

Perinatal HIV

**A learning
programme for
professionals**



Developed by the
Perinatal Education Programme

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for professionals

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VERY IMPORTANT

We have taken every care to ensure that drug dosages and related medical advice in this book are accurate. However, drug dosages can change and are updated often, so always double-check dosages and procedures against a reliable, up-to-date formulary and the given drug's documentation before administering it.

Perinatal HIV:

A learning programme for professionals

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The aim of this Perinatal HIV course is to improve the care of HIV-positive pregnant women and their newborn infants in all communities, especially in poor peri-urban and rural districts of southern Africa.

Perinatal HIV was developed by a multi-disciplinary team of nurses, obstetricians, paediatricians, senior professors and colleagues in government health departments. This ensures a balanced, practical and up-to-date approach to common and important clinical problems.

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Editor-in-chief of the Perinatal Education Programme, Prof D. L. Woods

Introduction

ABOUT THE EBW HEALTHCARE SERIES

EBW Healthcare publishes an innovative series of distance-learning books for healthcare professionals, developed by the Perinatal Education Trust, Eduhealthcare, the Desmond Tutu HIV Foundation and the Desmond Tutu TB Centre, with contributions from numerous experts.

Our aim is to provide appropriate, affordable and up-to-date learning material for healthcare workers in under-resourced areas, so that they can manage their own continuing education courses which will enable them to learn, practise and deliver skillful, efficient patient care.

The EBW Healthcare series is built on the experience of the Perinatal Education Programme (PEP), which has provided learning opportunities to over 60 000 nurses and doctors in South Africa since 1992. Many of the educational methods developed by PEP are now being adopted by the World Health Organisation (WHO).

WHY DECENTRALISED LEARNING?

Continuing education for healthcare workers traditionally consists of courses and workshops run by formal trainers at large central hospitals. These teaching courses are expensive to attend, often far away from the healthcare workers' family and places of work, and the content frequently fails to address the real healthcare requirements of the poor, rural communities who face the biggest healthcare challenges.

To help solve these many problems, a self-help decentralised learning method has been developed which addresses the needs of professional healthcare workers, especially those in poor, rural communities.

BOOKS IN THE EBW HEALTHCARE SERIES

Maternal Care addresses all the common and important problems that occur during pregnancy, labour, delivery and the puerperium. It covers the antenatal and postnatal care of healthy women with normal pregnancies, monitoring and managing

the progress of labour, specific medical problems during pregnancy, labour and the puerperium, family planning and regionalised perinatal care. Skills workshops teach clinical examination in pregnancy and labour, routine screening tests, use of an antenatal card and partogram, measuring blood pressure, detecting proteinuria and performing and repairing an episiotomy.

Maternal Care is aimed at healthcare workers in level 1 hospitals or clinics.

Primary Maternal Care addresses the needs of healthcare workers who provide antenatal and postnatal care, but do not conduct deliveries. It is adapted from theory chapters and skills workshops from *Maternal Care*. This book is ideal for midwives and doctors providing primary maternal care in level 1 district hospitals and clinics, and complements the national protocol of antenatal care in South Africa.

Intrapartum Care was developed for doctors and advanced midwives who care for women who deliver in district hospitals. It contains theory chapters and skills workshops adapted from the labour chapters of *Maternal Care*. Particular attention is given to the care of the mother, the management of labour and monitoring the wellbeing of the fetus. *Intrapartum Care* was written to support and complement the national protocol of intrapartum care in South Africa.

Newborn Care was written for healthcare workers providing special care for newborn infants in regional hospitals. It covers resuscitation at birth, assessing infant size and gestational age, routine care and feeding of both normal and high-risk infants, the prevention, diagnosis and management of hypothermia, hypoglycaemia, jaundice, respiratory distress, infection, trauma, bleeding and congenital abnormalities, as well as communication with parents. Skills workshops address resuscitation, size measurement, history, examination and clinical notes, nasogastric feeds, intravenous infusions, use of incubators, measuring blood

glucose concentration, insertion of an umbilical vein catheter, phototherapy, apnoea monitors and oxygen therapy.

Primary Newborn Care was written specifically for nurses and doctors who provide primary care for newborn infants in level 1 clinics and hospitals. *Primary Newborn Care* addresses the care of infants at birth, care of normal infants, care of low-birth-weight infants, neonatal emergencies, and common minor problems in newborn infants.

Mother and Baby Friendly Care describes gentler, kinder, evidence-based ways of caring for women during pregnancy, labour and delivery. It also presents improved methods of providing infant care with an emphasis on kangaroo mother care and exclusive breastfeeding.

Saving Mothers and Babies was developed in response to the high maternal and perinatal mortality rates found in most developing countries. Learning material used in the book is based on the results of the annual confidential enquiries into maternal deaths and the Saving Mothers and Saving Babies reports published in South Africa. It addresses the basic principles of mortality audit, maternal mortality, perinatal mortality, managing mortality meetings and ways of reducing maternal and perinatal mortality rates. This book should be used together with the Perinatal Problem Identification Programme (PPIP).

Birth Defects was written for healthcare workers who look after individuals with birth defects, their families, and women who are at increased risk of giving birth to an infant with a birth defect. Special attention is given to modes of inheritance, medical genetic counselling, and birth defects due to chromosomal abnormalities, single gene defects, teratogens and multifactorial inheritance. This book is being used in the Genetics Education Programme which trains healthcare workers in genetic counselling in South Africa.

Perinatal HIV enables midwives, nurses and doctors to care for pregnant women and their infants in communities where HIV infection is common. Special emphasis has been placed on the prevention of mother-to-infant transmission of HIV. It covers the basics of HIV infection and screening, antenatal and intrapartum care of women with HIV infection, care of HIV-exposed newborn infants, and parent counselling.

Childhood HIV enables nurses and doctors to care for children with HIV infection. It addresses an introduction to HIV in children, the clinical and immunological diagnosis of HIV infection, management of children with and without antiretroviral treatment, antiretroviral drugs, opportunistic infections and end-of-life care.

Childhood TB was written to enable healthcare workers to learn about the primary care of children with tuberculosis. The book covers an introduction to TB infection, and the clinical presentation, diagnosis, management and prevention of tuberculosis in children and HIV/TB co-infection. *Childhood TB* was developed by paediatricians with wide experience in the care of children with tuberculosis, through the auspices of the Desmond Tutu Tuberculosis Centre at the University of Stellenbosch.

Child Healthcare addresses all the common and important clinical problems in children, including immunisation, history and examination, growth and nutrition, acute and chronic infections, parasites, and skin conditions, as well as difficulties in the home and society. *Child Healthcare* was developed for use in primary care settings.

Adult HIV covers an introduction to HIV infection, management of HIV-infected adults at primary-care clinics, preparing patients for antiretroviral (ARV) treatment, ARV drugs, starting and maintaining patients on ARV treatment and an approach to opportunistic infections. *Adult HIV* was developed by doctors

and nurses with wide experience in the care of adults with HIV, through the auspices of the Desmond Tutu HIV Foundation at the University of Cape Town.

FORMAT OF THE COURSES

1. Objectives

The learning objectives are clearly stated at the start of each chapter. They help the participant to identify and understand the important lessons to be learned.

2. Pre- and post-tests

There is a multiple-choice test of 20 questions for each chapter at the end of the book. Participants are encouraged to take a pre-test before starting each chapter, to benchmark their current knowledge, and a post-test after each chapter, to assess what they have learned.

Self-assessment allows participants to monitor their own progress through the course.

3. Question-and-answer format

Theoretical knowledge is presented in a question-and-answer format, which encourages the learner to actively participate in the learning process. In this way, the participant is led step by step through the definitions, causes, diagnosis, prevention, dangers and management of a particular problem.

Participants should cover the answer for a few minutes with a piece of paper while thinking about the correct reply to each question. This method helps learning.

Simplified flow diagrams are also used, where necessary, to indicate the correct approach to diagnosing or managing a particular problem.

Each question is written in bold, like this, and is identified with the number of the chapter, followed by the number of the question, e.g. 5-23.

4. Important lessons

Important practical lessons are emphasised by placing them in a box like this.

5. Notes

NOTE Additional, non-essential information is provided for interest and given in notes like this. These facts are not used in the case studies or included in the multiple-choice questions.

6. Case studies

Each chapter closes with a few case studies which encourage the participant to consolidate and apply what was learned earlier in the chapter. These studies give the participant an opportunity to see the problem as it usually presents itself in the clinic or hospital. The participant should attempt to answer each question in the case study before reading the correct answer.

7. Practical training

Certain chapters contain skills workshops, which need to be practised by the participants (preferably in groups). The skills workshops, which are often illustrated with line drawings, list essential equipment and present step-by-step instructions on how to perform each task. If participants aren't familiar with a practical skill, they are encouraged to ask an appropriate medical or nursing colleague to demonstrate the clinical skill to them. In this way, senior personnel are encouraged to share their skills with their colleagues.

8. Final examination

On completion of each course, participants can take a 75-question multiple-choice examination on the EBW Healthcare website, when they are ready to.

All the exam questions will be taken from the multiple-choice tests from the book. The content of the skills workshops will not be included in the examination.

Participants need to achieve at least 80% in the examination in order to successfully complete the course. Successful candidates will be emailed a certificate which states that they have successfully completed that course. EBW Healthcare courses are not yet accredited for nurses, but South African doctors can earn CPD points on the successful completion of an examination.

Please contact info@ebwhealthcare.com or +27 021 44 88 336 when you are ready to take the exam.

CONTRIBUTORS

The developers of our learning materials are a multi-disciplinary team of nurses, midwives, obstetricians, neonatologists, and general paediatricians. The development and review of all course material is overseen by the Editor-in-Chief, emeritus Professor Dave Woods, a previous head of neonatal medicine at the University of Cape Town who now consults to UNICEF and the WHO.

Perinatal Education Trust

Books developed by the Perinatal Education Programme are provided as cheaply as possible. Writing and updating the programme is both funded and managed on a non-profit basis by the Perinatal Education Trust.

Eduhealthcare

Eduhealthcare is a non-profit organisation based in South Africa. It aims to improve health and wellbeing, especially in poor communities, through affordable education for healthcare workers. To this end it provides financial support for the development and publishing of the EBW Healthcare series.

The Desmond Tutu HIV Foundation

The Desmond Tutu HIV Foundation at the University of Cape Town, South Africa, is a centre of excellence in HIV medicine,

building capacity through training and enhancing knowledge through research.

The Desmond Tutu Tuberculosis Centre

The Desmond Tutu Tuberculosis Centre at Stellenbosch University, South Africa, strives to improve the health of vulnerable groups through the education of healthcare workers and community members, and by influencing policy based on research into the epidemiology of childhood tuberculosis, multi-drug-resistant tuberculosis, HIV/TB co-infection and preventing the spread of TB and HIV in southern African.

UPDATING THE COURSE MATERIAL

EBW Healthcare learning materials are regularly updated to keep up with developments and changes in healthcare protocols. Course participants can make important contributions to the continual improvement of EBW Healthcare books by reporting factual or language errors, by identifying sections that are difficult to understand, and by suggesting additions or improvements to the contents. Details of

alternative or better forms of management would be particularly appreciated. Please send any comments or suggestions to the Editor-in-Chief, Professor Dave Woods.

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1

Introduction to perinatal HIV

Before you begin this unit, please take the corresponding test at the end of the book to assess your knowledge of the subject matter. You should redo the test after you've worked through the unit, to evaluate what you have learned.

Objectives

When you have completed this unit you should be able to:

- Understand the meaning of HIV infection and AIDS.
- Describe the different ways that HIV can be transmitted.
- List the three phases of HIV infection.
- List the common presentations of HIV infection in adults.
- Describe how HIV infection is diagnosed.
- List the factors which influence the risk of becoming infected with HIV.
- Describe how HIV damages the immune system.
- List the groups of drugs used to treat HIV infection.
- Explain how to prevent HIV infection of staff by needle-stick injuries.

INTRODUCTION TO HIV

1-1 What is HIV?

HIV, the human immunodeficiency virus, is a virus which infects people for life and causes a severe clinical condition called AIDS. HIV infects cells of the immune system, particularly lymphocytes. HIV infection can be spread from one person to another.

HIV causes AIDS.

HIV infection is a relatively new condition which was first identified in Paris in 1983. Since then it has spread to almost every country in the world and by 2006 over 40 million people worldwide were infected. South Africa has one of the fastest-growing HIV epidemics, with one to two thousand people infected every day.

NOTE Two types of HIV are recognised, HIV1 and HIV2. Most infection in southern Africa is caused by HIV1, which has many subtypes (clades). The important subtype in Africa is subtype C, while subtype B is the most common subtype in the developed world.

HIV probably appeared in humans in the 1950s. It was first transmitted to humans by

chimpanzees in central Africa. From here it rapidly spread to all parts of the world, especially the USA, Europe, Asia and other parts of Africa.

1-2 What is a virus?

Viruses are extremely small, very simple organisms which can only exist and multiply by invading and taking control of a plant or animal cell (the host cell). Viruses are responsible for many diseases. Unlike bacteria, they are not killed by antibiotics. Viruses may be divided into many different groups. HIV belongs to a group of viruses known as retroviruses.

1-3 What are retroviruses?

They are a group of viruses which are unique in nature as they have a special enzyme which enables them to introduce their own genes into the nucleus of the host cell. The host cell is then instructed to produce millions of new copies of the virus. These copies are released into the bloodstream where they can infect other cells. Retroviruses usually cause long periods of silent infection before signs of disease appear.

NOTE Retroviruses contain an RNA genetic code. The enzyme reverse transcriptase allows HIV to make DNA copies of its RNA. The DNA copy is then inserted into the DNA of the nucleus in the host cell. This enables the virus to take over control of the host cell and instruct the host cell to produce huge numbers of new HIV. Only retroviruses have this ability to make a DNA copy of their RNA code. Retroviruses are common and some cause cancers in animals.

