require a family centered care approach
- Nurses play an essential role in supporting children with HIV infection

ARVs in Children

Slide 36

Step 3: Presentation of Key Points; Slides 8.36-8.37 (5 minutes)

- Summarise presentation, present key points in this unit, and answer any final questions.
- A child with HIV has significant challenges to cope with. Their parent or caregiver has potentially even greater concerns, as they cope with their own illness or concerns about the child's future and face worry or guilt over the child's HIV infection.
- On top of all that, ARVs may add to their problems if they are not supported and encouraged at all times. You have a significant role to play!!



Thank You!



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 **Notes**



HIV Basics Course for Nurses

Participant's Handbook

Unit 9
Pregnancy and HIV

Unit 9: Pregnancy and HIV

Aim: The aim of this unit is to provide information on how to treat and care for HIV positive pregnancy women and their babies.

Learning Objectives: By the end of this unit, participants will be able to:

- Describe effects of HIV on pregnancy
- Identify risk factors for HIV transmission during pregnancy
- Identify risk factors of HIV transmission during labor and delivery
- Identify risk factors for HIV transmission during breastfeeding
- Identify HIV prevention interventions and strategies for mother, baby and family

Key Points:

1. Women are more vulnerable to HIV infection.
2. HIV is a family infection. Mothers and fathers have an impact on transmission of HIV to the baby.
3. If a woman becomes infected with HIV when pregnant or breastfeeding, the risk of transmission to the baby increases.
4. Both partners need to be aware of the importance of safer sex throughout pregnancy and breastfeeding.
5. Pregnancy does not seem to have an effect on progression of disease to AIDS, but...
6. Women with AIDS are more likely to suffer from pregnancy-related complications.



Handout 9.1: Factors that Impact MTC-HIV Transmission

Factors Increasing the Risk of MTC-HIV Transmission

Maternal Factors	Obstetrical Factors	Infant Factors	Infant Feeding factors
High viral load Recent infection Advanced disease	ROM>4 hours	Prematurity	Breast feeding
Poor Nutrition	Episiotomy	First infant of multiple birth	Mixed feeding
Concurrent STI's	Invasive foetal monitoring	Immature GI tract	Maternal breast pathologies (mastitis)
Placental infection (esp. malaria)	Intrapartum hemorrhage		Longer duration of breast feeding
	Instrument delivery		Maternal HIV infection during lactation
	Vaginal vs C-section		

Summary of MTCT Risk with Interventions

Intervention	Risk of MTC HIV transmission
No intervention , breastfeeding	30-45%
No intervention , No breastfeeding	20-25%
Short course with 1 ARV, Breastfeeding	15-25%
Short course with 1 ARV, No breastfeeding	5-15%
Short course with 2 ARV's, no breastfeeding	5%
3 ARV's, no breastfeeding	1%
2 ARV's, breastfeeding	unknown
3 ARV's ,, breastfeeding	unknown

Comparison Risks and Benefits of Mode of Delivery

Risk	Vaginal delivery	Caesarian section
Infection	-	Higher risk of wound, puerperal infection, esp. with advanced disease. Consider prophylactic antibiotics.
Blood loss	-	Higher than vaginal birth
HIV transmission to baby	Generally higher than C-section unless viral load suppressed.	Reduced transmission rate if performed before labour and rupture of membranes.
Maternal Mortality	-	Higher than vaginal delivery
Safety	Skilled HCW usually available	Requires more supplies, skills, care
Cost	Available to most women	More expensive, not available to many women



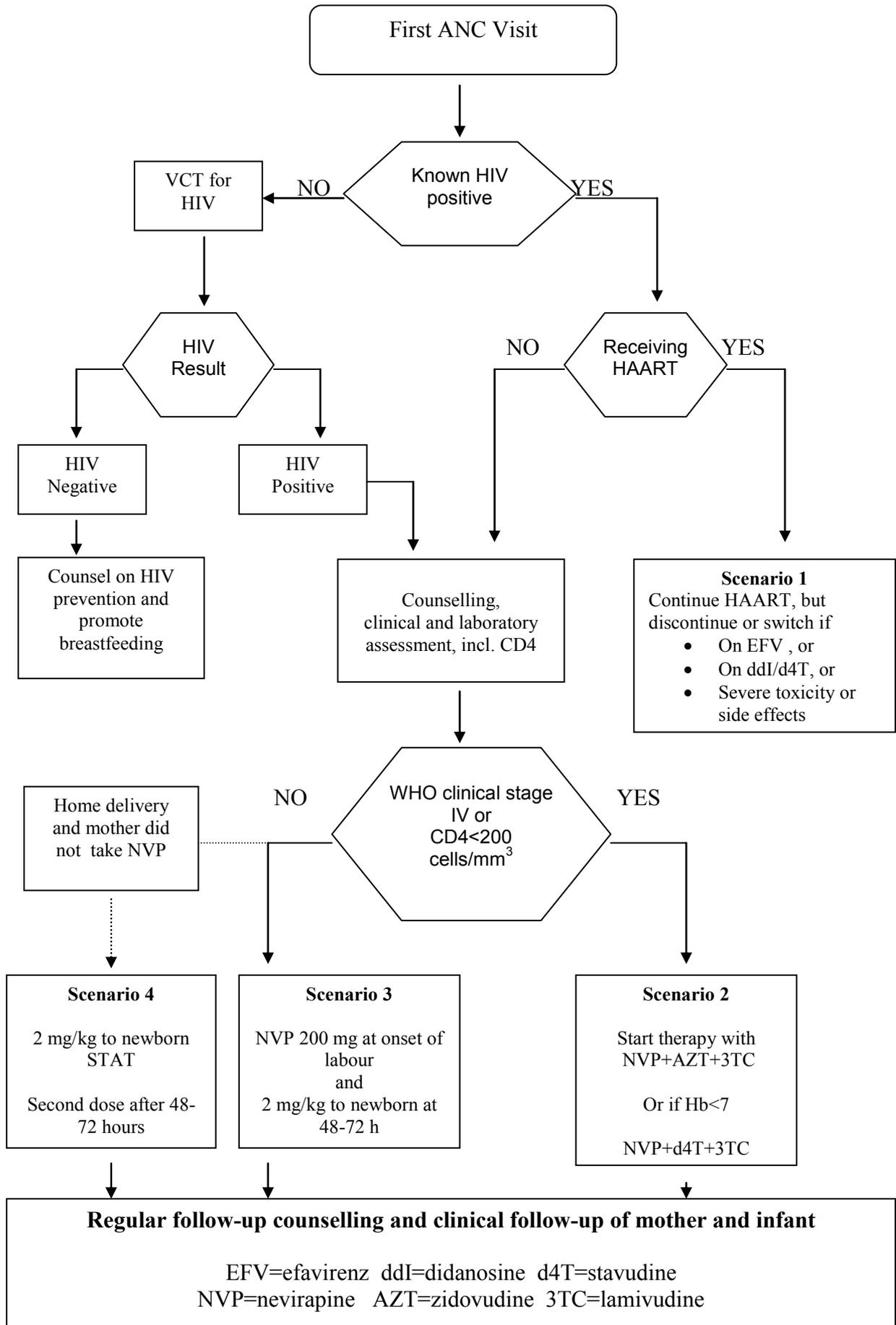
Handout 9.2: Integrating HIV into ANC Services

What....	To Do...	Why
History	Obstetric, medical and sexual	Begin to “stage” HIV disease
Physical Exam	Note S&S consistent with HIV infection: Obtain Vital signs, Weight	
Nutrition Evaluation: anemia Diet counseling	HgB, Iron 1to 2 tab per day Multivits 1 tab qd	Nutrition impacts immune suppression and transmission
Lab Diagnostics/immunizations	Blood group and RH factor,, urine analysis, CD4, HBV panel, tetanus toxoid,	Identify potential complications of pregnancy
STI screen/treatment	VDRL (syphilis) Bacterial vaginosis HSV, HPV, pap smear	as per MOH guidelines, counsel re: partner,safer sex, condom use
Tuberculosis	assess weight loss, fever, cough, night sweats, jaundice, lymphadenopathy, TB tx in previous year.	INH is safe in pregnancy and lactation.
Malaria	Chloroquin 2 tabs/week PLUS proquinil 300 mg q d Malaria area: mosquito nets, insecticide	Malaria causes increase maternal and child morbidity and Malarial placental infection increases HIV transmission,
PCP prophylaxis for HIV + women CD4<200	Cotrimoxazole: single strength= 2 tabs daily double strength= 1 tab daily	Benefits outweigh risk of possible neonatal jaundice
ARV’s for PMTCT	200 mg tab given to mother at 32 weeks To take at onset of labour	NVP can reduce the risk of HIV transmission to mother by 50%
ARV’s for mother’s HIV: Clinical Stage IV and/or CD4<200 or <15% and Stable housing, access to ID clinic, identified treatment supporter, not abusing drugs or alcohol	1st line: d4T 40mg q12hr 3TC 150 mg q12hr NVP 200 mg QD x14 days then q12hr: Start in second trimester unless very ill	Treatment for mother’s health and PMTCT requires ongoing commitment to care. Poor adherence rapidly results in drug resistance.

What....	To Do...	And Why
Safer Infant feeding information	Exclusive BF for 4-6 months or Exclusive replacement feeding	Infant feeding guidelines promote exclusive BF for 4-6 months for all infants. BF adds ongoing additional risk of HIV transmission
Anticipatory guidance: pregnancy danger signs and HIV danger signs	Guidance to seek care for bleeding, fever, pre-eclampsia. For HIV, seek care for wasting, OI's, diarrhoea.	Though pregnancy does not impact HIV, women with advanced HIV disease may have more complications of pregnancy
Partners and Families	Link to community based HIV support programs	Stress of pregnancy, isolation, and lack of support can impact disease progression.
Effective Family Planning	Dual protection. Non estrogen hormonal contraceptive	Condom use prevents re-infection, new infections



Algorithm for ARV Use in Pregnant Women





Worksheet 9.1: What Do You Know about HIV and Pregnancy?

The purpose of this exercise is to find out what you know about HIV and Pregnancy. You will probably realize you know a great deal!

Directions:

- Join a group of three or four people.
- Your group is to read each statement below and discuss whether the statement is **True** or **False**.
- Discuss each statement for approximately 2 minutes and circle your response. Your group must decide on one answer per statement.
- Be ready to provide reasons for your decisions.

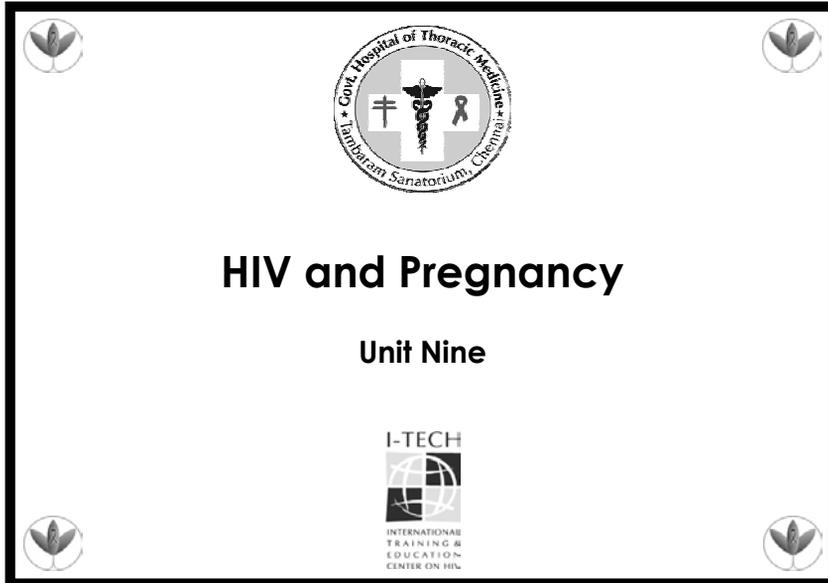
Statements:

1. Pregnancy makes HIV disease worse. **True False**
2. If an HIV positive woman has a Caesarian section, her risk of having a baby with HIV is 0%. **True False**
3. If a woman is HIV+, her pregnancy should automatically be considered high-risk. **True False**
4. HIV-infected sperm can directly infect the infant even if the mother does not have HIV infection. **True False**
5. If the mother and the father are both HIV-infected, using condoms during pregnancy isn't necessary. **True False**
6. If a woman is HIV positive, all her babies will be HIV-infected because they share the same blood. **True False**
7. Giving Nevirapine to babies after they are born is like giving a nurse post-exposure prophylaxis after a needlestick. **True False**
8. Delivery procedures which cause the mixing of maternal/infant body fluids should be avoided whenever possible. **True False**



PowerPoint Slides

Refer to companion document for copies of the Unit 9 PowerPoint presentation slides.



Unit 9 should take approximately 1 hour to implement.

- **Step 1:** HIV and Pregnancy; Slides 9.1-9.31 (45 minutes)
- **Step 2:** HIV and Pregnancy Case Study; Slide 9.32-9.33 (10 minutes)
- **Step 3:** Presentation of Key Points; Slides 9.34-9.36 (5 minutes)



Learning Objectives

After this unit, you will be able to:

- Identify risk factors for HIV transmission during pregnancy
- Identify risk factors of HIV transmission during labor and delivery
- Identify risk factors for HIV transmission during breastfeeding
- Describe HIV prevention interventions and strategies for mother, baby, and family

HIV and Pregnancy

Slide 2

Step 1: HIV and Pregnancy; Slides 9.1-9.31 (45 minutes)

- Begin by reviewing the unit aim.
- The aim of this unit is to provide information on how to treat and care for HIV positive pregnancy women and their babies.
- Review the session learning objectives with participants.
- Ask participants what else they would like to learn during the session.
- Refer participants to Worksheet 9.1: What do you know about HIV and pregnancy?
 - Divide the participants into groups of three or four.
 - Ask them to discuss each statement and respond to each question with Always True, Sometimes True or Never True.
 - They should try to develop a brief explanation for each response.
- Discuss participants' responses to each statement using the corresponding slides in the PowerPoint presentation.
- The goal of this exercise is to:
 - Show how much participants already know about HIV and pregnancy
 - Identify areas where participants may need more information in order to be able to provide effective care to their patients.



What Do You Know re: HIV and Pregnancy? (1)

TRUE or FALSE?

1. Pregnancy makes HIV disease worse
2. If an HIV positive woman has a Caesarian section, her risk of having a baby with HIV is 0%
3. If a woman is HIV+, her pregnancy should automatically be considered high-risk
4. HIV-infected sperm can directly infect the infant even if the mother does not have HIV infection

HIV and Pregnancy

Slide 3

Answers to 1-4:

1. Pregnancy makes HIV disease worse. FALSE
2. If an HIV positive woman has a Caesarian section, her risk of having a baby with HIV is 0%. FALSE
3. If a woman is HIV+, her pregnancy should automatically be considered high-risk. FALSE
4. HIV-infected sperm can directly infect the infant even if the mother does not have HIV infection. FALSE



What Do You Know re: HIV and Pregnancy? (2)

TRUE or FALSE?

5. If the mother and the father are both HIV-infected, using condoms during pregnancy isn't necessary
6. If a woman is HIV positive, all her babies will be HIV-infected because they share the same blood
7. Giving Nevirapine to babies after they are born is like giving a nurse post-exposure prophylaxis after a needle stick
8. Delivery procedures which cause the mixing of maternal/infant body fluids should be avoided whenever possible

HIV and Pregnancy

Slide 4

Answers to 5-8:

5. If the mother and the father are both HIV-infected, using condoms during pregnancy isn't necessary. FALSE
6. If a woman is HIV positive, all her babies will be HIV-infected because they share the same blood. FALSE
7. Giving Nevirapine to babies after they are born is like giving a nurse post-exposure prophylaxis after a needle stick. TRUE
8. Delivery procedures which cause the mixing of maternal/infant body fluids should be avoided whenever possible. TRUE



Epidemiology of HIV in Pregnancy in India

- Average HIV prevalence rate in pregnant women in India ranges from 1% to 4%
- Average HIV prevalence rate in pregnant women in cities such as Hyderabad, Mumbai, Pune, Sangli, and Manipur is 2-2.5%
- In 3 states: Goa, Gujarat, and Tamil Nadu, the prevalence of HIV exceeds 5% among high risk groups
- Perinatal transmission of HIV accounts for 2.61% of all HIV infections in India

HIV and Pregnancy

Slide 5

Source: NACO

- Make sure this slide is up to date.
- Why do you think the HIV prevalence rate in pregnant women in cities such as Hyderabad, Mumbai, Pune, Sangli, and Manipur is higher than other cities?
- Who are the high risk groups in Goa, Gujarat, and Tamil Nadu?