HIV is a retrovirus.

1-4 What is AIDS?

AIDS stands for the Acquired Immune Deficiency Syndrome. This is a severe illness caused by advanced HIV infection and may present in many different ways. The symptoms and signs of AIDS are usually

due to secondary infections with a number of different organisms. Some secondary infections are due to uncommon organisms not normally seen in HIV-negative people. AIDS is a slow, progressive, incurable disease which is fatal unless correctly treated with antiretroviral drugs. AIDS was first recognised among homosexual males in the USA in 1981. The following year it was diagnosed in heterosexual men and women in Africa.

AIDS is a severe illness caused by HIV infection. There is a widespread epidemic of AIDS in Africa.

Most cases of AIDS occur in Africa. The spread of the HIV epidemic is greatest in southern Africa. It is estimated that six million adults and children have HIV infection in South Africa alone.

About six million South Africans are infected with HIV.

1-5 Can you have silent HIV infection?

Yes. A person is usually infected with HIV for many years before developing symptoms and signs of the disease. Therefore, most people infected with HIV are clinically well and have a 'silent' or hidden infection.

THE SPREAD OF HIV

1-6 How can you become infected with HIV?

The virus may be transmitted from one person to another by:

1. Unprotected heterosexual or homosexual intercourse (horizontal transmission).
2. Crossing from a mother to her fetus or newborn infant (vertical transmission).
3. Using syringes, needles, or blades which are soiled with HIV-infected blood. They may be shared by intravenous drug abusers or not correctly cleaned and then reused by health workers.

4. Accidental needle-stick injuries in healthcare workers.
5. A blood transfusion with HIV-infected blood or other HIV-infected blood products such as factor VIII in haemophiliacs. This is very rare in South Africa as all blood products are screened for HIV.

There is no evidence that HIV can be spread by mosquitoes, lice or bed bugs. In Africa, HIV is most commonly spread by heterosexual intercourse, especially when there are multiple sex partners.

In Africa, HIV is usually spread by sexual intercourse.

1-7 Can an HIV-infected person who is well transmit the virus?

Yes. HIV is frequently transmitted by people who appear to be clinically well but are infected with HIV. This is the great danger of HIV infection as most infectious people do not know that they have been infected. They are also unaware that they may transmit HIV to another person.

1-8 How may you become infected during sexual intercourse?

By contact with infected body fluids which contain large amounts of HIV, such as:

1. Vaginal and cervical secretions
2. Semen
3. Blood

The spread of HIV between adults by sexual intercourse is called horizontal transmission.

1-9 Can you become infected with HIV during normal social contact?

No. Family and friends of an HIV-infected person do not become infected except by sexual contact. HIV is not transmitted by close social contact such as touching, holding hands, hugging and social kissing. HIV is also not spread by coughing, sneezing, swimming pools, toilet seats, sharing cooking and eating

utensils or by changing a nappy. However, any bleeding, such as nose bleeds, may spread HIV.

1-10 What forms of sexual contact may transmit HIV?

In Africa HIV is almost always transmitted by penetrative sexual intercourse. However all forms of oral sexual contact (mouth to vagina or mouth to penis) can also result in infection, although the risk is less. Deep kissing may possibly transmit HIV, especially if mouth ulcers are present. HIV is not present in urine or stool while very little is present in saliva. HIV cannot penetrate intact skin but may infect open sores, cuts and abrasions, or mucous membranes. The thin, friable rectal mucosa is easily damaged during anal intercourse and, thereby, increases the risk of infection. Men who have been circumcised have a lower risk of infection.

NOTE The mucous membrane on the inner surface of the foreskin is easily infected with HIV.

1-11 Is HIV very infectious?

In comparison to other viral illnesses such as hepatitis B, HIV is not very infectious, and repeated exposure to large amounts of virus is usually needed for transmission. People with early and advanced HIV infection are most infectious. Other sexually transmitted diseases and abrasions of the vaginal epithelium increase the risk of infection. The highest risk of sexual transmission for both men and women is during anal intercourse. Patients on antiretroviral treatment are less infectious.

Within weeks of becoming infected, when HIV levels in the blood are very high, promiscuous people with multiple partners may infect many people.

DIAGNOSING HIV INFECTION

1-12 How is HIV infection diagnosed?

Usually a blood test is used to screen people for antibodies to HIV. Antibodies are proteins produced by the immune system to protect the body against invading organisms, such as viruses. Unfortunately they offer little protection to HIV. The presence of HIV antibodies in an adult, or child older than 18 months, indicates HIV infection.

A number of antibody tests are available to diagnose HIV infection.

1. The ELISA (enzyme-linked immunosorbent assay) is a laboratory test which has been used for many years to detect HIV antibodies. It is a highly accurate test and is used for screening for HIV infection and for confirming a clinical suspicion of HIV infection. From the time of infection it takes between six and 12 weeks for the test to become positive. Two positive ELISA tests, using kits from two different manufacturers on two separate blood samples, are needed before a definite diagnosis of HIV infection is made. This is done to make sure that an error has not been made.
2. Rapid tests have been developed to detect HIV antibodies in blood, urine and saliva. The new generation of rapid tests are very accurate and in many places have replaced ELISA tests for screening and confirming HIV infection. Two rapid tests using kits from different manufacturers should be used to diagnose HIV infection. The great benefit of the rapid test is that it can be done on site to give same day results. If the rapid test is negative it is very unlikely that the person has HIV infection. Two positive rapid tests indicate HIV infection. If the first rapid test is positive but the second negative, blood must be taken for ELISA testing.

NOTE Some laboratories still do Western blot tests which are the 'gold standard' of antibody tests.

Two positive ELISA or rapid tests are needed to diagnose HIV infection.

Viral tests, which do not rely on HIV antibodies, can also be used to diagnose HIV infection:

1. HIV proteins, such as the p24 antigen, can be detected in the blood. If positive, it confirms HIV infection. The new very sensitive p24 antigen test is more accurate than the old test.
2. DNA from the HIV can be detected, using the polymerase chain reaction (PCR) test. This is a very accurate, but more expensive, test which is used in special circumstances to confirm or exclude infection. For example, in infants where the mother's HIV antibodies may remain for up to 18 months and thereby give a positive result in an infant who is not HIV infected. The PCR test is accurate in infants from six weeks after delivery if they have not been breastfed, or in infants who have not been breastfed for six weeks or more. A positive test indicates that the individual is infected with HIV.
3. The virus can be cultured. This is very expensive.

A positive PCR test in an infant indicates that the infant is infected with HIV.

NOTE The DNA-PCR test is used to diagnose HIV infection while the RNA-PCR is usually used to measure viral load.

The ELISA or rapid screening tests may be negative for six weeks after infection with HIV. This is known as the window period. During the window period these people are still infectious to others, despite their test being negative. The window period for the PCR test is six weeks. With newer tests the window period is becoming shorter.

CLINICAL SIGNS OF HIV INFECTION

1-13 What acute illness may occur soon after HIV infection?

In response to infection with HIV, the immune system produces antibodies against the virus. Unfortunately these antibodies fail to kill all the HIV and cure the infection. At the time that HIV antibodies appear in the blood (seroconversion) some people develop a flu-like illness which lasts a few days or weeks. This illness starts two to four weeks after infection with HIV and is called acute seroconversion illness (or acute HIV syndrome). It only occurs in about half of HIV-infected individuals.

The usual signs of acute seroconversion illness are:

1. Fever
2. General tiredness
3. Enlarged lymph nodes
4. A measles-like rash
5. Cough or sore throat
6. Oral or genital ulcers

The above signs and symptoms are similar to those found in glandular fever (infectious mononucleosis).

NOTE Some people also develop signs of viral meningitis or encephalitis.

During the first few weeks of HIV infection, large amounts of virus are present in the blood and the person is very infectious to others. HIV is most infectious during the acute seroconversion illness. HIV screening tests may still be negative at this time.

Acute seroconversion illness is often the first sign of HIV infection.

1-14 What is the latent phase of HIV infection?

HIV infection, with or without acute seroconversion illness, is followed by months

or years when the person feels well. In adults, this silent, asymptomatic period is usually five to ten years but may last for as long as 15 years before the signs of symptomatic HIV infection appear. In children, the latent phase is much shorter, from a few months to five years. Occasionally, asymptomatic HIV-infected adults may also progress rapidly to symptomatic HIV infection. Generalised lymphadenopathy is common in the latent phase.

HIV infection can, therefore, be divided into three phases:

1. Acute seroconversion illness (which only occurs in 50% of people)
2. The latent, asymptomatic phase when people feel well
3. Symptomatic HIV infection when people are ill

Patients who have signs and symptoms due to HIV infection following the latent phase are said to have symptomatic HIV infection (HIV illness or HIV disease). Only when they become severely ill is the clinical condition called AIDS.

1-15 What clinical signs suggest an adult has symptomatic HIV infection?

The clinical signs of symptomatic HIV infection are largely due to a wide range of infections and cancers, which occur because of the damaged immune system.

Common clinical signs in adults with symptomatic HIV infection are:

- Wasting or unexplained weight loss
- Generalised, non-tender lymphadenopathy
- Chronic fever
- Skin rashes
- Mouth infections
- Chronic watery diarrhoea
- Repeated respiratory infections
- Opportunistic infections
- Cancer, especially Kaposi's sarcoma and lymphoma
- Dementia caused by encephalopathy

NOTE HIV may also cause myelopathy and peripheral neuropathy. Oral hairy leucoplakia is asymptomatic but diagnostic of HIV infection.

HIV infection often presents with weight loss and chronic diarrhoea.

The severity of HIV infection can be graded from 1 to 4 based on clinical symptoms and signs. Grade 4 infection is most severe and is called AIDS.

1-16 What are opportunistic infections?

Opportunistic or HIV-associated infections are infections which usually do not occur in people with a normally functioning immune system. They are severe, repeated or chronic infections with common bacteria and viruses or infections with uncommon organisms. The organisms causing most opportunistic infections in HIV-positive people are:

1. Common bacteria such as Pneumococcus
2. Candida (which causes oral, oesophageal and tracheobronchial thrush)
3. Tuberculosis
4. Pneumocystis jiroveci (a parasite causing pneumonia)
5. Cytomegalovirus (CMV)
6. Herpes simplex
7. Varicella (the chickenpox virus which causes herpes zoster)
8. Cryptococcus (a fungus which causes meningitis)
9. Cryptosporidium (causes chronic diarrhoea)

Opportunistic infections are common in HIV-infected people due to their damaged immune systems.

An opportunistic infection, such as tuberculosis, is often the first sign that the patient is infected with HIV. Therefore HIV infection must be suspected and screened for in any person who has severe, chronic, repeated or unusual infections.

1-17 Can AIDS be cured?

At present AIDS is a severe, chronic illness which cannot be cured and has a slowly progressive and fatal outcome without the correct management. However, treatment with antiretroviral drugs can prevent the progression of the disease and improve the quality of life for many years. Without treatment, most AIDS patients will die within two years of the onset of the clinical illness. While the amount of virus in the body can be drastically reduced by antiretroviral drugs, some virus unfortunately remains hidden in the lymphocytes. The aim of HIV management is to keep the person well for as long as possible.

PREVENTING HIV INFECTION

1-18 How can HIV infection be avoided?

HIV infection can be avoided by:

- Abstaining from sexual intercourse
- Having sexual relations only with people who are HIV negative. In practice this usually means having sex with a single HIV-negative partner.
- Using male or female condoms which reduce the risk of infection
- Male circumcision reduces the risk of HIV infection in males.
- Avoiding drugs given intravenously with unsterile needles and syringes
- Avoiding ritual cutting or scratching of the skin with a shared blade
- The routine screening of donated blood and other blood products
- Reducing the risk of mother-to-child transmission
- Encouraging people to get screened for HIV infection

The 'ABC' of preventing HIV infection is **Abstinence**, **Be faithful** to one HIV-negative partner only, and use a **Condom** if there is any chance that the sexual partner may be HIV positive. Delaying the start of sexual activity

and then reducing the number of sexual partners is most important. Having more than one sex partner at a time is dangerous. The only way the HIV epidemic will be controlled is by reducing the number of new infections by practising safe sex.

Every effort must be made to reduce the number of new HIV infections.

1-19 Do other sexually transmitted diseases increase the risk of HIV infection?

Yes. The presence of other sexually transmitted diseases increases the risk of HIV infection, especially if these other diseases cause ulcers or mucosal damage. Treatment of these sexually transmitted diseases reduces the risk of the sexual spread of HIV.

1-20 Which sexually transmitted diseases may increase the risk of infection with HIV?

Important examples are:

- Syphilis
- Chancroid
- Herpes simplex
- Gonorrhoea
- Chlamydia

The risk of HIV infection is highest if ulcers are present, as in syphilis, chancroid and herpes.

1-21 Are HIV-infected people always infectious to others?

Yes, although the risk of infection varies widely between individuals. HIV is most infectious in the first weeks of the infection and again in seriously ill people when the signs of AIDS develop. At these times there are large amounts of HIV in the blood (a high viral load). The risk of infection is less during the latent period when smaller amounts of HIV are present in the blood. However, most HIV is still spread during the latent period when many people are unaware that they are infected. It is therefore very important that all sexually active adults know their HIV status.

Patients with a high viral load are most infectious.

NOTE Patients who are asymptomatic and on antiretroviral treatment may not be infectious.

1-22 Is HIV equally common in men and women?

No. During heterosexual intercourse HIV is more infectious to women than to men as HIV-infected semen may remain in the vagina for many hours. Therefore, in most countries where sexual transmission is common, HIV infection is more frequent in women.

1-23 How does HIV damage the immune system?