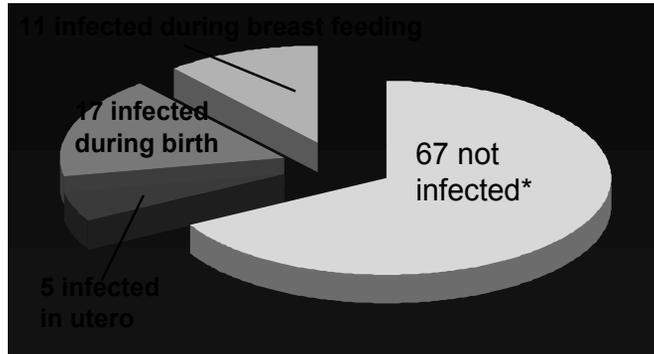


Indian Government Committed To PPTCT (Prevention of Parent to Child Transmission)

- The NACO programme for a phased scale up of access to antiretroviral therapy (ART) began 4/1/04
- Programme addresses PPTCT by:
 - Identifying priority subgroups including sero-positive mothers who have participated in the PPCTC programme in 6 states (Andhra Pradesh, Karnataka, Maharashtra, Tamilnadu, Manipur, and Nagaland)
 - Strengthening the existing capacity within the primary health care system for providing ART focusing on diagnostic facilities, equipment, infrastructure, and developing trained health care providers
 - Link ARV Centers with existing PPTCT Centers
 - Strengthening priority prevention activities



Of 100 Babies Born to HIV-infected Mothers...

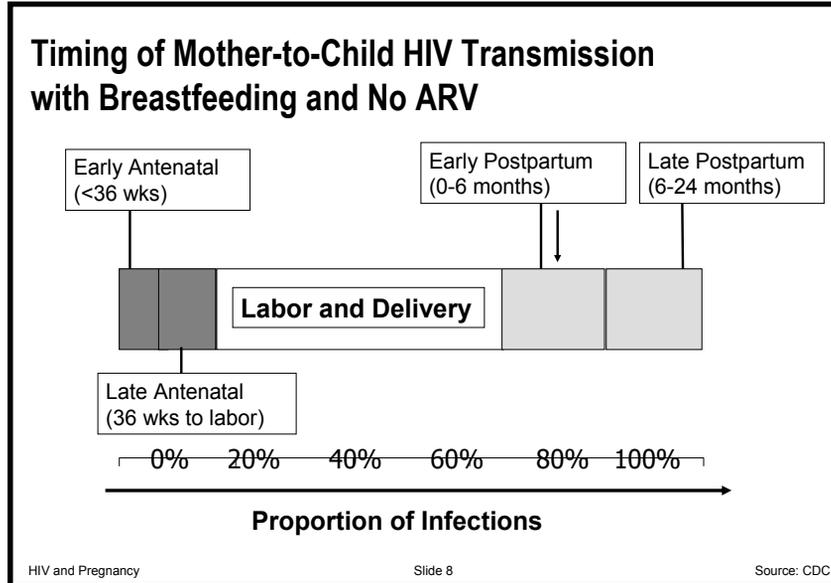


*Without treatment for parents, most will be orphaned

HIV and Pregnancy

Slide 7

- This slide illustrates that the majority of infants born to HIV positive mothers will NOT be HIV positive themselves. It is important to emphasise, however, that even though most infants are not born HIV positive, they may lose one or both parents if treatment is not available, resulting in potentially great challenges for the child as they mature. In other words, such children are not immune to the hardships of HIV.
- Questions for Discussion:
 - o How can you counsell mothers about breastfeeding based on these findings?
 - o What would you tell them about vaginal vs. caesarian birth?



- This is crucial: If we take 100 women with HIV and look at this chart:
- We will expect 40 babies to be born with HIV:
 - o about 8 will be infected in utero - we cannot do anything about these infections yet.
 - o about 16-18 babies will be infected at the time of delivery. Here we can intervene.
 - o about 8 babies will be infected in the first 6 months of life from breastfeeding. Here we can intervene.
 - o about an additional 6-8 babies will become infected as mother BF's longer. Here we can intervene. The most important thing to remember is that no one knows at what point along this continuum a baby may become infected - we can only discuss RISK! And reducing the risk of transmission by 50% looks primarily at labour and delivery and breastfeeding.



Vulnerability of Women

Biological

- Risk of HIV transmission for women during unprotected vaginal intercourse is 2 to 4 times higher than for men
- More vulnerable to STIs
- Younger women and older women more susceptible

Social and Economic

- Power imbalances
- Lack of control over how or when they have sex

HIV and Pregnancy

Slide 9

- Questions for discussion:
 - o What can nurses do to address these vulnerabilities of women?
 - o How might the greater vulnerability of women influence how you care for female patients?



What Increases the Vulnerability of Women?

- Lack of education
- Sexual customs and norms
- Lack of economic opportunities
- Lack of control in relationships
- Condom use and pregnancy
- STIs and HIV
- HIV and prostitution

HIV and Pregnancy

Slide 10

- Questions for Discussion:
 - o Why would a lack of education, economic opportunities and relationship control increase a woman's chances of becoming HIV positive?
 - o How can nurses talk with women about these risks in ways that can empower them to decrease their vulnerability?



What Do We Know about PPTCT of HIV?

- Factors that impact each other in PPTCT of HIV:
 - Pregnancy (Maternal)
 - Labor and Delivery (Obstetric)
 - Post-partum (Breastfeeding)
 - Infant



HIV and Pregnancy

Slide 11

- These are 4 “factors” impacting one another. Our job is to help minimize the “risk” impacting each of these “pieces”.
- Keep in mind infectious disease concepts. Factors influencing MTCT may be related to:
 - The virus (maternal or paternal factors)
 - The inoculation (how the virus gets to the fetus/infant)
 - The host (factors which allow the virus to cause infection and to replicate)



Factors That Impact MTC-HIV Transmission

Maternal Factors	Obstetrical Factors	Infant Factors	Infant Feeding Factors
High viral load Recent infection Advanced disease	ROM>4 hours	Prematurity	Breast feeding
Poor Nutrition	Episiotomy	First infant of multiple birth	Mixed feeding
Concurrent STI's	Invasive foetal monitoring	Immature GI tract	Maternal breast pathologies (mastitis)
Placental infection (esp malaria)	Intrapartum hemorrhage		Longer duration of breast feeding
	Instrument delivery		Maternal HIV infection during lactation
	Vaginal vs. C-section		Mouth sores in infant

HIV and Pregnancy

Slide 12

Source: WHO MTCT

- This shows a summary of factors which impact HIV transmission from a mother to her baby.
- Ask participants to refer to Risk Factors That Impact MTC-HIV Transmission and Integrating HIV into ANC Services (Handouts 9.1-9.2) located in the Participant’s Handbook..



ARV Interventions to Decrease Risks to Babies

Intervention	Risk of Mother-to-Child HIV Transmission
No ARV, breastfeeding	30-45%
No ARV, No breastfeeding	20-25%
Short course with 1 ARV, Breastfeeding	15-25%
Short course with 1 ARV, No breastfeeding	5-15%
Short course with 2 ARV's, no breastfeeding	5%
3 ARV's, no breastfeeding	1%
2 ARV's, breastfeeding	unknown
3 ARV's, breastfeeding	unknown

HIV and Pregnancy

Slide 13

Source: WHO MTCT

- This is a review of ARV interventions that summarise efforts to decrease the risk to babies. Our goal is to prevent HIV transmission.



Risk Factors During Pregnancy

- Increased risk if mother:
 - Has viral, bacterial, and parasitic (esp. malaria) placental infection
 - Has concurrent STI
 - Is malnourished
 - Is infected with HIV during pregnancy
 - Has advanced HIV disease



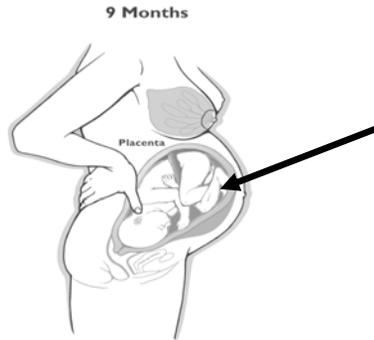
HIV and Pregnancy

Slide 14

- How to decrease the risk? Let's review how we might decrease these risks. Again review the infectious disease concepts:
 - Anything that compromises physical barriers to the virus (alterations in the integrity of the skin, mucous membranes, placenta, chorion).
 - Use the analogy of mosquito netting - bugs can still get in!