HIV invades and destroys the immune system by damaging the CD4 lymphocytes. These special cells are produced by the thymus and control the functions of the immune system. CD4 lymphocytes are also called helper lymphocytes as they assist other types of lymphocytes. A normally functioning immune system prevents severe infections and the development of malignancies. HIV infection causes a fall in the number of CD4 lymphocytes with the result that the immune system cannot function normally. As a result, the risk of infection and cancer increases.

The CD4 count is a very important way of determining the immunological stage of the HIV infection, by measuring the amount of damage that has been done to the immune system.

NOTE Normally the CD4 count in adults is well above 500 cells/ μ l (usually about 1000 cells/ μ l). Signs of AIDS usually appear when the count falls below 200. A CD4 count is needed to assess the amount of suppression of the immune system.

The body also responds by producing antibodies to the HIV. Unfortunately, the antibodies cannot kill all the virus, which is able to hide inside cells.

HIV damages the immune system by attacking and destroying the CD4 lymphocytes.

1-24 How does HIV multiply in human cells?

HIV is a retrovirus which infects human CD4 lymphocytes. Retroviruses invade the nucleus of lymphocytes and instruct these 'host' cells to produce more copies of the virus. HIV therefore 'hijacks' the host cell and converts it into a factory which produces millions of new viruses. Antiretroviral drugs act by stopping the multiplication of HIV in lymphocytes.

MANAGING HIV INFECTION

1-25 What drugs can be used to treat HIV infection?

There are a number of drugs which can reduce the amount of HIV in the body and, thereby, slow the progression to AIDS, or improve the clinical signs of AIDS. At present none of these drugs can cure AIDS. They are called antiretroviral drugs. It is best to use at least three of these drugs together. Combination therapy is more effective and helps to avoid drug resistance.

There are three groups of antiretroviral drugs. They block the function of enzymes needed for the multiplication of HIV.

1. Nucleoside and nucleotide reverse transcriptase inhibitors ('nucs'), such as tenofovir (TDF), zidovudine (AZT), lamivudine (3TC) and emtricitabine (FTC). These drugs stop HIV from infecting cells.
2. Non-nucleoside reverse transcriptase inhibitors ('non-nucs'), such as nevirapine and efavirenz. They also stop HIV from infecting cells.
3. Protease inhibitors ('PIs'), such as ritonavir and lopinavir. These drugs prevent the HIV-infected cell from releasing new virus.

NOTE Other nucleoside reverse transcriptase inhibitors include ddI and d4T, while

other protease inhibitors include indinavir, saquinavir and nelfinavir. The two groups of reverse transcriptase inhibitors act differently in preventing HIV infection of cells.

Antiretroviral drugs can be used to treat a patient with severe HIV infection (antiretroviral treatment) or to prevent infection with HIV (antiretroviral prophylaxis). AZT and nevirapine are the commonest drugs used for HIV prophylaxis in pregnancy and labour.

1-26 What is zidovudine?

Zidovudine (also called AZT) was the first antiretroviral drug available. It is effective when used prophylactically during pregnancy and labour to reduce the risk of transmission of HIV from mother to infant. It can also be given to the newborn infant after delivery. When used alone for a short period it is uncommon for HIV to become resistant to AZT.

NOTE AZT is a nucleoside analogue. This means that it mimics a natural nucleoside. Nucleosides are linked together to form DNA. When reverse transcriptase produces DNA, AZT is incorporated in preference to a natural nucleoside. The resulting DNA is not correctly formed and HIV cannot be produced.

AZT is well absorbed orally and crosses the placenta well. It increases the fetus's ability to resist infection from HIV. AZT needs to be taken twice a day.

Unfortunately, AZT has a number of side effects. It causes tiredness, nausea and vomiting. It may also suppress the bone marrow and cause anaemia. Because of these side effects some patients stop taking the treatment.

Zidovudine (AZT) is one of the most commonly used antiretroviral drugs.

1-27 What is nevirapine?

Nevirapine is a potent and rapidly acting antiretroviral drug, which is very useful in reducing the risk of HIV transmission from

mother to infant during labour and delivery. It is absorbed orally and crosses the placenta very well. A single dose is given to the mother in early labour. Nevirapine has few adverse effects when used in this way. However, resistance develops rapidly when nevirapine is used on its own. Therefore, it is best if nevirapine is used with AZT (dual therapy) for reducing the risk of mother-to-infant transmission of HIV.

NOTE Nevirapine is a non-nucleoside reverse transcriptase inhibitor.

Prophylactic nevirapine is very useful in reducing the risk of mother-to-child transmission during labour and delivery.

Both zidovudine and nevirapine are used in combination with other drugs for antiretroviral treatment in patients with AIDS.

1-28 Is a vaccine available to prevent HIV infection?

Unfortunately not. An effective vaccine against HIV is the only way that the HIV epidemic will be controlled. Many studies are being conducted in an attempt to produce an HIV vaccine. However it may be many years before an effective HIV vaccine is available.

1-29 What drugs are commonly used to prevent opportunistic infections?

1. Co-trimoxazole (Bactrim, Septran or Purbac) is currently used in patients with HIV infection to prevent opportunistic infections with Pneumocystis, Toxoplasma and some common bacteria. It is very effective but must be taken regularly.
2. Isoniazid (INH) is used to prevent tuberculosis.

1-30 What is the general management of a patient with HIV infection?

The general management of adults with HIV infection consists of the following:

- A good, balanced diet to help prevent weight loss
- Prophylactic co-trimoxazole and INH when indicated
- Treat opportunistic infections if they occur.
- Monitor the clinical and immunological progress of the HIV infection.
- Antiretroviral drugs
- Emotional, social and financial support
- Manage the patient at a local primary-care clinic if possible.
- Prevent the spread of HIV to others.

Except for the use of antiretroviral drugs, the general management of HIV infection is not expensive and makes a big difference to the quality of the patient's life. Whenever possible, the patient should not be admitted to hospital, but managed at home with the support of the community and primary healthcare services. Patients with AIDS should never be abandoned. AIDS cannot be effectively treated with diet alone.

ACCIDENTAL HIV INFECTION

1-31 Are nurses and doctors at risk of infection when caring for HIV-positive women?

Yes, as body fluids, especially vaginal and cervical secretions, blood and amniotic fluid, may contain large amounts of HIV. Healthcare workers can become infected by HIV via the following routes:

- By needle-stick injuries or by cutting one's finger during surgery.
- Through sores or abrasions of the skin when handling body fluids.
- By splashes of body fluid into the eyes or mouth.

1-32 How can healthcare workers reduce the risk of HIV infection?

By adopting standard (universal) precautions. This means that all body fluids should be regarded as potentially infectious in all patients. Precautions should always be taken to prevent exposure to body fluids.

1-33 What are the standard precautions to prevent HIV infection when caring for patients?

All patients should be regarded as being potentially HIV positive. Therefore, general precautions should be taken with all patients. These precautions are especially important in patients known to be HIV positive.

- Wash your hands, or spray them with disinfectant, after touching a patient or after handling body fluids. Wash your hands with soap and water immediately should they become contaminated with blood.
- Use gloves when handling any body fluids, especially blood. Usually disposable, unsterile gloves can be used. Gloves do not have to be used when taking a blood sample.
- Wear a mask if there is a chance that body fluids may splash into your mouth.
- Wear protective glasses if there is a chance of blood splashing into your eyes. Be careful to avoid splashes.
- Wear a plastic apron or gown during procedures, such as a deliveries, when body fluid may soil your clothes. Remove the soiled apron or gown as soon as possible.
- Linen soiled with body fluids must be disposed of, usually into a special bag or container, until they can be sterilised. Gloves must be worn when handling soiled linen.
- All spilt blood must be cleaned up immediately and the surface wiped with a hypochlorite solution (Biocide, Milton or Jik mixed 2:1 with water). Use paper towels, which should then be placed in an approved disposal bag for incineration.

- All blood specimens for the laboratory must be placed in a leak-proof packet or container.
- Be very careful when handling 'sharps' (needles, blades, lancets).

Standard precautions should be adopted when managing all patients.

1-34 How should sharps be handled?

- Whenever sharps (needles, blades, lancets) are used, great care must be taken not to puncture or injure your skin.
- Handling of sharps should be reduced to a minimum.
- Needles must not be resheathed.
- Once used, always keep the sharp end of a needle, blade or lancet pointing away from you. Be careful not to stick anyone else.
- After withdrawing the sharp from the skin, immediately place it in a sharps container. The container must be within easy reach before starting the procedure. Failure to do this is the commonest way healthcare workers are infected with HIV while on duty.
- Never place a used sharp on the bed or work top.
- Correctly designed sharps containers must always be available. Do not allow them to become overfilled. They should be collected and be disposed of in a safe manner.

Always use a sharps container for the disposal of lancets or needles.

1-35 What is the risk of HIV infection after an accidental needle-stick injury?

The overall risk without antiretroviral prophylaxis is 1 in 300. Therefore, of every 300 healthcare workers who prick or cut themselves with an instrument covered with HIV-positive blood, one person will become infected with HIV. With the correct use of antiretroviral prophylaxis this risk is reduced by 80%. The risk of infection is greatest if:

1. The wound is deep.
2. The person is stuck with a hollow needle.
3. The patient has AIDS or has recently been infected with HIV (high viral load).
4. Antiretroviral prophylaxis is not given or is given incorrectly.

The risk of infection without antiretroviral prophylaxis after a splash of HIV-infected blood into the mouth or eye, or contamination of a cut or skin abrasion, is less than 1 in 1000.

1-36 What prophylaxis should be given to a healthcare worker exposed accidentally to HIV?

Healthcare workers may be accidentally exposed to HIV by needle-stick injuries or splashes of infected body fluid into the eyes or mouth, or onto broken skin. The risk of infection is greatest with a cut or needle-stick injury. Every effort must be made to start antiretroviral prophylaxis within two hours of exposure. Start treatment as soon as possible. Treatment is probably not effective if the delay is greater than 24 hours.

Prophylaxis is strongly recommended with mucosal splashes if the patient is sick with AIDS. Prophylaxis is not indicated after exposure to urine, stool, milk, vomitus or saliva.

Zidovudine (AZT) plus 3TC (Lamivudine) for 28 days are used for prophylaxis. The dose of oral zidovudine (AZT) is 300 mg 12-hourly and the dose of oral 3TC is 150 mg 12-hourly. The adverse effects of nausea and tiredness are common. The drugs are best taken with food to reduce nausea.

Consult the local post-exposure prophylaxis (PEP) protocol. Sometimes a third drug (e.g. nevirapine) is added.

1-37 What is the correct procedure after a needle-stick injury?

After a needle-stick injury the following procedure should be followed:

1. Do not panic. Encourage bleeding from the puncture site and wash with soap and water.

2. The mouth or eyes should immediately be washed with water after a blood splash.
2. Notify the correct hospital authority. Every hospital and clinic must have a clear management policy for accidental HIV exposure. This should be available to all staff. Everyone must know who the person to contact is, should accidental HIV exposure occur.
3. Start prophylactic antiretroviral management with AZT and 3TC as soon as possible. These drugs must be readily available in all hospitals and clinics both day and night.
4. Obtain consent and collect blood samples from the patient for an HIV screen. If consent is refused, assume that the patient is HIV positive.
5. An HIV test need only be performed on the healthcare worker if the patient tests positive. This is done to make sure that the healthcare worker is not already HIV positive. If so, prophylaxis is not indicated.
6. Notify the laboratory that two urgent HIV tests are needed for screening. The screening test must be done as soon as possible.
7. If the HIV test on the patient's blood is negative stop the antiretroviral prophylaxis. If the test is positive, continue for 28 days.
8. Repeat the HIV test on the healthcare worker after six weeks to determine whether or not he/she has become HIV positive. If the test is negative, repeat after another three months.
9. Counselling is recommended for all healthcare workers exposed to HIV-contaminated blood.

All hospitals and clinics must keep emergency packs of prophylactic antiretrovirals for staff with accidental exposure to HIV.

CASE STUDY 1

During a public lecture at a social club, the speaker says that HIV infection in Africa is usually acquired by heterosexual intercourse. He also says that HIV infection is commoner

in women. During question time a member of the public asks whether HIV is also spread by kissing. Another member of the audience asks if HIV infection is the same as having AIDS, and whether people who are HIV positive but well can be infectious to others.

1. Do you agree that HIV infection in Africa is usually acquired by heterosexual intercourse?

Yes. Heterosexual intercourse is the most common method of spreading HIV in Africa. However, the vertical spread from mother to infant is also very important. Homosexual intercourse and the use of contaminated needles are other important methods of spread in some communities.

2. Why is HIV infection commoner in women in Africa?

Because HIV is usually spread by unprotected heterosexual intercourse. As semen may remain in the vagina for some time after intercourse, women have a greater chance than men of being infected.

3. Can HIV be spread by kissing?

Probably not. HIV cannot be acquired by non-sexual contact such as social kissing, holding hands, hugging and sharing cooking and eating utensils.

4. Is HIV infection the same as having AIDS?

No. The difference commonly causes confusion among members of the public. Most people with HIV infection remain well for years before they become seriously sick with the illness called AIDS. Therefore, it is very common to have HIV infection without AIDS. With time, however, these people with asymptomatic HIV infection will become sick.

5. Can people who do not have AIDS transmit HIV to others?

Yes. Everyone with HIV infection is infectious to others even if they are clinically well. Patients

on antiretroviral treatment are less infectious than patients not receiving treatment.

CASE STUDY 2

A blood donor has a routine HIV test which is negative. A few weeks later she has unprotected sexual intercourse with a stranger she met in a night club. After three weeks she develops a fever, a mild cough and a generalised pink rash. On examination, her doctor notes that she has enlarged lymph nodes in her neck and axilla, and small ulcers on her throat. He diagnoses infectious mononucleosis and prescribes oral penicillin. She recovers rapidly. Six months later, when she again asks to donate blood, it is found that she is HIV positive.