Risk During Pregnancy



HIV and Pregnancy

Slide 15

- Anything that interferes with the integrity of the placenta can increase the risk of HIV transmission, such as placental or vaginal infections. An example would be chorioamnionitis.
- Use the picture above:
 - If you have infection/inflammation of the placenta/chorion, you have an immune response (lymphocytes, "pus," all the white cells).
 - And where does HIV live? In the cells of the immune system! Visually show how this increased number of HIV's in close proximity and with a damaged "barrier" can lead to increased risk of transmission - because once through the placenta, what protects the growing fetus?
 - Ask the participants to identify ways to explain this to mothers.
- Stress to participants the importance of comprehensive physical assessment and monitoring of symptoms.



Infections in Pregnancy Discussion

- What do we know about viral infections in early pregnancy?
- Imagine that mother become infected about the time she becomes pregnant. What do we know about her viral load?

HIV and Pregnancy

Slide 16



Risk Factors During Labor and Delivery (Exposure to Maternal Fluids)

- Prolonged rupture of membranes (> 4 hours)
- Intrapartum haemorrhage
- Invasive delivery techniques:
 - Episiotomy
 - Use of metal cups for vacuum deliveries
 - Forceps deliveries

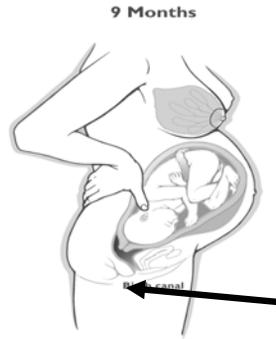
HIV and Pregnancy

Slide 17

- Discuss with participants: what is the biology behind increased risk with ruptured membranes?
- Review: amniotic fluid are protective and not an HIV “soup”. Once the membranes are ruptured, the infant is exposed to HIV in vaginal secretions.
- Remind participants that blood, semen and vaginal secretions have high concentrations of HIV and that infants will have those secretions in their mouth - and make the connection between avoiding suctioning as the catheter may actually “push” virus into the baby.
- Ask participants: what about the fetal scalp or invasive techniques? Identify “breaks” in the integrity of the skin - not dissimilar to women or men with genital ulcers. In this case, it is strictly ACCESS by the virus to the infants blood.



Risk During L&D



HIV and Pregnancy

Slide 18

- Review with participants:
 - o Infant will be exposed to vaginal fluids containing HIV.
 - o If there is hemorrhage, infant will be exposed to blood with HIV.
 - o If there are invasive fetal monitoring, the skin integrity of the infant is altered, allowing a portal for infection.



Risk Factors for Infants

- Prematurity
- Low birth weight
- First infant of multiple birth
- Altered skin integrity
- Mouth sores



HIV and Pregnancy

Slide 19

- Discuss with participants:
 - Why would a premature baby be at higher risk than a full term infant?
 - Encourage participants to think about the biggest organ of the immune system: skin.
 - Remind people what that skin looks like in a preemie baby –fragile, porous
- What about low birth weight?
- What about first infant? Usually we consider twin A to be healthier and often larger.
 - Twin A is first in the birth canal, exposed to maternal fluids, bearing “brunt” of contractions.
 - Twin B, smaller, usually slips right through the “cleaned” birth canal in minutes rather than hours.



Risk Factors During Breastfeeding

- Mother infected with HIV while breastfeeding (risk increases from 15 – 30%)
- Mixed feeding (foods other than breast milk)
- Breast pathologies (engorgement, cracked nipples, mastitis)
- Advanced disease in the mother
- Poor maternal nutrition
- Prolonged breastfeeding (12-18 months)



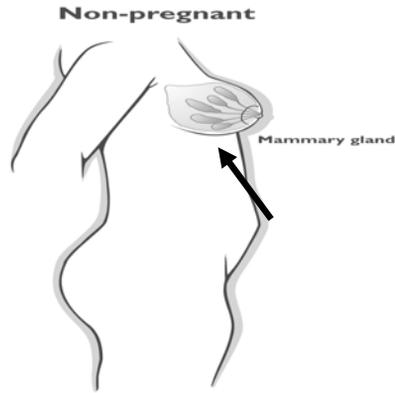
HIV and Pregnancy

Slide 20

- With breastfeeding we are thinking about mother and baby!
- Have the audience discuss the reasons why this increases the risk:
 - Recent infection: increased viral load (It will take 6-24 weeks for the body to make antibody to control the virus.) The VL may be in the millions and transmission risk is increased.
 - Mixed feeding: This is mechanical-inflamed baby's gut from different foods and subsequent immune response (The white cells increase and are right there!) plus HIV in mother's milk equals increased risk of infection.
 - Breast pathologies: More white cells equals more virus plus blood exposure.
- If not exclusive, breastfeeding is recommended with early weaning at 4-6 months advisable.
 - The earlier the weaning, the less of HIV transmission
- Ask the participants why the importance of EXCLUSIVE breastfeeding should be stressed.



Risk During Breastfeeding



HIV and Pregnancy

Slide 21

- Review the pathology of mastitis and discuss why that would increase risk of transmission to the baby.
 - o Cracked nipples?
 - o Sores in the baby's mouth.
 - o What interventions would you discuss with mother in the event of mastitis or bleeding nipples?



PPTCT: Mothers Protect Your Baby from HIV

- Know your HIV status
- Take Nevirapine to reduce the viral load
- Choose a safer infant feeding option



HIV and Pregnancy

Slide 22

- The message we are trying to communicate to the community. This is the message we want to share with mothers.



PPTCT: Nurses

- Health care workers protecting babies from HIV:
 - Give Nevirapine - lowers mother's viral load and prophylaxis for the baby
 - Modify obstetric practices to minimise baby's exposure to HIV
 - Support safest infant feeding choice



HIV and Pregnancy

Slide 23

- The message we need all health care providers to know.



Why Nevirapine?

- Long-acting
- Rapidly absorbed
- Crosses placenta
- Produces a rapid drop in viral load
- Simple, can be taken at home
- Inexpensive
- Safe and effective

HIV and Pregnancy

Slide 24

- Emphasise effectiveness of NVP to significantly reduce HIV perinatal transmission.



Nevirapine Resistance

- ARV resistance is emerging as a concern worldwide
- HIVNET study demonstrated resistance after single dose
- Resistance fades in the absence of continued drug pressure; impact on future treatment options not known
- WHO recommended benefits of Nevirapine to reduce PPTCT outweighs risk (October 2000)

HIV and Pregnancy

Slide 25

- As NVP is included in the first line ARV regimen in India, the issue of resistance is a concern.
- Stress importance of continuing education to keep updated as new information emerges regarding NVP resistance.



ANC: Optimize Mother's Health

- Provide HIV information to all pregnant women
- Antenatal visits are vital opportunities for PPTCT for:
 - HIV positive women
 - HIV negative women



HIV and Pregnancy

Slide 26

- As nurses, we can help to normalize HIV as a potential STI that can impact mother and baby's health.
- Ask the group to consider the difference between preventing HIV transmission to babies compared with preventing syphilis to babies.
 - Where are the similarities and differences, especially in light of increasing availability for HIV treatment?



Integrating HIV into ANC Services (1)

What....	To Do...	Why
History	Obstetric, medical and sexual	Begin to "stage" HIV disease
Physical Exam	Note S&S consistent with HIV infection: Obtain Vital signs, Weight	
Nutrition Evaluation: anaemia Diet counselling	HgB, Iron 1to 2 tab per day Multivits 1 tab qd	Nutrition impacts immune suppression and transmission
Lab Diagnostics/immunisations	Blood group and RH factor, urine analysis, CD4, HBV panel, tetanus toxoid,	Identify potential complications of pregnancy
STI screen/treatment	VDRL (syphilis) Bacterial vaginosis HSV, HPV, pap smear	As per MOH guidelines, counsell re: partner, safer sex, condom use
Tuberculosis	assess weight loss, fever, cough, night sweats, jaundice, lymphadenopathy, TB tx in previous year.	INH is safe in pregnancy and lactation

HIV and Pregnancy Slide 27

- Let’s review the complete package of antenatal care (ANC) that is offered to women in India, including HIV testing and counselling.
- What are the perceived barriers of integrating HIV testing into the standard of care?
- Refer participants to Handout 9.2: Integrating HIV into ANC Services. Discuss this table at length.



Integrating HIV into ANC Services (2)

What....	To Do...	Why
Malaria	Chloroquin 2 tabs/week PLUS proquinil 300 mg q d Malaria area: mosquito nets, insecticide	Malaria causes increase maternal and child morbidity and Malarial placental infection increases HIV transmission
PCP prophylaxis for HIV + women CD4<200	Cotrimoxazole: single strength= 2 tabs daily double strength= 1 tab daily	Benefits outweigh risk of possible neonatal jaundice
ARV's for PPTCT	200 mg tab given to mother at 32 weeks To take at onset of labour	NVP can reduce the risk of HIV transmission to mother by 50%
ARV's for mother's HIV: Clinical Stage IV and/or CD4<200 or <15% and Stable housing, access to ID clinic, identified treatment supporter, not abusing drugs or alcohol	1 st line: d4T 40mg q12hr 3TC 150 mg q12hr NVP 200 mg QD x14 days then q12hr: Start in second trimester unless very ill	Treatment for mother's health and PPTCT requires ongoing commitment to care. Poor adherence rapidly results in drug resistance

HIV and Pregnancy

Slide 28

- emphasise difference in ARV treatment for maternal HIV infection and prevention of perinatal HIV transmission.



Integrating HIV into ANC Services (3)

What...	To Do...	Why
Safer infant feeding information	Exclusive BF for 4-6 months or Exclusive replacement feeding	Infant feeding guidelines promote exclusive BF for 4-6 months for all infants. BF adds ongoing additional risk of HIV transmission
Anticipatory guidance: pregnancy danger signs and HIV danger signs	Guidance to seek care for bleeding, fever, pre-eclampsia. For HIV, seek care for wasting, OI's , diarrhoea.	Though pregnancy does not impact HIV, women with advanced HIV disease may have more complications of pregnancy
Partners and Families	Link to community based HIV support programmes	Stress of pregnancy, isolation, and lack of support can impact disease progression
Effective Family Planning	Dual protection. Non estrogen hormonal contraceptive	Condom use prevents re-infection, new infections

HIV and Pregnancy

Slide 29



Nursing Implications

- Nurses play an essential role in reducing HIV parent to child transmission
- Nurses coordinate the dissemination of PPTCT information to patients, families, communities and colleagues



HIV and Pregnancy

Slide 30

- Ask participants to give examples of how they can disseminate PPTCT information to their colleagues and communities



Fostering Empowerment

- Combat ignorance
- Provide women-friendly services
- Develop female-controlled prevention methods
- Build safer norms
- Reinforce women's economic independence
- Reduce women's vulnerability through advocacy and policy change

HIV and Pregnancy

Slide 31

- Ask nurses what they are doing or can do to decrease vulnerability for women in India.



Case Study

- Mrs. B has been on ARV therapy for just six months. She is taking ZDV, 3TC and NVP. Her family was very supportive of her decision to initiate treatment. Since she has started treatment she is feeling much better and able to participate in family life and care for her children
- She is even thinking of having another child and is seeking your advice. Her husband, whose HIV status is not known, is encouraging her to get pregnant. Her church members are also wondering why, since her health has improved, she is not having more children

HIV and Pregnancy

Slide 32

Step 2: HIV and Pregnancy Case Study; Slide 9.32-9.33 (10 minutes)

- Ask participants to refer to the HIV and Pregnancy Case Study worksheet located in the Participant's Handbook (Worksheet 9.2.)
- Discuss answers to the case as a class using the slides in the PowerPoint presentation.



Case Study Questions

- What advice will you give Mrs. B?
- What are the medical implications?
- How will you proceed with your counselling?



Key Points (1)

- HIV is an STI with potentially serious health consequences to mothers and babies
- Both partners need to be aware of the importance of safer sex throughout pregnancy and breastfeeding
- If a woman becomes infected with HIV when she is pregnant or breastfeeding, the risk of transmission to the baby increases

HIV and Pregnancy

Slide 34

Step 3: Presentation of Key Points; Slides 9.34-9.36 (5 minutes)

- summarise presentation, present key points in this unit, and answer any final questions.
- Ask what other questions they have about PPTCT.
- Ask the audience why recent HIV infection during pregnancy or breast feeding increases the risk to the baby.
 - The number one factor which impacts transmission is the amount of virus – the more virus, the higher the risk.
- Stress the necessity of involving male partners in all discussions regarding pregnancy, safe sex and breastfeeding.
- Ask participants to identify cultural issues that may serve as barriers to male involvement.



Key Points (2)

- Risk factors may be identified and controlled to prevent HIV transmission
- Pregnancy does not seem to have an effect on the progression of the disease to AIDS, but...
 - Women with AIDS are more likely to suffer from pregnancy-related complications



Thank You!



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CENTER ON HIV

 **Notes**



HIV Basics Course for Nurses

Participant's Handbook

Unit 10
Role of the Nurse in
HIV Care and Treatment

Unit 10: Role of the Nurse in HIV Care and Treatment

Aim: The aim of this unit is to discuss the crucial role of nurses in responding to the HIV epidemic and providing care and treatment to HIV positive patients.

Learning Objectives: By the end of this unit, participants will be able to:

- Describe the dynamic role of the nurse in providing holistic care to the patient receiving ARV treatment
- Identify the importance of a family centered, multidisciplinary team approach to care
- Understand the important values that the nursing profession brings to the healthcare team that ensure successful ARV treatment

Key Points:

1. The nurse plays a vital and diverse role in the care of the patient on ARV treatment
1. HIV is a complex multigenerational disease that requires a family centered, multidisciplinary team approach.
2. Nurses should understand their importance and believe in their ability to be leaders in the care and treatment of patients on ARVs.



Handout 10.1

An Exploration of Socioeconomic, Spiritual, and Family Support Among HIV-Positive Women in India

NEEDS TO BE COPIED AND INSERTED HERE



Worksheet 10.1

Diverse Roles in Nursing (Additional Self Review)

These are roles previously discussed during your training session.

- Educating
- Counselling
- Assessing
- Managing
- Administrating
- Referring

1) When does the nurse engage in this role during the overall care of a patient on/considering ARVs?

2) Why is this role important in the overall success of ARV therapy?

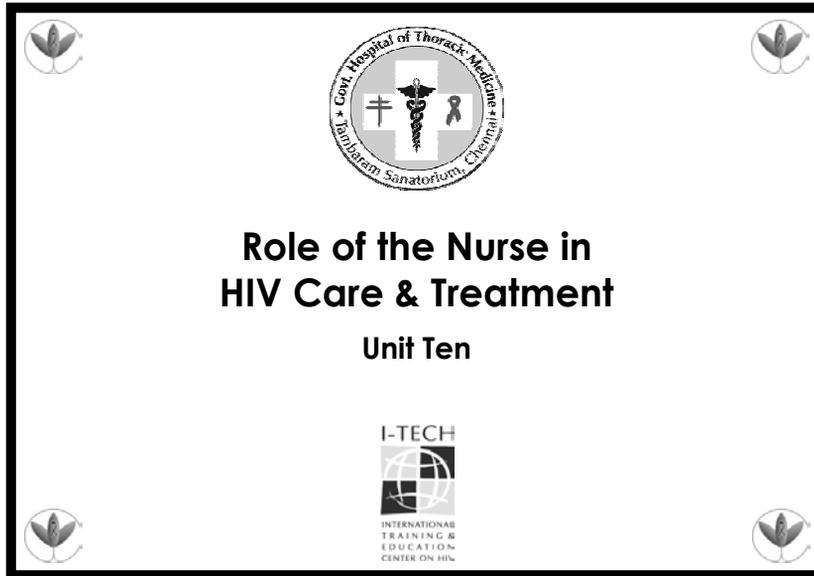
3) What knowledge and skills do nurses require to fulfill this role effectively?

From McGilvray, M., & Willis, N., *All about Antiretrovirals: A Nurse Training Programme*, "Trainer's Manual," pp. 70, Africaid, 2004.



PowerPoint Slides

Refer to companion document for copies of the Unit 10 PowerPoint presentation slides.



Unit 10 should take approximately 1 $\frac{3}{4}$ -2 hours to implement.