1. What is the correct diagnosis of her illness?

Acute seroconversion illness. This occurs two to four weeks after HIV infection in about 50% of individuals. It is often misdiagnosed as acute infectious mononucleosis (glandular fever) as both conditions present with fever, sore throat, rash and lymphadenopathy.

2. How could she have avoided HIV infection?

By abstaining from sexual intercourse or by using a condom.

3. Can a person become infected with HIV by donating blood?

No. There is no risk in donating blood provided that a sterile needle is used. However, one can become infected by receiving blood donated by someone who is infected with HIV. Therefore, all donated blood in South Africa is screened for HIV.

4. For how long can this woman expect to remain well?

She will probably remain well for five to ten years. However, the latent phase of HIV infection may last as long as 15 years.

CASE STUDY 3

A young man presents with shortness of breath and a chronic cough. During the past few months he has noticed an unexplained weight loss. On examination he has oral thrush and generalised lymphadenopathy. A chest X-ray shows pneumonia with a cavity in one lung. The HIV rapid test is positive. Recently he was treated for syphilis.

1. What is the diagnosis?

Symptomatic HIV infection complicated by tuberculosis. HIV infection commonly presents with a history of weight loss, cough and shortness of breath.

2. Is tuberculosis common in HIV-positive people?

Yes. It may be the first sign that the patient has symptomatic HIV disease.

3. Why has the patient got oral thrush?

Thrush is an infection caused by the fungus *Candida*. It is common in young infants but rare in adults. Thrush is one of the opportunistic infections which complicate HIV infection.

4. Why do patients with HIV disease commonly have opportunistic infections?

Because HIV damages the CD4 lymphocytes which play an important role in the immune system. Thrush, therefore, takes this opportunity of infecting the mouth. Some opportunistic infections, such as *Pneumocystis* and CMV, may also cause pneumonia which often presents with cough and shortness of breath.

5. How can syphilis increase the risk of becoming infected with HIV?

Often more than one sexually transmitted disease occurs in a patient. Syphilis causes genital ulcers that increase the risk of HIV infecting the person.

6. Can AIDS be treated?

AIDS can be treated with a combination of antiretroviral drugs. While the signs and symptoms of AIDS may disappear while on treatment, HIV infection cannot be cured. A vaccine holds the only hope of ending the HIV epidemic.

CASE STUDY 4

After collecting capillary blood for glucose measurement from the heel of a newborn infant, a nurse accidentally pricks her finger with the lancet while cleaning up. A sharps container is not available in the nursery. She only informs the management the following day. Blood from the patient and the nurse is then sent urgently to the laboratory and the HIV test on the patient is positive. A one month course of zidovudine (AZT) and 3TC is started but she stops after a week as the medication makes her feel nauseous and tired.

1. What basic mistake was made by the nurse?

She did not use a sharps container. After collecting a blood sample, the needle or lancet must immediately be placed in a special sharps container. It is extremely dangerous to place the used needle or lancet on the bed or work top, as staff commonly prick themselves while tidying up afterwards.

2. When should she have informed the management?

Immediately. As soon as any staff member pricks him- or herself with a blood-stained needle or lancet, the management must be

informed so that the procedure of testing the patient's blood and starting prophylactic antiretroviral drugs can begin without delay. Every hospital and clinic must have a clear list of instructions as to the correct procedure after a needle-stick injury.

3. Was the correct medication given?

Yes. A course of both AZT and 3TC can be used for needle-stick injuries. However, the risk of HIV infection is increased if the treatment is not started within a few hours of the needle-stick injury.

4. What is the risk of her becoming infected with HIV?

Without treatment the risk is about 1 in 300. This risk is greatly reduced if the correct prophylactic treatment is started as soon as possible, preferably within two hours.

5. Does it matter that the prophylactic treatment was only taken for a week?

Yes. To be as effective as possible the treatment must be taken for 28 days. Unfortunately the antiretroviral agents do have adverse effects such as lethargy and nausea. As a result the full course of treatment is often not taken.

1A

Skills workshop: HIV rapid test

Objectives

When you have completed this skills workshop you should be able to:

- Use an HIV rapid test to screen a patient for HIV infection.
- Interpret the results of the screening test.

At the first antenatal visit each woman should be offered screening for HIV infection. An HIV rapid test can be used in any antenatal clinic as no sophisticated equipment is required. Prior to testing, patients need to be counselled and consent must be obtained. The rapid test is simple, accurate and easy to perform at an antenatal clinic. It can be done on a drop of blood and gives a result within minutes.

There are a number of different makes of rapid test available in South Africa. The Abbott Determine Whole Blood Assay is given as an example.

A. Equipment needed to perform an HIV rapid test

1. The Abbott Determine HIV-1/2 Whole Blood Assay. Each kit contains ten cards

with ten tests. The Chase Buffer (2.5 ml bottle) is supplied with the kit.

2. EDTA capillary tubes marked to indicate 50 μ l, lancets, alcohol swabs and sterile gauze swabs. These are not supplied with the kit.

The kit needs to be stored at room temperature between 2 °C and 30 °C. Storage in a fridge is required during summer. The kit must not be used after the expiry date.

B. The method of performing the HIV rapid test

1. Clean a fingertip with an alcohol swab and allow the finger to dry.
2. Remove a test strip from the foil cover.
3. Prick the skin of the fingertip with a lancet. Wipe the first drop of blood away with a sterile gauze swab.
4. Collect the next drop of blood into an EDTA tube. Either side of the tube can be used to collect blood. Fill the tube from the tip to the first black circle (i.e. 50 μ l of blood). Avoid the collection of air bubbles.
5. Apply the 50 μ l of blood from the EDTA tube onto the sample pad marked with an arrow on the test strip.
6. Wait one minute until all the blood has been absorbed in to the sample pad and then apply one drop of Chase Buffer. The

bottle must be held vertically (upside down) above the test strip when a single drop of the buffer is dropped on the sample pad.

7. Wait a minimum of 15 minutes and then read the results. The maximum waiting time for reading the test is 24 hours. After 24 hours the test becomes invalid.

C. Reading the results of the HIV rapid test

1. **Positive:** A red bar will appear within both the Control window and the Patient window on the test strip. Any visible red bar in the Patient window must be regarded as positive. The result is positive even if the patient bar appears lighter or darker than the control bar.
2. **Negative:** A red bar will appear within the Control window and but no red bar is seen in the Patient window.
3. **Invalid:** If no red bar appears in the Control window, even if a red bar is visible in the Patient window. The result is invalid and the test must be repeated.

D. The interpretation of the HIV rapid test

The test is a specific test for HIV and will become positive when there are antibodies against HIV (the virus that cause AIDS) in the blood.

1. A positive test indicates that a person has antibodies against HIV (HIV positive). Therefore the person is infected with HIV.

2. A negative test indicates that a person does not have antibodies against HIV (HIV negative). Therefore the person is not infected with HIV, unless infected very recently and the HIV antibodies have not appeared yet (the window period).

E. Management if the HIV rapid test is positive

1. Explain to the patient that the first screening test for HIV is positive but that this should be confirmed with a second test.
2. Proceed with a second test using a separate blood sample and a kit made by a different manufacturer.
3. If the second test is also positive, the patient is HIV positive.
4. Proceed with post test counselling for a patient with a positive test.

F. Management if the first HIV rapid test is positive but the second is negative

1. A blood sample for an ELISA test must be sent to the laboratory.
2. The patient must be informed that the results of the HIV rapid tests are inconclusive and that a laboratory test is required to finally determine her HIV status.
3. If the ELISA test is positive the patient is HIV positive (i.e. HIV infected).
4. If the ELISA test is negative the patient is HIV negative (i.e. not HIV infected).
5. Proceed with appropriate counselling.

2

HIV in pregnancy

Before you begin this unit, please take the corresponding test at the end of the book to assess your knowledge of the subject matter. You should redo the test after you've worked through the unit, to evaluate what you have learned.

Objectives

When you have completed this unit you should be able to:

- Assess the risk of HIV transmission from a mother to her fetus.
- Describe how pregnant women can be screened for HIV infection.
- List which pregnancy complications are commoner with HIV infection.
- Diagnose symptomatic HIV infection and AIDS in pregnancy.
- Use zidovudine (AZT) and nevirapine to reduce the risk of vertical transmission.
- Manage a pregnant woman with HIV infection or AIDS.
- Understand the use of antiretroviral treatment in pregnancy.

HIV INFECTION IN PREGNANCY

2-1 Is HIV infection common in pregnant women?

In Africa, where HIV infection is usually spread by sexual intercourse, HIV is more common in women than in men. In South Africa in 1990 less than 1% of pregnant women were HIV positive. By 2006, more than 30% of all pregnant women were infected with HIV. The rates of infection vary widely from region to region. In some regions up to 40% of all pregnant women are HIV positive. About 300 000 HIV-positive women become pregnant in South Africa each year.

2-2 Should pregnant women be screened for HIV?

Yes. All women should be tested for HIV when they first book for antenatal care. HIV infection in women is often diagnosed for the first time when they are screened during pregnancy. Therefore HIV screening is very important as it is the gateway to care. Therefore, women should book early for antenatal care and all should be offered screening for HIV infection. This should

be done by 12 weeks of gestation or as soon as possible thereafter. In South Africa all pregnant women should be screened for HIV unless they ask not to be screened.

If the first HIV screen is negative, it should be repeated around 32 weeks gestation to detect any late infections.

All pregnant women should be offered HIV screening at 12 weeks gestation.

2-3 How may pregnant women be screened for HIV infection?

A blood test is used to screen for antibodies to HIV. The presence of HIV antibodies indicates the presence of HIV infection. A number of tests are available to screen for HIV antibodies. Usually the rapid test is used. Rapid tests are cheap, highly accurate and can be done on a drop of blood in the antenatal clinic. Two positive tests, using kits from two different manufacturers on two separate blood samples, are needed before a definite diagnosis of HIV infection is made, in order to be sure that the diagnosis is correct.

2-4 Can HIV be transmitted from a pregnant woman to her fetus?

Yes. HIV can cross the placenta from mother to fetus at any time during pregnancy. Without antiretroviral prophylaxis, the risk up until the last few weeks of pregnancy is about 5%. However, most fetal infection during pregnancy takes place in late pregnancy or during labour and delivery. The combined risk of HIV transmission to the fetus during pregnancy, labour and delivery is about 20% if antiretroviral prophylaxis is not used (5% during pregnancy and 15% during labour and vaginal delivery). The spread of HIV from a mother to her fetus or infant is called mother-to-child transmission (MTCT) or vertical transmission. Avoiding vertical transmission is one of the most important methods of preventing the spread of HIV in a community. In women who do not breastfeed,

most vertical transmission takes place during labour and delivery.

NOTE HIV has been found as early as eight weeks of gestation in aborted fetuses. First trimester HIV infection may cause abortion and be more common than is presently believed. It is thought that the risk of HIV crossing the placenta in pregnancy increases in the last weeks of pregnancy as the lower segment is taken up.

2-5 Which HIV-positive women are at high risk of infecting their infants with HIV during pregnancy?

All HIV-positive women are at risk of infecting their fetus. However, the following women have the greatest risk of transmitting HIV to their fetus:

- Women who become infected with HIV during the pregnancy
- Women with clinical stage 3 or 4 HIV infection
- Women with a low CD4 count
- Women who are undernourished
- Women who do not have antiretroviral prophylaxis

Women who become infected during pregnancy and women with advanced HIV infection have high viral loads that increase their risk of vertical transmission of HIV. It has been suggested that women who have an antepartum haemorrhage and women who have an amniocentesis may also have a higher risk of transmitting HIV to their infants.

2-6 What are the benefits of antenatal HIV screening?

1. The risk of HIV transmission to the fetus during pregnancy, labour and delivery can be reduced.
2. Women found to be HIV positive in the first trimester may decide to have a termination of pregnancy before 20 weeks gestation.
3. Women who are HIV negative can be reassured and be advised to practise safer sex to lower the risk of becoming infected.

4. Women who are HIV positive should be encouraged to practise safer sex to avoid infecting others.
5. Clinical signs of HIV infection may be detected and complications treated in both the mother and her infant.
6. Antiretroviral treatment can be offered to women who need it.
7. Infants born to HIV-positive women can be correctly managed.
8. HIV-positive women can be counselled about breastfeeding while HIV-negative women should be encouraged to breastfeed.
9. HIV-positive women may decide not to have any more children.

All pregnant women should be counselled about the benefits of knowing their HIV status. This must be done at the first antenatal (booking) visit.

All pregnant women should be counselled about the benefits of knowing their HIV status.

2-7 Is consent needed for antenatal HIV screening?

Yes. Verbal consent must be obtained from all patients before they are screened for HIV infection. Testing must always be voluntary and never forced. Before offering HIV screening, patients should be informed about the practical implications of a positive result. Women must be provided with the necessary information and be helped to make an informed choice as to whether they want to be screened. Screening of individuals without their consent is a violation of human rights.

A system of 'opt out' consent is being used in South Africa. Following group education, all pregnant women are screened for HIV unless they ask not to be screened. This method increases the number of women who are screened. It may also reduce the stigma of being tested.

The results of the HIV screen must be added to the antenatal card so that, with shared

confidentiality, all health workers caring for her and her infant know her status.

2-8 How should mothers be told the results of the screening test?

The results should be given privately to each mother. The implications of the results should be explained and post-test counselling offered if needed. Nurses, doctors, social workers or trained lay counsellors usually provide counselling. It is very important that breaking the news of a positive HIV status be done correctly. The rapid test gives the great benefit of same-day results which avoids a long wait for the test outcome.

2-9 When should termination of pregnancy be considered in HIV-positive women?

The option of termination of pregnancy should be discussed with HIV-positive women if the gestational age is less than 20 weeks. Most of these women will, however, elect to continue with their pregnancy, especially if antiretroviral treatment is available.