- **Step 1:** Role of the Nurse in HIV Care and Treatment; Slides 10.1-10.10 (15 minutes)
- **Step 2:** Referrals and Linkages Group Discussion; Slide 10.11 (20 minutes)
- **Step 3:** Nursing Role in Antiretroviral Therapy; Slides 10.12-10.19 (10 minutes)
- **Step 4:** Educating Patients about Condom Use Demonstration; Slide 10.20-10.26 (30 minutes)
- **Step 5:** Fulfilling Many Roles, Presentation of Key Points and Course Review; Slides 10.27-10.37 (30 minutes)
- Photocopy the following for distribution to participants:
 - o An Explanation of Socioeconomic, Spiritual, and Family Support Among HIV-Positive Women in India (Handout 10.1)



Learning Objectives

By the end of this unit, you should be able to:

- Describe the dynamic role of the nurse in providing holistic care to the patient receiving ARV treatment
- Identify the importance of a family centered, multidisciplinary team approach to care
- Understand the important values that the nursing profession brings to the healthcare team that ensure successful ARV treatment

HIV Nursing Care Issues

Slide 2

Step 1: Role of the Nurse in HIV Care and Treatment; Slides 10.1-10.10 (15 minutes)

- Begin by reviewing the unit aim.
- The aim of this unit is to discuss the crucial role of nurses in responding to the HIV epidemic and providing care and treatment to HIV positive patients.
- Review the learning objectives with participants.
- Ask participants if they have additional topics they would like to discuss about the role of the nurse in the era of HIV and ARV treatment.



What Will Our Role be in ARV Treatment?

HIV Nursing Care Issues Slide 3

- Since ARVs are available in India, nurses are eager to learn more about HIV, treatment options, and how they might be involved.
- Nurses know that their participation is essential for successful ARV treatment programmes....but what that role will be remains unclear for many. Some see it as primarily task oriented and practical.
- Before South Africa begins rolling out their ARV programme, nurses in that country were asked what they thought they needed to learn.
 - They said they needed to know more about ARVs, and that they envisioned their role to be one that was practical and task-oriented.
- Ask participants if they agree with this list generated by the South African nurses.
 - What would they add to it?
 - Which tasks may not be applicable to nurses in India?



These are Important Tasks

BUT.....

*These tasks underestimate the great importance
of the dynamic role nurses have to play*



HIV Nursing Care Issues

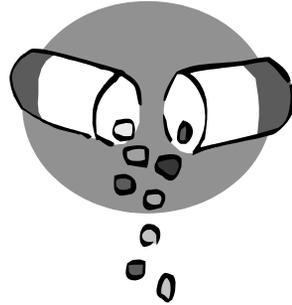
Slide 4

- Indeed, nurses may have an essential role to play in measurement of vital signs and documentation. Perhaps some nurses are also taking blood.
- However, the nurse's role, doesn't stop there!!!
- We have an immense part to play, a role that is very dynamic and tackles every aspect of ARV administration.



Revisiting the Goal of ART

- ...to decrease or reverse immune system damage associated with HIV infection
- thus improving quality of life and reducing HIV-related morbidity and mortality



HIV Nursing Care Issues

Slide 5

- The goal of ARV therapy is primarily to decrease or reverse immune system damage associated with HIV infection.
- This results in an improvement of the patient's quality of life through the reduction of infections and an increase in length of life.



Family Centered Care

- Recognises the important role family plays in the lives of patients: support, care, etc.
- Identifies and engages family members in care planning
- Empowers patients by building on the strength of the family to assist with accessing care and adhering to treatments

HIV Nursing Care Issues

Slide 6

- The nurse recognises that the family is the basic unit of society that has a direct impact on a person's ability to maintain and promote good health. The nurse is also the family "advocate" who can "speak " for the patient and family when they may be unsure how to navigate the healthcare system.
- It is important to remember that frequently more than one member of a family is infected with HIV.
- Educating the family is essential. Universal precautions, prevention re: transmission of HIV, are all part of working with the family.
- Important point: The patient's confidentiality must never be jeopardised.
 - Family involvement in care is only done with the patients permission.



Multidisciplinary Care

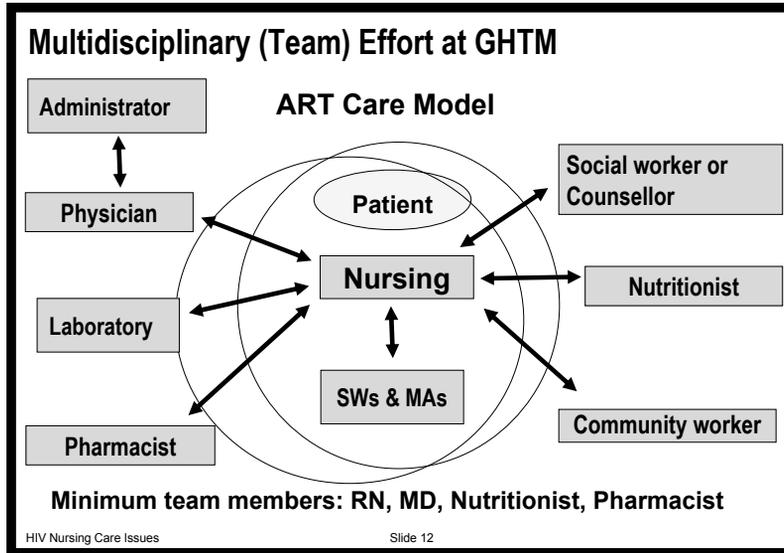
- Acknowledges that patients with HIV have multiple needs
- A *team* of providers is needed: doctor, nurse, pharmacist, nutritionist, counsellor, community outreach worker
- A coordinated, collaborative approach to care is required
- The role of the nurse is **key**



HIV Nursing Care Issues

Slide 7

- A multidisciplinary team approach to care puts clinical issues into the context of psychosocial needs, and links family and community to medical care. It recognises that all members of the healthcare team make important contributions that working alone does not allow.
- Again, the patient should be made aware that members of this team respect the patient's privacy and confidentiality. There are times when we need to be sensitive to the fact that staff and patients could live in the same community and patients may not want others to know of his/her HIV status.
- The nurse is frequently the team member who makes it all "happen".
- Ask participants why the nurse is often the crucial member on a multidisciplinary team caring for HIV patients.



- Hospital Administrator makes decisions, informs staff of drug stock,
- Discuss this diagram the diagram on the next slide.
- Together these depict clearly how the nurse plays a central role in helping the patient navigate the ART care programme.
- Ask participants:
 - How do nurses work with physicians to provide care to patients on ART?
 - How do nurses work with the nutritionist to provide care to patients on ART?
 - How do nurses work with pharmacists to provide care to patients on ART?
 - How do nurses work with social workers and counsellors to provide care to patients on ART?
 - How can the team work together to provide BETTER ART than if they weren't working together in collaboration and as a team?



The Nurse as “Case Manager”

- Assesses medical and social service needs of the patient
- Develops a comprehensive care plan
- Makes appropriate referrals to other members of the multidisciplinary team
- Links the patient and family to community-based support programmes
- Monitors, evaluates, and follows up

HIV Nursing Care Issues

Slide 9

- The concept of the nurse as a case manager places the nurse in the role of “coordinator” of the care plan, from start to finish.
- The nurse is in the ideal situation for this role as they are often the primary contact for the patient and the key liaison between the patient (family) and other members of the healthcare team.
- In some healthcare settings the case manager is the social worker; however, in many hospitals more and more nurses are assuming this role.



Collaboration and Referral

- Nurses collaborate with other providers and make appropriate referrals
 - Collaboration with doctors, other nurses, social workers, counsellors, nutritionists, pharmacists, and others
 - Referrals to:
 - NGOs & CBOs
 - Positive networks
 - Financial resources
 - DOTS programmes
 - Religious groups
 - Other?

HIV Nursing Care Issues

Slide 10

- Ask participants for any other people or agencies they use for referral or collaboration.



Referral & Linkage Discussion

- How do you identify and establish linkages to NGOs and other groups?
- What organisations do you currently refer patients to and for what?
- Who on the team makes the referral and how do you make sure the patient followed through and received the services?
- How do you handle patient consent and confidentiality issues when making a referral?