The following should be taken into consideration when termination is discussed with the mother:

1. The stage of her HIV infection is important. Clinical signs of stage 3 or 4 infection indicate a much shorter life expectancy for the mother if antiretroviral treatment is not available.
2. Other children and family members may have HIV infection and need care.
3. The family support structures. Who will look after this child if the mother becomes ill or dies?
4. The risk of the fetus or newborn infant becoming infected with HIV must be explained to the mother.

Every effort should be taken to prevent unplanned or unwanted pregnancies in HIV-positive women. The primary goal in preventing HIV infection in women and their children is to prevent parents-to-be from becoming infected with HIV.

2-10 What precautions should HIV-negative women take to avoid becoming infected in pregnancy?

HIV-negative women should take precautions not to become infected with HIV both during pregnancy and breastfeeding. Becoming infected with HIV during pregnancy, or in the weeks before falling pregnant, places the fetus at high risk of also becoming infected. As with non-pregnant women, the best precaution is either not having sexual intercourse or to have intercourse with a single HIV-negative partner only. If both such sexual partners are faithful to each other and are not abusers of intravenous drugs, there is no risk of HIV infection. High-risk sexual activity by both partners, such as promiscuity, must be avoided at all costs during pregnancy and breastfeeding. If this is not possible then a condom must be used.

2-11 Does HIV have an effect on the pregnancy?

Yes. Pregnancy complications are far commoner in women who are HIV positive. They occur most frequently in women with clinical signs of advanced HIV infection.

2-12 Which pregnancy complications are commoner in women who are HIV positive?

1. Infections

- Other sexually transmitted diseases
- Urinary tract infection
- Pneumonia
- Opportunistic infections
- Severe chicken pox or shingles (Varicella zoster infections)

NOTE Any pregnant woman who presents with pneumonia must be suspected of having HIV infection.

2. Early pregnancy complications

- Abortion (miscarriage)
- Ectopic pregnancy

3. Late pregnancy complications

- The risk of stillbirth is doubled
- Intra-uterine growth restriction, especially if the mother is underweight
- Abruptio placentae

- Anaemia
- Preterm labour and prelabour rupture of the membranes, especially if chorioamnionitis is present

NOTE As a result of pregnancy complications, the neonatal mortality rate is increased fivefold if the mother has advanced HIV infection (AIDS).

2-13 Are there any procedures in pregnancy which may increase the risk of HIV transmission?

Amniocentesis and external cephalic version may possibly increase the risk of vertical transmission. Amniocentesis should only be done if there is a good indication and there is easy access to a pool of amniotic fluid, without having to pass through the placenta. Antiretroviral prophylaxis with oral zidovudine (AZT) 300 mg twice daily for 28 days must be given if the woman is not already on antiretroviral prophylaxis or treatment.

HIV PROPHYLAXIS IN PREGNANCY

2-14 What is the benefit of antiretroviral drugs in pregnancy?

Antiretroviral drugs can be used in two different ways during pregnancy:

1. Antiretroviral (anti-HIV) drugs can be used *prophylactically* to reduce the risk of HIV transmission from mother to infant, i.e. prevention of mother-to-child transmission (PMTCT). One, preferably two, drugs are used. The drugs act mainly by preventing HIV infection of the fetus (prophylaxis).
2. Antiretroviral *treatment* (therapy) to both treat HIV infection in the mother and reduce the risk of HIV transmission to her infant. A combination of at least three drugs is used to reduce the viral load.

2-15 How effective is antiretroviral prophylaxis in reducing HIV transmission?

The use of prophylactic antiretroviral drugs during pregnancy, labour and delivery reduces the risk of HIV transmission from mother to infant. If treatment is given, the transmission rate during pregnancy, labour and delivery for non-breastfeeding women can be reduced from 20% to less than 5%. The risk of transmission is lowest if two antiretroviral drugs are used.

2-16 Which antiretroviral drugs are used prophylactically in pregnancy?

The most commonly used drug to reduce the risk of mother-to-infant transmission during pregnancy is AZT. When AZT is given prophylactically it is best used together with another antiretroviral drug, nevirapine, during labour (dual therapy). Prophylactic treatment with more than one antiretroviral drug is preferred as this is more effective.

Zidovudine (AZT) is the prophylactic antiretroviral drug of choice during pregnancy.

2-17 How can antiretroviral drugs be used in pregnancy to reduce the risk of vertical transmission of HIV?

Antiretroviral drugs can be used a number of ways to reduce the risk of mother-to-child transmission of HIV.

1. **Prophylactic AZT** is started at 14 weeks gestation, or when a later rapid test is positive, and continued to the end of pregnancy. This significantly reduces the transmission of HIV to the fetus during pregnancy as well as labour and delivery. With AZT alone the transmission rate during pregnancy, labour and delivery can be more than halved to about 8%.

NOTE In the famous '076' study, one group of women was given AZT from 14 weeks pregnancy until the end of labour. The infants also received AZT for six weeks after delivery. In another group neither the mother nor the infant received AZT.

In both groups the infants were bottle fed. The transmission rate was 8.3% in the AZT group and 25.5% in the untreated group, giving a 67% reduction in the risk of HIV transmission.

It is more effective to start AZT at 14 weeks than at 28 weeks. This is important in South Africa where preterm labours are common. Women should return monthly for their AZT.

It is best if prophylactic AZT is started at 14 weeks of gestation.

2. **Combined prophylaxis** is provided with AZT during pregnancy and labour together with nevirapine to the mother in labour. The infant also receives nevirapine after delivery. Using combination prophylaxis with AZT from 14 weeks reduces the HIV transmission rate during pregnancy, labour and delivery to 2%. Therefore combination prophylaxis is better than AZT alone and is the recommended practice in South Africa.

HIV transmission during pregnancy, labour and delivery is 2% when prophylaxis with both AZT and nevirapine is used.

2-18 What is the dose of zidovudine (AZT) for prophylaxis?

During pregnancy and labour, prophylactic AZT is given orally at a dose of 300 mg (three 100 mg capsules) twice a day.

2-19 What are the side effects of zidovudine (AZT)?

Like most drugs, AZT has side effects. These tend to be more common with larger doses. AZT usually causes few major side effects in pregnancy, but may result in tiredness, headaches, muscle pains, difficulty in sleeping, nausea and vomiting. It may also suppress the bone marrow, causing anaemia and occasionally a low white-cell count. Muscle weakness can also be a problem. It is uncommon that prophylactic AZT has to be stopped because of side effects.

Prophylactic AZT should not be given to women with a haemoglobin below 8 g/l. The haemoglobin should be monitored monthly in all women on prophylactic AZT, especially if their haemoglobin is between 8 and 10 g/l.

2-20 Can zidovudine (AZT) cause congenital abnormalities or harm the fetus?

Using AZT to reduce the risk of vertical transmission causes no fetal problems. AZT does not cause congenital abnormalities or significant bone marrow depression in the fetus.

2-21 What is the role of vitamins in reducing vertical transmission of HIV?

Unfortunately there is little evidence that giving vitamins, especially vitamin A, during pregnancy reduces the risk of vertical transmission of HIV from mother to fetus in most communities. A high dose of vitamin A during the first trimester may cause congenital abnormalities. Therefore, if women take vitamins during pregnancy, they should not take more than one multivitamin tablet a day.

HIV AND AIDS DURING PREGNANCY

2-22 Is AIDS an important cause of maternal death?

As the HIV epidemic spreads, the number of pregnant women dying of advanced HIV infection (AIDS) has increased dramatically. In some countries, such as South Africa, AIDS is now the commonest cause of maternal death.

NOTE The Second Interim Report on Confidential Enquiries into Maternal Deaths in South Africa showed that AIDS was the commonest cause of maternal death. Many additional AIDS deaths may have been missed, as HIV testing is often not done.

AIDS is the commonest cause of maternal death in South Africa.

2-23 Does pregnancy increase the risk of progression from asymptomatic to symptomatic HIV infection and AIDS?

Pregnancy appears to have little or no effect on the progression from asymptomatic to symptomatic HIV infection. However, in women who already have symptomatic HIV infection, pregnancy may lead to a more rapid progression to AIDS.

Progression of HIV infection during pregnancy can be monitored by:

1. Laboratory tests
2. Clinical signs

2-24 Which laboratory tests indicate the progression of HIV infection?

1. A falling CD4 count is an important marker of progression in HIV. It is an indicator of the degree of damage to the immune system. The normal CD4 count is 700 to 1100 cells/ μ l. A CD4 count below 200 cells/ μ l indicates severe damage to the immune system.
2. A high viral load indicates a large number of virus particles in the blood and gives an idea as to how fast the HIV infection is progressing to AIDS. This test is usually used to monitor the response to treatment.

The CD4 count is an important marker of HIV progression during pregnancy.

2-25 How is the clinical severity of HIV infection classified?

The World Health Organisation (WHO) classification of clinical staging is used in both pregnant and non-pregnant individuals. Stage 1 is very mild while stage 4 is most severe. Life expectancy is best with stage 1 and worst with stage 4.

WHO staging is as follows:

Stage 1: Clinically well. Generalised lymphadenopathy may be present.

Stage 2: Mild weight loss or minor rashes or infections.

Stage 3: Moderate weight loss with oral thrush, pulmonary tuberculosis (TB), or severe bacterial infections.

Stage 4: Severe HIV-associated (opportunistic) infections, cancer, and wasting.

HIV infection is classified clinically into four stages.

Stage 4 HIV disease is also called AIDS. Therefore the complications seen in stage 4 are called 'AIDS-defining conditions'. This is confusing to many as the word 'AIDS' is often used incorrectly to mean any stage of HIV infection where the patient has symptoms and signs of illness.

Patients with stage 4 HIV infection have AIDS.

2-26 Can an HIV-positive woman be cared for in a primary-care clinic?

Most women who are HIV positive are clinically well with a normal pregnancy. Others may only have minor problems (grade 1 or 2). These women can usually be cared for in a primary-care clinic throughout their pregnancy, labour and puerperium provided their pregnancy is normal and their CD4 count is 350 cells/ μ l or more. Women with pregnancy complications should be referred to hospital as would be done with HIV-negative patients. Women with HIV-related problems who do not respond to treatment at a primary-care clinic may have to be referred to an HIV/ARV (antiretroviral) clinic where staff are trained to care for patients with severe HIV infection. Due to the large numbers of patients, the HIV/ARV clinics cannot see all pregnant women who have minor problems related to HIV infection.

Most HIV-positive women who are clinically well during their pregnancy with a CD4 count of 350 or more can usually be cared for at a primary-care clinic.

It is very important that the primary-care clinic and the HIV clinic work in close partnership. Maternal and HIV care must be integrated.

The primary-care clinic and the HIV clinic must work together in a close partnership.

2-27 How are pregnant women with HIV infection managed at a primary-care clinic?

In a country with limited healthcare resources the management of women with HIV infection or AIDS in pregnancy is restricted to affordable protocols. The management of pregnant women is very similar to that of non-pregnant adults. The most important step is to identify those pregnant women who are HIV positive.

The principles of management of pregnant women with HIV infection at a primary-care clinic are:

1. Make the diagnosis of HIV infection by offering routine HIV screening to all pregnant women at the start of their antenatal care.
2. Assess the CD4 count in all HIV-positive women as soon as their HIV status is known.
3. Screen for tuberculosis and clinical signs of HIV infection at each antenatal visit.
4. Good diet. Nutritional support may be needed.
5. Emotional support and counselling.
6. Prevention of mother-to-child transmission (PMTCT) of HIV.
7. Start antiretroviral treatment (ART) for women who meet the treatment criteria.

All HIV-positive women should have their CD4 count measured.

2-28 Which health workers should care for women with HIV infection?

Most patients with HIV infection can be cared for by nurses at a primary-care clinic. Even in hospital, much of the care can be done by nurses. Nurse-initiated antiretroviral treatment is essential if the large numbers of pregnant women needing treatment are to be adequately managed. Doctors should support the nurses and help with complicated problems.

CLINICAL STAGING OF HIV INFECTION

2-29 What clinical signs suggest stage 1 and 2 HIV infection?

1. Persistent generalised lymphadenopathy
2. Repeated or chronic mouth or genital ulcers
3. Extensive skin rashes
4. Repeated upper respiratory tract infections such as otitis media or sinusitis
5. Herpes zoster (shingles)

Most of these women can be managed at a primary-care clinic. These clinical problems are usually treated symptomatically with simple drugs which are not expensive.

2-30 What are the important features suggesting stage 3 HIV infection?

Features of stage 3 HIV infection include:

1. Unexplained weight loss. Pregnant women normally gain rather than lose weight.
2. Oral candidiasis (thrush)
3. Cough, fever and night sweats suggesting pulmonary tuberculosis
4. Cough, fever and shortness of breath suggesting bacterial pneumonia
5. Chronic diarrhoea or unexplained fever for more than one month

It is important to think of these HIV-associated conditions at every clinic visit. These patients may need to be referred to

an HIV clinic for further investigation and management. Pulmonary tuberculosis is common in patients with HIV infection.

Pulmonary tuberculosis is common in patients with symptomatic HIV infection.

2-31 What are the important features suggesting stage 4 HIV infection?

Features of stage 4 HIV infection include:

1. Severe weight loss
2. Severe or repeated bacterial infections, especially pneumonia
3. AIDS-defining illnesses such as:
 - Severe HIV-associated (opportunistic) infections
 - Malignancies such as Kaposi's sarcoma

Common, severe opportunistic infections include:

- Oesophageal candidiasis which presents with difficulty swallowing
- Pneumocystis pneumonia which presents with cough, fever and shortness of breath
- Cryptococcal meningitis and toxoplasmosis of the brain (encephalitis) present with headache, vomiting and confusion
- Extrapulmonary tuberculosis (TB)

Patients with any of these signs of stage 4 HIV infection must be urgently referred to hospital.

It is important to recognise the signs of stage 3 and 4 HIV infection.

2-32 What are the principles of managing pregnant women with AIDS?

In addition to the steps in the management of all HIV-positive women, the following should be done at the HIV/ARV clinic:

1. Prophylactic co-trimoxazole (one tablet per day) to prevent Pneumocystis pneumonia and some bacterial infections
2. Treatment of opportunistic and other bacterial infections, such as pneumonia and urinary tract infections

3. Multivitamin supplements
4. If active tuberculosis is diagnosed, treatment must be started.
5. Urgently prepare the patient for antiretroviral treatment.
6. Start antiretroviral treatment according to the correct protocol.
7. Monitor the progress on antiretroviral treatment.

NOTE TB prophylaxis with INH is often provided.

USE OF ANTIRETROVIRAL TREATMENT IN PREGNANCY

2-33 What is antiretroviral treatment?

Lifelong antiretroviral treatment (or highly active antiretroviral therapy) is the use of three or more antiretroviral drugs in combination to treat patients with severe HIV infection or AIDS. The aim of antiretroviral treatment is to lower the viral load and allow the immune system to recover. It is planned to roll out antiretroviral treatment to all South Africans who need it. This will require extensive strengthening of the primary-care system in South Africa.

2-34 What are the indications for antiretroviral treatment in pregnancy?

The indications for antiretroviral treatment at an HIV/ARV clinic are either of the following:

1. Clinical signs of stage 3 or 4 HIV infection
2. A CD4 count of 350 cells/ μ l or below
3. Tuberculosis

Pregnant women with stage 3 or 4 HIV infection or a CD count of 350 cells/ μ l or below should be started on antiretroviral treatment.

2-35 What patient preparation is needed for antiretroviral treatment?

Preparing a patient to start antiretroviral treatment is very important. This requires education, counselling and social assessment before antiretroviral treatment can be started. These patients need to learn about their illness and the importance of excellent adherence (taking their antiretroviral drugs at the correct time every day) and regular clinic attendance. They also need to know the side effects of antiretroviral drugs and how to recognise them. Careful general examination and a range of blood tests are also needed before starting antiretroviral treatment. It usually takes two weeks to prepare a patient for antiretroviral treatment.

2-36 What drugs are used for antiretroviral treatment during pregnancy?

Usually antiretroviral treatment is provided to pregnant women in South Africa with three drugs:

- TDF
- 3TC
- Nevirapine

This is the national first-line standard drug combination used during pregnancy. Sometimes FTC replaces 3TC. Patients are no longer started on d4T due to the risk of serious adverse effects.

Patients who do not respond to first-line treatment, or have severe adverse effects to the drugs used in first-line treatment, may have to be considered for second-line treatment with AZT, 3TC or FTC and lopinavir/ritonavir.

2-37 Is it dangerous for a woman to fall pregnant if she is already receiving antiretroviral treatment?

No. If a woman is already on antiretroviral treatment when she falls pregnant:

1. If she is receiving a drug combination during the first trimester which includes efavirenz, she should be counselled

about the risk of the drug causing fetal abnormalities. Usually efavirenz is stopped and replaced with nevirapine if the woman is still in the first trimester.

2. Women who fall pregnant while receiving standard first-line therapy with 3TC, d4T and nevirapine may continue the medication throughout pregnancy.
3. Women receiving standard second-line therapy should also continue the medication throughout pregnancy.

Most women who are clinically well on antiretroviral therapy when they fall pregnant remain well with few treatment problems during their pregnancy.

NOTE The risk of efavirenz causing congenital abnormalities in humans if used during the first trimester is not fully understood but probably small.

2-38 When can pregnant women be started on antiretroviral treatment?

Antiretroviral treatment should be started within two weeks at any time during pregnancy if there are the correct clinical and immunological indications. However it is best to start treatment as soon as possible, especially in women who are seriously ill or with a CD4 count less than 50 cells/ μ l.

2-39 Can antiretroviral treatment be started close to term?

As it takes a few weeks to prepare a woman for antiretroviral treatment, it may be too late to begin treatment if the woman is within a few weeks of delivery, unless she is seriously ill or her CD4 count is less than 50 cells/ μ l. Women who present close to delivery are usually given antiretroviral prophylaxis only and antiretroviral treatment is postponed until after delivery.

2-40 Should antiretroviral prophylaxis still be given if a woman is receiving antiretroviral treatment?

No. If antiretroviral treatment is started before 34 weeks gestation the risk of vertical transmission is low.

2-41 What are the drug doses used for starting antiretroviral treatment during pregnancy?

1. TDF 300 mg daily
2. 3TC (lamivudine) 150 mg every 12 hours or 300 mg daily
3. Nevirapine 200 mg daily for two weeks followed by 200 mg every 12 hours

2-42 What are the benefits of antiretroviral treatment during pregnancy?

1. Antiretroviral treatment improves the health of the mother and prevents her dying during or soon after pregnancy.
2. Antiretroviral treatment reduces the risk of vertical transmission.
3. Women on antiretroviral treatment can be kept alive and well for many years, enabling them to care for their children and be economically active.
4. The number of AIDS orphans will be significantly reduced.

2-43 What are the adverse effects of antiretroviral treatment?

Pregnant women on antiretroviral treatment may have adverse effects (side effects) to the drugs. These are usually mild and occur during the first six weeks of treatment. However, adverse effects may occur at any time that patients are on antiretroviral treatment. It is important that the staff at primary-care clinics are aware of these adverse effects and that they ask for symptoms and look for signs at each clinic visit. Adverse effects are more common with antiretroviral treatment than with antiretroviral prophylaxis during pregnancy.

Common early adverse effects during the first few weeks of starting antiretroviral treatment include:

1. Lethargy, tiredness and headaches
2. Nausea, vomiting and diarrhoea
3. Muscle pains and weakness

These mild adverse effects usually disappear on their own. They can be treated symptomatically. It is important that antiretroviral treatment is continued even if there are mild adverse effects.

More severe adverse effects, which can be fatal, include:

1. AZT may suppress the bone marrow causing anaemia. There may also be a reduction in the white cell count.
2. Nevirapine may cause severe skin rashes. All patients with severe skin rashes must be referred urgently to the HIV/ARV clinic.
3. Hepatitis can be caused by all antiretroviral drugs but especially nevirapine.
4. TDF can cause renal failure.
5. Lactic acidosis is a serious adverse effect, especially with d4T. It presents with weight loss, tiredness, nausea, vomiting, abdominal pain and shortness of breath in patients who have been well on antiretroviral treatment for a few months.

Staff at primary-care clinics must be aware and look out for these very important adverse effects.

2-44 What blood tests should be done to monitor antiretroviral treatment during pregnancy?

1. Serum ALT (a liver function test) should be done at the start of treatment (baseline) and again at two and four weeks. Thereafter ALT should be measured monthly until delivery.
2. As AZT can cause anaemia, these women should have a full blood count at the start of treatment and then a laboratory haemoglobin measurement done every month during pregnancy. Women with a haemoglobin concentration below 8 g/dl should not be given AZT.

3. The creatinine clearance must be measured before starting TDF. This drug should not be used if the creatinine clearance is below 50 ml/min.

2-45 Who should follow up on women on antiretroviral treatment during pregnancy?

Whenever possible, a pregnant woman on antiretroviral treatment should be followed up on at the clinic or hospital where she is receiving antenatal care. Only women with serious problems related to their HIV infection or antiretroviral treatment need be referred to a special HIV clinic.

At every visit these women must be encouraged and supported to continue with excellent drug adherence. They should also be monitored for clinical signs of HIV infection and adverse effects of antiretroviral treatment, as well as having their ALT and haemoglobin (if on AZT) monitored.

TB/HIV CO-INFECTION

2-46 How is TB/HIV co-infection diagnosed?

All pregnant women, especially if they have HIV infection, should be asked about the symptoms of tuberculosis at every antenatal visit. These are:

- Cough for longer than two weeks
- Fever for longer than two weeks
- Severe night sweats for longer than two weeks
- Unexplained weight loss, blood-stained sputum, shortness of breath, chest pains, general tiredness and loss of appetite

2-47 How is the diagnosis of pulmonary tuberculosis confirmed?

Two sputum specimens should be sent for microscopy and culture.

2-48 When should anti-TB treatment be started?

Pulmonary tuberculosis is a feature of stage 3 disease in patients with HIV infection. Therefore they should receive both anti-TB and antiretroviral treatment:

If the patient is severely ill or the CD4 count is less than 50 cells/ μ l, start anti-TB treatment for two weeks and then begin antiretroviral treatment.

In other patients, it is best to stabilise the patient on two to eight weeks of anti-TB treatment before starting antiretroviral treatment.

If patients develop tuberculosis while on lifelong antiretroviral treatment, anti-TB treatment can be started without delay.

The risk of adverse effects is increased when antiretroviral and anti-TB drugs are used together, especially if the tuberculosis has been treated for less than two months when the antiretroviral drugs are started.

2-49 How is a woman with tuberculosis treated in pregnancy?

If possible, antenatal care, HIV management and anti-TB treatment should be integrated at a primary-care clinic. Treatment is usually started with rifampicin, INH, pyrazinamide and ethambutol.

Rifampicin lowers the blood levels of nevirapine. Therefore efavirenz should be used after the first trimester. Blood levels of lopinavir/ ritonavir are also lowered when anti-TB drugs are given.

CASE STUDY 1

A woman books for antenatal care at 18 weeks of gestation. She is known to be HIV positive and has a CD4 count below 200 cells/ μ l. She asks whether her infant will also be infected with HIV, and is told by the staff that HIV does not spread to the fetus. She does not receive HIV prophylaxis.

1. What is the risk of vertical transmission of HIV to this infant?

About 5% during pregnancy alone and 20% during labour and vaginal delivery. There is an added risk of 15% if she mixed breastfeeds for up to two years.

2. Should termination of pregnancy be considered?

Yes. At 18 weeks of pregnancy this is an option. This woman would need to be counselled so that she can make an informed decision. Most women decide to continue their pregnancy.

3. Should she be offered antiretroviral treatment?

Yes. As she has a low CD4 count, she needs antiretroviral treatment with three drugs.

4. Can vitamins reduce the risk of HIV spread to her fetus?

Unfortunately there is little evidence that vitamin A alone or multivitamin supplements reduce the risk of vertical transmission of HIV to the fetus.

CASE STUDY 2

A clinically well woman is found to be HIV positive when screened during her first trimester of pregnancy. Her CD4 count is 400 cells/ μ l. She is offered antiretroviral prophylaxis with AZT from 14 weeks to delivery. She asks whether AZT has adverse effects and whether it may damage her fetus.

1. Does zidovudine (AZT) have adverse effects?

Yes. Some women taking AZT complain of tiredness, weakness, nausea and vomiting. Occasionally AZT may suppress the bone marrow, especially if taken in big doses. This complication is uncommon when AZT is taken prophylactically in pregnancy. However her haemoglobin should be monitored monthly.

2. Does zidovudine (AZT) damage the fetus?

No. The woman can be reassured that AZT does not cause congenital abnormalities nor damage the fetus.

3. Would you advise that she take zidovudine (AZT) prophylaxis?

Yes, as this will reduce the risk of HIV transmission to her fetus.

4. What is the dose of prophylactic treatment with zidovudine (AZT) in pregnancy?

300 mg orally twice a day.

5. Is the woman at an increased risk of complications in pregnancy?

Because she is HIV positive, she is more likely to develop an infection such as pneumonia or pyelonephritis. There is also an increased risk of stillbirth and preterm delivery.

CASE STUDY 3

A woman receives antenatal care at a clinic, which does not have the staff or funding to provide HIV screening. She is well and her pregnancy is proceeding normally. The previous year, a survey found that 25% of pregnant women at that clinic were HIV positive.

1. Is this woman at risk of becoming infected with HIV during her pregnancy?

Infection with HIV is always a possibility unless the woman abstains from sex during her pregnancy or she and her HIV-negative partner are mutually faithful. If there is any chance of becoming infected with HIV, she must use a condom during intercourse.

2. Is a 25% incidence of HIV during pregnancy common in South Africa?

Unfortunately yes. The incidence of HIV varies widely between different communities but

about 30% of all pregnant women in South Africa are HIV positive. In some communities, up to 40% of pregnant women are HIV positive.

3. How can the clinic staff manage a pregnant woman if her HIV status is not known?

In some regions the HIV status of pregnant women is still unknown. Therefore, all women should be regarded as potentially infected with HIV, and universal precautions should always be practiced. In South Africa HIV screening services are being made available at all antenatal clinics.

CASE STUDY 4

An ill woman books for antenatal care at 30 weeks gestation. She has severe oral candidiasis (thrush) and difficulty swallowing, which suggests oesophageal candidiasis as well. A chest X-ray has the appearance of pneumonia caused by *Pneumocystis*. A blood test shows a CD4 count of 50 cells/ μ l.

1. Are oesophageal candidiasis and *Pneumocystis pneumonia* signs of AIDS?

Yes. They are both severe opportunistic infections (i.e. AIDS-defining conditions). Therefore she almost certainly has stage 4 HIV infection (AIDS).

2. What does the result of the CD4 count mean?

The normal CD4 count in adults is 500 cells/ μ l or more. The very low CD4 count in this woman indicates that her immune system has been severely damaged. This explains why she has developed severe opportunistic infections.

3. Is AIDS a common cause of maternal death in South Africa?

Yes, AIDS is the commonest cause of maternal death in South Africa.

4. Does she have indications for antiretroviral treatment?

Yes. Stage 4 HIV infection and a CD4 count of 50 cells/ μ l are both indications for antiretroviral treatment. She urgently needs to start antiretroviral treatment as soon as possible.