HIV Nursing Care Issues

Slide 11

Step 2: Referrals and Linkages Group Discussion; Slide 10.11 (20 minutes)

- Lead a group discussion on referrals and linkages using the questions in the corresponding PowerPoint presentation **slide**.



Starting ARVs: Early Days

- Early days are **EXTREMELY** influential in ARV success
- Why?
 - **Patient is not ready** – S/he may be non-adherent
 - **Patient doesn't understand the drugs** – S/he may take them incorrectly
 - **Patient doesn't expect side effects** – S/he may be shocked and get 'put off' ARVs or not report any problems
 - **Patient feels alone and unsupported** – S/he may be frightened, reluctant to take drugs or to report any problems

HIV Nursing Care Issues

Slide 12

Step 3: Nursing Role in Antiretroviral Therapy; Slides 10.12-10.19 (10 minutes)

- Continue lecture using slides in the PowerPoint presentation..
- As you begin working with patients who are initiating ARV treatment keep in mind the models of nursing care we just discussed.
- Also, think about integrating the new information you have obtained throughout the training...begin putting it all to work!



Diverse Nursing Role in ART

- Blood collection* (baseline results eg CD4, VL, LFTs, FBC)
- Education for patient about ARVs (What are they?, side effects)
- Counselling about starting ARVs
- Assessing ARV readiness
- Liaising with multidisciplinary team about ARV readiness
- Adherence support



HIV Nursing Care Issues

Slide 17

- When a patient starts ARVs, our role is extremely diverse.
- This is a time for educating the patient about ARVs:
 - On issues such as adherence and resistance
 - ARVs are a treatment and not a cure that bring with them their own unique problems, such as side effects
- Identifying whether the patient is really ready to start ARVs.
- Communicating with the Multidisciplinary team to discuss patients.



Monitoring ARVs

- ARV success depends on regular monitoring of their efficacy & safety
- This is assessed using a combination of:
 - Verbal Reporting:
 - “I feel much stronger now”
 - “I keep getting headaches”
 - “My appetite is much better”
 - “I am having bad dreams”
 - Clinical Examination: e.g. weight gain, ‘looks better’, rash, jaundice
 - Laboratory Testing: CD4, Viral Load, FBC, Resistance testing

HIV Nursing Care Issues

Slide 14

- Monitoring ARV efficacy and safety tells us how well the drugs are working and whether they are causing any problems.
- A three-pronged approach is involved:
 - A report from the patient as to how they are feeling
 - Clinical examination
 - Laboratory tests all give vital information. They inform us both of improvements which are extremely encouraging and warn us of potential problems.
- Don't forget correct documentation of all these reports!



Nurse's Role in Monitoring: Verbal Reporting

- Nurses are often the first point of contact
- Patients often feel more comfortable raising issues with nurses
- Nursing activities (e.g. vital, signs) provides opportunity for informal conversation re problems/issues
- Assessment: Is patient experiencing any side effects? How are they feeling? Any problems?
- Follow up: referral of concerns to doctor, recognising urgent referrals, good multidisciplinary team communication

HIV Nursing Care Issues

Slide 15

- Nurses are the key to monitoring patients. progress on ARVs.
- Verbal reporting allows the nurse to identify whether the patient is experiencing any problems, or has any questions?
- Nurses are ideally placed for this as they are usually the first point of contact & patients often feel reluctant to raise issues with the physician.
- Nursing tasks provide many informal opportunities for talking. Any concerns that may arise must ALWAYS be referred and discussed with the Multidisciplinary Team.



Nurses Role in Monitoring: Clinical Examination

- Again, nurses are often the first point of contact
- Clinical examination can take place during other activities, e.g. blood taking
- **Assessment:** Recognising ARV side effects (e.g. jaundice, rash) or improved patient health
- **Referral:** Prompt, appropriate intervention
- **Counselling:** reassurance for patient
- **Encouragement** for patient doing well!!!

HIV Nursing Care Issues

Slide 16

- Clinical Examination provides the next method of monitoring.
- Again, nurses are often the first point of contact, enabling us to identify a problem immediately and ensure prompt referral, particularly in an emergency.
- Counselling is vital for patients, whether they are doing well or experiencing problems.
- Always support and encourage!
- Ask the group to discuss some of the conditions patients often present with, i.e. rash, nausea, headaches and the nurse intervention for these symptoms.



Laboratory Testing

- A variety of different blood tests are used to measure the efficacy and safety of ARVs
- The results provide essential information:
 - Disease progression
 - Is patient safe to continue taking regimen?
 - Is the patient resistant to the ARV regimen?
 - Is the patient at risk of OIs and in need of prophylaxis?
 - Psychological support & encouragement for patient

HIV Nursing Care Issues

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- Laboratory tests provide invaluable information that cannot be assessed verbally or visually.
- Doctors use the results to make clinical decisions about the safety of the drugs for that patient, how well they are working for the patient, is there resistance?
- Is prophylaxis needed for any impending OIs? Also, (a point often forgotten) - good results provide encouragement, psychological support for patients taking ARVs.



Laboratory Tests

- Correct clinical decisions depend on meaningful clinical laboratory information
- Common blood tests:
 - CD4 Count
 - Viral Load*
 - Safety Labs (CBC, LFTs)
 - Resistance Testing*

* *May not be available*



HIV Nursing Care Issues

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- Common blood tests done include CD4 count.
- This simply measures the CD4 (normal range is between 600-1200 cells/mm) allowing us to determine the state of the patient's immune system.
- Viral load measures the amount of HIV in the blood
- Other tests including CBC, LFT's, and certain chemistry tests, e.g. creatinine, bilirubin allow us to monitor the health of the patient, i.e. the liver, kidneys, red blood cells etc.
- Finally, a resistance test indicates any mutations of the HIV virus that lead to an ARV drug resistance. (This test is uncommon in most parts of the world because it is VERY expensive.)



Nurses and Adherence

- Educate
- Support
- Counsell
- You can never do this enough!!!
- It is the single most important thing you can do for your patients



HIV Nursing Care Issues

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- Good patient adherence to ARVs is the MOST important role of the nurse.
- Whenever you see patients, educate, support and counsell about the need for adherence. This alone will dramatically affect the outcome of your patients ARV.



Patient Education & Counselling

- Nurses provide education & counselling on:
 - Nutrition
 - Hygiene
 - Medication adherence
 - Safe sex
 - Emotional issues
 - Other?

HIV Nursing Care Issues

Slide 20

- **Step 4: Educating Patients about Condom Use; Slides 10.20-10.26 (30 minutes)**
- Ask participant's to name other areas of patient education and counseling.



Don't Forget Safer Sex!

- Safer Sex is essential to prevent:
 - Transmission: someone on ARVs can still transmit HIV, even if their viral load is undetectable
 - Re-infection: someone on ARVs may be re-infected with a different strain of HIV, making treatment success more difficult
- Take every opportunity to counsel about safer sex practices



HIV Nursing Care Issues

Slide 21

- This is all too frequently forgotten or overlooked.
- Many people prefer not to discuss sex! However, nurses are ideally placed to meet this challenge.
- Patients on ARVs **MUST** be told that they can still transmit the virus and that they themselves can be re-infected with different strains through sex.
- We know that people are reluctant to disclose their status to sexual partners but even so, we must continually advocate safe sex for the good of the patient's health and also for the good of public health!



Condoms

- You can use a condom to avoid getting infected with HIV or other sexually transmitted diseases (STDs)
- It is very risky for you to be exposed to other sexually transmitted diseases if you already have HIV
- It is also important that you use the condom correctly



How to Use a Condom (1)

Do not re-use condoms. Use a new condom for every sex act

Do not store condoms in the sun. Heat and sunlight destroy condoms

1. Check the expiration date
2. Open the package carefully without damaging the condom



HIV Nursing Care Issues

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How to Use a Condom (2)



3. Put the condom on only after the penis is fully erect
4. Always hold the space at the end of the condom to squeeze out air, and then gently roll it on the penis
5. Check to make sure there is space at the tip and that the condom is not broken



6. With the condom on, insert the penis for intercourse. The condom must be on the penis during the whole time of penetrative sex. If it slides off or breaks, put on a new condom. If you use lubricant, only use water-based lubricants (not oil-based, which may dissolve the condom)
6. When finished, hold onto the condom at the base of the penis. Keeping the condom on, pull the penis out before it gets soft
7. Remove the condom carefully without spilling the semen
8. Always use the condom only once for every sex act
9. Tie a knot in the used condom, and dispose it in a safe place such as an enclosed trash container or in a pit latrine or toilet

HIV Nursing Care Issues

Slide 29



Teaching Patients about Condom Use

- Divide into groups of 3—one person will be the patient, the second person will be the nurse, and the 3rd will be an observer
- Use the penis model and condoms provided to practice teaching patients how to use a condom correctly
- Take five minutes to do the demonstration, then change roles
- Let everyone have a turn teaching about condom use

HIV Nursing Care Issues

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Step 4(cont.) Condom Use Demonstration

- Hand out condoms and penis models to each group. Each participant should get a chance to play the role of the nurse, patient, and observer.