5. What antiretroviral drugs will be used?

She will be started on first-line treatment of TDF (tenofovir), 3TC (Lamivudine) and

nevirapine. Minor side effects are common for all three drugs in the first six weeks of treatment.

6. Which important adverse effect of TDF should be looked for in pregnancy?

Reduced kidney function.

3

HIV during labour and delivery

Before you begin this unit, please take the corresponding test at the end of the book to assess your knowledge of the subject matter. You should redo the test after you've worked through the unit, to evaluate what you have learned.

Objectives

When you have completed this unit you should be able to:

- Explain the risk of HIV transmission to the infant during labour and delivery.
- Identify women at the greatest risk of transmitting HIV to their infant.
- List ways of reducing the risk of HIV transmission to the infant.
- Describe how to use nevirapine prophylactically during labour.
- Reduce the risk of HIV infection of the staff during labour and delivery.
- Provide family planning advice to HIV-positive women after delivery.

HIV TRANSMISSION DURING LABOUR

3-1 Can HIV be transmitted from mother to infant during labour and delivery?

Yes. During labour and delivery the infant is exposed to cervical and vaginal secretions as well as blood, all of which may contain HIV that can infect the infant. The risk of HIV transmission is higher during the last weeks of pregnancy, labour and delivery than during the rest of the pregnancy. The greatest risk of HIV transmission from a mother to her fetus is during labour and vaginal delivery.

Most vertical spread of HIV takes place during labour and vaginal delivery.

3-2 What is the risk of an infant being infected with HIV during labour and delivery?

The risk of HIV transmission from mother to infant during pregnancy, labour and vaginal delivery together is about 20% if antiretroviral prophylaxis is not used. The risk of HIV transmission during labour and vaginal delivery alone is about 15%. Therefore,

most of this transmission takes place during labour and delivery. Efforts to reduce HIV transmission during labour and delivery are very important. The management of all women in labour needs to be modified as it is often not known which women are HIV positive.

3-3 Can HIV infection be diagnosed for the first time during labour?

If a woman has not been screened for HIV during her pregnancy, she can be screened during labour using a rapid test. However it is preferable to screen women for HIV during pregnancy when there is still time for adequate counselling.

REDUCING HIV TRANSMISSION DURING LABOUR AND DELIVERY

3-4 Is there any need to isolate HIV-positive women during labour?

No. There is no need to isolate HIV-positive women before, during or after labour. However, there is a need for privacy when counselling these women.

3-5 Can the duration of ruptured membranes influence the risk of HIV transmission?

Yes. With ruptured membranes the infant is exposed to cervical and vaginal secretions. Therefore, the longer the duration of ruptured membranes, the greater the risk of HIV in vaginal secretions getting into the uterine cavity and infecting the infant. The risk of transmission from mother to infant increases if the membranes have been ruptured for more than four hours.

The risk of vertical transmission of HIV to the infant is increased if the membranes have been ruptured for more than four hours.

NOTE The risk of HIV infection of the second twin is less than that in the first twin, as the second twin is exposed to maternal secretions for a shorter time.

3-6 Should the membranes be ruptured routinely in HIV-positive women?

No. The membranes should not be ruptured unless there is a good clinical indication. Artificial rupture of the membranes often results in the infant being exposed to vaginal and cervical secretions for more than four hours. Routine artificial rupture of the membranes must no longer be practised.

NOTE There is no need to rupture membranes if labour progresses normally. However, with intact membranes and poor progress in the active phase of labour, rupture of the membranes should be considered. These patients need to be reassessed after a further two hours. Many patients will have progressed by then and be close to delivery. Those that have not progressed should be considered for Caesarean section.

3-7 How may the duration of labour influence the risk of HIV transmission?

In long labours there is a greater risk of transmission than in short labours. As with the duration of ruptured membranes, the infant is exposed to HIV in vaginal and cervical secretions for a longer time with long labours than with shorter labours. It is believed that labour increases the risk of HIV crossing the placenta. Therefore prolonged labour should be avoided if possible.

3-8 Is preterm labour more common in HIV-infected women?

Yes. The risk of preterm labour is doubled in women who are HIV positive.

3-9 May preterm labour increase the risk of HIV transmission?

Yes. The risk of HIV transmission is higher in preterm than in term infants, possibly because preterm infants have a more immature immune system and have fewer maternal

antibodies. HIV in swallowed maternal blood or vaginal secretions may pass through the walls of their immature guts more easily.

NOTE The presence of chorioamnionitis, which is a common cause of preterm labour, may also increase the risk of vertical transmission.

3-10 Does HIV infection in the mother cause intra-uterine growth restriction?

Intra-uterine growth is usually normal in HIV-positive women who are well nourished. However, poor fetal growth may occur if the mother is underweight and clinically ill with AIDS. Therefore, HIV infection itself does not appear to cause slow fetal growth.

NOTE HIV-associated infections such as CMV may cause fetal infection and restrict intra-uterine growth.

3-11 Can Caesarean section reduce the risk of HIV transmission from mother to infant?

There is good evidence that transmission can be reduced by as much as 50% if a Caesarean section is performed, especially if it is done electively before the onset of labour. An elective Caesarean section prevents the fetus being exposed to cervical and vaginal secretions. The infant does, however, still come into contact with maternal blood during the delivery. Therefore, an effort should be made to limit the infant's contact with maternal blood during delivery by Caesarean section. The risk of vertical transmission is probably not reduced much if a Caesarean section is done after the membranes have been ruptured. As a Caesarean section is expensive and requires the necessary staff and facilities, this is not a practical method of reducing the risk of vertical transmission in most poor communities. The benefit of an elective Caesarean section is much reduced if correct antiretroviral prophylaxis or treatment is given to mother and infant, so Caesarean section should not be used to reduce transmission.

Routine elective Caesarean section is not recommended to reduce the risk of HIV transmission to the infant.

NOTE Techniques of delivering the infant with minimal uterine bleeding at elective Caesarean section offer a very low risk of vertical transmission of HIV during delivery. Four hours before an elective Caesarean section the mother should be given a single dose of nevirapine, TDF and FTC.

3-12 Is a Caesarean section dangerous in HIV-positive women?

Caesarean section has more complications in women who are HIV positive, especially if their CD4 count is low. The risks of wound sepsis and post-operative pneumonia are increased in HIV-positive women. Caesarean section may also shorten the period of asymptomatic HIV infection in the mother and hasten the onset of AIDS. Routine elective Caesarean section is, therefore, not recommended in HIV-positive women. Caesarean section should only be done if there are good clinical indications. Prophylactic antibiotics must be given to HIV-positive women who have a Caesarean section. Do not forget the antiretroviral prophylaxis.

NOTE If a Caesarean section is done in an HIV-positive woman, a spinal or epidural anaesthetic is preferable to a general anaesthetic as it carries a lower risk of pneumonia.

3-13 Can instrumental delivery increase the risk of HIV transmission?

Both vacuum extraction and forceps delivery may damage the infant's skin and, thereby, increase the risk of HIV infection of the infant during delivery.

3-14 Should an episiotomy be done in HIV-positive women?

Whether a woman is HIV positive or not, an episiotomy should only be done if there is a good clinical indication. It should not be a

routine procedure. HIV in maternal blood from an episiotomy may be swallowed and, thereby, infect the infant during delivery. Healing of the episiotomy may also be delayed if the woman has depressed immunity.

Instrumental delivery and episiotomy may increase the risk of HIV transmission to the infant.

3-15 Which women are most likely to transmit HIV to their infant during labour and delivery?

1. Women who become infected with HIV during their pregnancy as they have a high viral load
2. Women who have advanced HIV infection (AIDS) as they have a high viral load
3. Women with preterm labour and delivery
4. Women with rupture of the membranes for longer than four hours
5. Women who have prolonged labours

3-16 Are scalp clips and scalp blood sampling safe in HIV-infected women?

No. Both scalp clips and scalp blood sampling damage the infant's skin and may allow the entrance of HIV. Attaching scalp clips and scalp blood sampling should not be done if the woman is HIV positive. Scalp clips should not be used routinely. When there is a high incidence of HIV in the community, scalp clips should probably not be used at all.

NOTE The use of scalp clips and scalp blood sampling may still be an option if clinically indicated in HIV-negative women or positive women receiving antiretroviral prophylaxis or treatment.

3-17 What is the value of vaginal cleaning in reducing the risk of HIV transmission?

Some evidence suggests that wiping the vagina with 0.25% chlorhexidine (Hibitane) or povidone iodine (Betadine) may reduce the risk of HIV transmission to the infant. This seems particularly important if the membranes have been ruptured for more than four hours.

A swab soaked in 0.25% chlorhexidine and wrapped around the examiners two fingers can be used to clean the vagina. Routinely use chlorhexidine cream for vaginal examinations. Vaginal cleaning may reduce the risk of puerperal sepsis and neonatal sepsis.

3-18 Should all infants born to HIV-positive women be suctioned at delivery?

Unless infants are meconium stained or need resuscitation, they must not have their mouth and nose suctioned after birth as this may damage the mucous membranes and increase the risk of HIV infection. Sometimes, deep suctioning may cause apnoea in the infant. It may be helpful to wipe the infant's mouth and face after delivery to remove maternal blood and secretions. Suctioning of the mouth should not be done routinely on any infant.

Infants should not be routinely suctioned after delivery.

3-19 Should you clean infants born to HIV-positive women after delivery?

It may reduce the risk of HIV transmission if these infants are well dried and all the maternal blood and vaginal secretions are wiped off with a towel immediately after delivery. These infants do not need to be bathed straight after delivery. Once dried they should be given to the mother if they are breathing well.

ANTIRETROVIRAL PROPHYLAXIS IN LABOUR

3-20 Are antiretroviral drugs useful during labour to reduce the vertical transmission of HIV?

Many studies have shown the value of antiretroviral drugs to reduce the risk of HIV transmission in labour. Women on AZT from 14 weeks of gestation, who also receive a single

dose of nevirapine during labour, will have an HIV transmission rate of about 2%.

HIV-infected women who did not receive AZT during the antenatal period must still be given a single dose of nevirapine in labour.

Women who have been on antiretroviral treatment during pregnancy do not need AZT and a prophylactic dose of nevirapine during labour as they have a low viral load with only a small risk of transmitting HIV during labour and delivery. They should continue their antiretroviral drugs during labour.

Antiretroviral drugs, given during pregnancy and labour will reduce the risk of spreading HIV to the infant.

3-21 Should zidovudine (AZT) be given during labour?

Oral AZT 300 mg should be given three-hourly to women who have taken AZT prophylaxis during pregnancy. This can be omitted if the woman is being kept nil per mouth. Giving a few doses of AZT during labour is of no help in women who did not receive AZT during pregnancy.

3-22 How is nevirapine used prophylactically to reduce the risk of vertical transmission of HIV?

A single oral dose of nevirapine (sdNVP) is taken by the mother at the onset of labour. If possible, the dose should be taken more than two hours before delivery to allow the drug time to cross the placenta to the fetus. The dose of nevirapine for the mother is 200 mg (a single tablet). This is followed by six weeks of nevirapine to the infant, started as soon as possible after delivery.

The great advantage of nevirapine is that only a single dose to the mother is needed. This is easy and can be monitored by the clinic or hospital staff. It is best to use nevirapine in labour together with AZT from 14 weeks gestation.

All women on AZT prophylaxis in pregnancy must receive a single dose of nevirapine at the onset of labour.

A single dose of nevirapine to a woman in labour can result in temporary HIV resistance to both nevirapine and efavirenz. Therefore it is followed by a single dose of TDF and FTC to the mother after delivery.

All women receiving nevirapine prophylaxis in labour must be given a single dose of TDF and FTC after delivery.

HIV IN THE PUERPERIUM

3-23 What complications may occur in the puerperium in an HIV-positive woman?

Infectious complications are more common in the puerperium in women with HIV infection. Therefore, these women must be closely observed for:

1. Infection of the genital tract (puerperal sepsis). This may cause secondary postpartum haemorrhage.
2. Urinary tract infection, especially pyelonephritis.
3. Pneumonia, especially in women who have had a general anaesthetic.
4. Wound infections, especially after Caesarean section, episiotomy or tubal ligation.

If any of the above occurs, appropriate antibiotics must be started immediately.

PREVENTING ACCIDENTAL HIV INFECTION

3-24 Are nurses and doctors at risk of accidental infection when delivering HIV-positive women?

Yes, as vaginal and cervical secretions, blood and amniotic fluid may contain HIV.

Healthcare workers can become infected by HIV via the following routes:

1. By needle-stick injuries or cuts during surgery
2. By exposing cuts or abrasions on one's hand to body fluids infected with HIV
3. By splashes into the mouth or eyes of body fluids infected with HIV

The risk of acquiring HIV infection by needle-stick injury or accidentally cutting one's finger during surgery is 1 in 300 without antiretroviral prophylaxis while the risk of HIV infection after blood splashes or getting blood on cuts or abrasions is less than 1 in 1000 if antiretroviral prophylaxis is not given.

3-25 How can staff reduce the risk of becoming infected with HIV during a delivery?

In the absence of screening, all women should be regarded as HIV positive. Therefore, the following universal precautions should be practised during the labour and delivery of *all* women:

1. Gloves must always be worn during vaginal examinations and delivery. If possible, double gloves should be worn during Caesarean section.
2. Glasses, goggles or a mask with a visor must be worn if there is a risk of blood or amniotic fluid splashing into one's eyes.
3. A plastic apron should be worn to prevent soiling of one's clothes.
4. Full precautions must be taken when handling needles or lancets. Both should be placed into a sharps container immediately after removal from the skin. A needle must never be put down to be cleared away after completion of the procedure.
5. Great care must be taken to avoid pricking or cutting one's finger during surgery or while suturing an episiotomy.

3-26 What measures should be taken during a surgical procedure to reduce the risk of staff becoming infected with HIV?