Variety of Roles

- Educating
- Counselling
- Assessing
- Managing
- Referring
- Administrating



HIV Nursing Care Issues

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Step 5: Fulfilling Many Roles, Presentation of Key Points and Course Review; Slides 10.27-10.37 (30 minutes)

- Continue presentation with the corresponding PowerPoint presentation slides.
- Refer participants to Diverse Roles in Nursing (Worksheet 10.1) for additional self review.
- Nurses have a broad range of roles to play. These roles already make up the unique skills and characteristics of the modern nurse - they just need applying now to ARV treatment. We now have an understanding of ARV drugs, so let's do what we're good at:
 - o Educating patients, other nurses, health professionals, and the general public.
 - o Counselling patients.
 - o Assessing and managing the patient's needs.
 - o Recognising our own limitations.
 - o Referring patients to the doctor where required.



Fulfilling These Roles

- **Knowledge:** Know the drugs, side effects, doses & dietary requirements
- **Understanding:** Be aware of the challenges and the psycho-social needs of YOUR patient
- **Confidence:** Your patient will look to you for advice, information, and support

***THESE ALL ENHANCE
NURSING CARE!***

HIV Nursing Care Issues

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- The ability to fulfill these roles depends upon our knowledge, our character and our confidence.
- Do not be daunted or put off! We are all learning and there are plenty of people around to discuss issues with, clarify points and answer questions.
- Above all, the aim is to provide comprehensive care that supports and encourages patients on ARV treatment.



Remember Key Nursing Values

- **Leadership:** Empower patient, families & communities through education. Share your knowledge with your colleagues
- **Collaboration:** Bring others together to accomplish those things they could not do alone
- **Diversity:** Provide an environment that welcomes difference
- **Creativity:** Encourage new ways of thinking and problem solving
- **Advocacy:** Raise public awareness. Be a voice for injustice

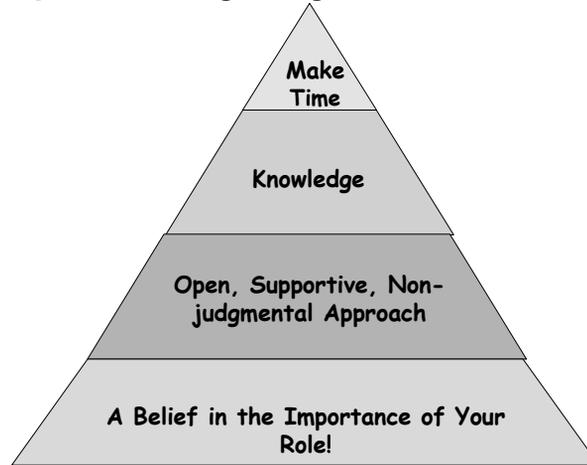
HIV Nursing Care Issues

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- Nurses practice with certain key values as the foundation to the care they provide.
- They are strong leaders who understand the importance of team work and collaboration.
- The nurse is often the member of the healthcare team who provides a “voice” for the patient and family and encourages the development of creative and diverse solutions to the complex issues that arise while caring for the patient with HIV/AIDS.
- Advocating for our patients is not new....but in the world of HIV this role is even more important. We all know that HIV is often associated with stigma and can result in discrimination. As nurses we can help stem this tide and make a real difference for present and future patients.



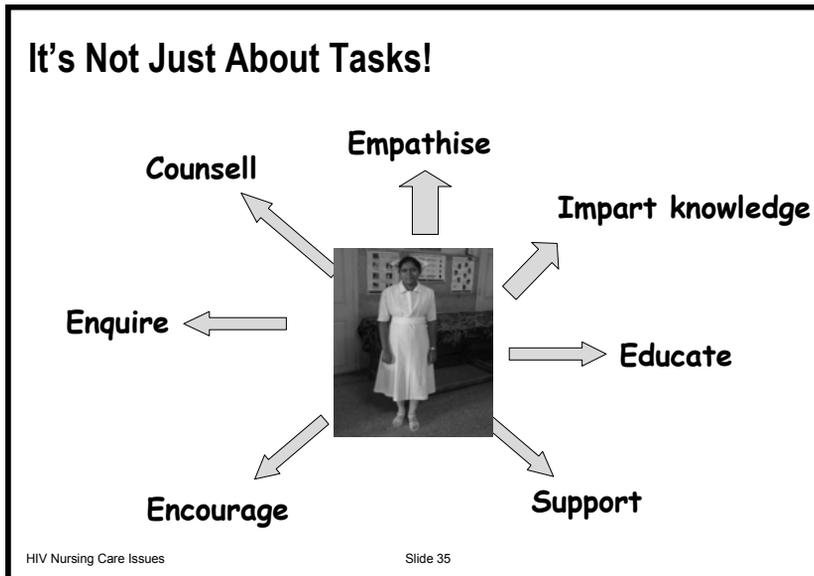
Four Steps to Getting It Right!



HIV Nursing Care Issues

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- This pyramid represents four building blocks designed to successfully care for our patients:
 - o First, a belief in the importance of our role is paramount and will encourage us to achieve the following three.
 - o An open, supportive, non-judgmental approach encourages patients to adhere to ARV treatment and to seek support and advice from us.
 - o This requires knowledge. If you don't know, ask someone in your team.
 - o Finally, if you don't make time to talk and find out your patients needs and concerns, how can you possibly nurse them!



- Our role is not just about completing tasks. Instead, one task provides a multitude of opportunities to meet the needs of our patient on ARVs.
- For example, if vital signs are to be taken, use the opportunity to build trust and to identify patient's needs. We are then able to identify any areas requiring intervention or, just as importantly, to encourage the patient doing well with no problems!



In Summary...

Patients on ARVs face an immense challenge

- You have an extremely exciting role, where you **CAN** and **WILL** have a huge influence on the success of ARV treatment for your patients

HIV Nursing Care Issues

Slide 32

- The challenges of ARVs are immense.
- Effective ARV programmes depend on enthusiastic, committed nurses who believe in the influence they may have on treatment success.
- Increasing access to ARVs is an extremely exciting opportunity for nurses to deliver the holistic care they are trained to provide, and for being directly involved in promoting quality of life and length of life for people with HIV.



Key Points

- The nurse plays a vital and diverse role in the care of the patient on ARV treatment
- HIV is a complex multigenerational disease that requires a family centered, multidisciplinary team approach
- Nurses should understand their importance and believe in their ability to be leaders in the care and treatment of patients on ARVs

HIV Nursing Care Issues

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- Review these key points with participants.
- Ask them what other key points they learned from this session on the role of the nurse in caring and treating for HIV patients.
- Ask for questions about information discussed in this session.
- Important questions to end this session is:
 - o What do you now understand your role to be as a nurse caring for HIV patients?
 - o What concerns do you have in this role and with the holistic care required?



Course Review (1)

Now that you have completed this training for nurses, you should be able to:

- Describe HIV and its implications for nursing in India
- Identify common opportunistic infections (OIs) associated with HIV disease
- Explain how ARV drugs are used to treat HIV positive patients
- Identify common side effects, toxicities and drug interactions related to ARV drugs



Course Review (2)

- Explain major issues and challenges associated with ARV therapy adherence
- Describe how resistance to ARV drugs can occur
- Explain how HIV positive pregnant women and their babies can be treated with ARV drugs
- Describe treatment for children living with HIV
- Describe common issues that arise for nurses as they treat HIV positive patients



Final Questions

What final questions do you have about:

- HIV, ARVs and ARV adherence?
- Educating patients on HIV, ARVs, and ARV adherence?
- Role of the nurse in the care of PLWHA and their families?



Thank you for all your hard work!

Please complete the course evaluation before you leave



- After participants have handed in their post assessment, make sure to go over the correct answers with them.

 **Notes**