1. All sharp instruments must be removed from the operating field as soon as they are no longer required. Sharp instruments must never be allowed to lie around.
2. A separate tray for sharp instruments is of value. The operator should then pick them up and put them down herself/himself.
3. A needle should always be held with forceps and not with one's fingers when suturing. A Bonney's forceps is ideal for this purpose as it has the necessary strength to grasp the needle.
4. Needles should always be safeguarded when not being used; even in between sutures while the knot is being tied.

FAMILY PLANNING FOR HIV-POSITIVE WOMEN

3-27 Why may an HIV-positive woman want family planning after delivery?

She may want to discuss family planning because:

1. A further pregnancy may speed up the progression of her disease, especially if she already has symptomatic HIV infection.
2. Of the risk of infecting her sexual partner during unprotected intercourse.
3. Of the risk of infecting any further children she may have with HIV.
4. She is worried that she may die of AIDS while her children are still young.

Family planning should be discussed with all women who have delivered. The risk of HIV transmission in a woman who is well on antiretroviral treatment is probably small.

3-28 What family planning advice should be given to an HIV-positive woman after delivery?

A permanent form of contraception may be advisable for HIV-positive women because of their reduced life expectancy that will result in their children being orphaned at a young age. The risk of transmitting HIV to each additional child also requires consideration. Postpartum tubal ligation should, therefore, be considered.

The methods of contraception usually offered to HIV-positive women are:

1. **Tubal ligation:** This is a very effective method but should not be done if the woman has AIDS because of the risk of post-operative sepsis. Vasectomy of the male partner is also an option in selected cases.
2. **Injectables:** Depo-Provera or Nuristerate provide reliable temporary contraception and are the contraceptives of choice.
3. **Oral contraceptives:** Effective if taken regularly. May fail if taken with antibiotics.
4. **Male or female condoms:** They are less reliable and must be used correctly every time intercourse takes place. Condoms also provide some protection against the risk of spreading HIV infection and other sexually transmitted diseases.
5. **Abstinence:** This is the only certain method of preventing both pregnancy and the spread of HIV.

Intra-uterine contraceptive devices (IUCDs) must be used with caution in women with HIV infection as they are associated with an increased risk of pelvic infection. However, the benefit of IUCDs in healthy HIV-positive women outweighs the risk. Emergency contraception with combined contraceptive pills is effective but should not be used as a method of regular contraception. Lactational amenorrhoea is also effective if the infant is exclusively breastfed. However, many HIV-positive women will not be breastfeeding.

Whatever method of contraception is used, if there is a risk of spreading HIV, a condom must be worn.

3-29 How should you provide family planning for an HIV-positive woman?

1. Ask the woman what method she would prefer.
2. Decide whether there are any contraindications to this method.
3. If there are no contraindications, then this method should be used.
4. If there are contraindications, then more appropriate methods should be discussed.

Always give the health benefits and the possible side effects of the method chosen. The need for proper compliance must be stressed. If only one of the sexual partners is HIV positive, a condom *must* be used during every act of intercourse.

FOLLOW-UP CARE OF HIV-INFECTED WOMEN

3-30 How should HIV-positive women be followed up after delivery?

1. HIV-positive women who are healthy with CD4 counts of more than 350 cells/ μ l during pregnancy must be reassessed in the puerperium. If they remain well and the CD4 count does not fall they should be followed up with a CD4 count every six months at their local primary-care clinic.
2. Women who become ill with symptoms or signs of stage 3 or 4 HIV infection or have a CD4 count of 200 cells/ μ l or less during the puerperium need urgent referral for antiretroviral treatment.
3. Women who are well on lifelong antiretroviral treatment after their pregnancy must continue with their treatment and be followed up at the local primary-care clinic. Nevirapine can be changed to efavirenz at the HIV clinic after delivery.
4. Good adherence and exclusive breast or formula feeding must be encouraged and supported.

5. Careful follow up during the puerperium for sepsis (uterus, breasts or wound) is important.
6. The infant also needs to be carefully followed up.

CASE STUDY 1

A woman, known to be HIV positive, goes into labour at 35 weeks of gestation. Because labour progresses slowly, her membranes are ruptured artificially when the cervix reaches 4 cm. A scalp clip is applied to monitor the fetal heart rate. After another six hours a Caesarean section is done as her labour has failed to progress adequately. Antiretroviral prophylaxis is not given.

1. Is there a danger in rupturing her membranes?

While artificial rupture of the membranes might speed up the progress of labour, it will also expose the fetus to vaginal and cervical secretions. This will increase the infant's chances of HIV infection. Therefore, the benefits of artificial rupture of the membranes must always be balanced against the risks.

2. Would you have applied a scalp clip?

No. This increases the risk of HIV infection in the infant if the mother is HIV positive.

3. Does it matter that the membranes have been ruptured for six hours?

Yes, as the risk of vertical transmission of HIV increases as the duration of rupture of the membranes increases. There is a significantly greater chance of HIV infection after the membranes have been ruptured for more than four hours.

4. Would the Caesarean section reduce the risk of vertical transmission of HIV?

Not in this case, as the membranes have already been ruptured for six hours, exposing the infant to HIV in the vaginal and cervical

secretions. Progress of labour should have been assessed two hours after rupture of the membranes. This would have resulted in an earlier decision as to whether a Caesarean section was needed.

5. Is the risk of HIV infection greater in a preterm infant?

Yes, because preterm infants have a more immature immune system than term infants and are less able to prevent infection.

CASE STUDY 2

A woman has a breech delivery at term. An episiotomy is performed. Although her HIV status is unknown, she comes from a community where the incidence of HIV infection is high. Before each vaginal examination, the midwife wipes the vaginal walls with chlorhexidine. At delivery the infant breathes spontaneously but the nose and pharynx are still suctioned. The infant is then carefully dried with a towel before it is given to the mother.

1. Should this woman be managed as if she were HIV positive?

Unless it is known whether a woman is HIV positive or not, it is best to consider all women to be potentially infected with HIV. This woman has a high chance of being HIV positive as she comes from a community where HIV infection is common.

2. When should an episiotomy be done?

An episiotomy should only be done if there is a good clinical indication. An episiotomy increases the risk of vertical transmission as the infant is exposed to maternal blood. The risk of wound sepsis and delayed healing is also increased if the mother has HIV infection.

3. Does wiping or douching the vagina with chlorhexidine lower the risk of vertical transmission of HIV?

It may, especially if the membranes are ruptured for more than four hours.

4. Would you have suctioned this infant at delivery?

No. There was no indication such as meconium staining of the liquor or birth asphyxia. Suctioning may damage the mucous membrane of the nose and mouth, increasing the risk of HIV infection. Routine suctioning after delivery should not be practised.

5. What is the value of drying an infant well after delivery?

It prevents the infant from getting cold. Wiping the infant with a towel may also reduce the risk of vertical transmission of HIV by removing maternal blood and secretions.

CASE STUDY 3

An unbooked woman with three children presents in early labour. She is very thin with generalised lymphadenopathy and chronic diarrhoea. A rapid test for HIV is positive, and she is given a single dose of nevirapine during labour. The infant is underweight for gestational age. After delivery the woman asks for family planning advice.

1. Does this woman's clinical signs suggest that she has symptomatic HIV infection?

Yes. This is the typical presentation of many women with symptomatic HIV infection.

2. Is the rapid test for HIV useful in labour?

Yes, particularly in a woman where there is a suspicion that she is infected with HIV. In addition, it provides an opportunity to reduce the risk of mother-to-child HIV transmission with nevirapine.

3. What is the risk of vertical transmission of HIV in this woman?

The risk is high, as she has clinical signs of symptomatic HIV infection. This suggests that her viral load is high.

4. Is it helpful to give a single dose of nevirapine during labour?

Yes, as it will reduce the risk of mother-to-child transmission of HIV.

5. Does maternal infection with HIV result in intra-uterine growth restriction?

Not usually. This infant is probably underweight for gestational age because the mother is very undernourished due to her illness.

6. What family planning advice should be given?

She should probably be advised not to fall pregnant again. She is too ill for tubal ligation and an IUCD is contraindicated as the clinical signs indicate that she has symptomatic HIV infection. An injectable, such as Depo-Provera or Nuristerate, is probably the best choice for her.

7. What management should this woman be offered?

She should be offered antiretroviral treatment urgently to improve her immune status and clinical condition, and prolong her life.

4

HIV in the newborn infant

Before you begin this unit, please take the corresponding test at the end of the book to assess your knowledge of the subject matter. You should redo the test after you've worked through the unit, to evaluate what you have learned.

Objectives

When you have completed this unit you should be able to:

- List the routes whereby infants can be infected with HIV.
- Diagnose HIV infection in infants.
- Use antiretroviral drugs prophylactically in newborn infants.
- Explain the risks and benefits of breastfeeding in HIV-positive mothers.
- Advise HIV-positive mothers on the choice of feeding methods.
- List ways of making milk formula available to more HIV-positive mothers.
- Explain the dangers of making cheap milk formula available to all mothers.
- Manage infants born to HIV-positive women.

INTRODUCTION TO HIV-EXPOSED NEWBORN INFANTS

4-1 Can newborn infants become infected with HIV?

Yes. Newborn infants may become infected with HIV:

- During pregnancy when HIV may cross the placenta from a mother to infect her fetus.
- During labour and delivery when the infant may become infected with HIV present in cervical and vaginal secretions, and maternal blood.
- After delivery when the infant may become infected with HIV present in breast milk.

NOTE Rarely, the infant may become infected with HIV from transfused blood or by HIV-contaminated needles.

Both the fetus and newborn infant can become infected with HIV.

Infants cannot become infected by touching, hugging or kissing them. Neither can they become infected if vitamin K is given by

intramuscular injection after they have been well dried.

The spread of HIV from a mother to her fetus or infant is called mother-to-child transmission (MTCT) or vertical transmission. Nearly all infants and young children with HIV infection have been infected by vertical transmission.

4-2 Do HIV-infected infants usually appear normal at birth?

Most infants that have been infected with HIV during pregnancy, labour or delivery appear normal at birth. It is therefore not possible to decide by physical examination alone whether or not a newborn infant is infected with HIV.

Most infants with HIV infection appear normal and healthy at birth.

4-3 Does HIV infection cause congenital abnormalities?

HIV infection of the fetus does not cause congenital malformations. However, HIV-infected infants have an increased risk of having a low birth weight, especially if their mothers are ill and underweight.

4-4 Should all infants born to HIV-positive mothers be suctioned at delivery?

Unless there is meconium-stained amniotic fluid or the infant needs resuscitation, these infants must not have their mouth and nose routinely suctioned after birth as this may damage the mucous membranes and, thereby, increase the risk of HIV infection. Routine suctioning should be avoided in all infants.

DIAGNOSING HIV INFECTION IN INFANTS

4-5 Can the HIV screening tests commonly used on adults diagnose HIV infection in a newborn infant?

The diagnosis of HIV infection in a newborn infant is difficult as most HIV-infected infants appear to be normal and healthy at delivery. The HIV antibodies tested for in the ELISA and rapid HIV screening tests cross the placenta from mother to fetus. Therefore, if the mother's HIV screening test is positive then the infant's test will also be positive, whether or not the infant is infected with HIV. All infants born to HIV-positive women will have a positive HIV screening test at delivery. As a result, the HIV screening tests for adults is not useful in infants during the first months of life.

A positive HIV antibody screening test in the newborn infant does not necessarily mean that the infant is infected with HIV.

4-6 When can the HIV antibody screening tests be used to diagnose HIV infection in HIV exposed infants?

By 18 months after delivery all maternal HIV antibodies will have disappeared from the infant. A positive screening test at 18 months indicates that the HIV antibodies are being produced by the infant and have not crossed from the mother during pregnancy. Therefore, a positive screening test for HIV in an infant of 18 months or older indicates that the infant is infected with HIV. This is a convenient time to screen these infants as they are attending a clinic for their booster immunisations.

All HIV-exposed infants with a negative PCR test at six weeks should have a rapid HIV screen at 18 months.

NOTE The maternal HIV antibodies will already have disappeared by nine months in about 50% of uninfected infants. Therefore, it has been

suggested that infants born to HIV-positive women should be screened at nine months when they attend clinic for their measles immunisation. A negative test will indicate that the infant is not infected, provided that the mother has not breastfed in the past six weeks. A positive test at nine months is still unreliable and should be repeated at 18 months as all uninfected infants will have become negative by then.

4-7 What blood tests can be used to diagnose HIV infection in a young infant?

HIV infection in infants younger than 18 months can be diagnosed by either of the following:

1. The PCR (polymerase chain reaction) test which detects the presence of genetic material from the HIV. If the PCR test is positive then the infant is infected with HIV.
2. The ultrasensitive p24 antigen test detects HIV protein in the blood. A positive test indicates that the infant is infected with HIV.

A PCR or ultrasensitive p24 antigen test is usually done when the infant is six weeks old, or earlier, if the infant is ill. However, if the infant is still being breastfed, the test should only be done six weeks after the last feed of breast milk.

The results of the HIV tests in the infant, plus other details of management, must be added to the Road-to-Health card.

4-8 Can the PCR test be used to identify when an infant became infected with HIV?

Yes, sometimes it may be helpful in identifying the time of infection. If the fetus is infected in early pregnancy then the PCR on the infant's blood will be positive at birth. However, if the infant only becomes infected in the last weeks of pregnancy, during labour and delivery or during the first days of life then the PCR will be negative at birth and only become positive by six weeks of age. The test may only become positive more than six weeks after delivery in infants who are infected with HIV via breast milk.

Therefore the PCR test should be repeated six weeks after the last feed of breast milk has been given.

4-9 When do infants with HIV infection present with clinical signs of illness?

1. Infants who are infected during pregnancy usually become ill in the first three months after delivery. They also rapidly progress to AIDS. Infants who are infected in the first half of pregnancy may present with signs of HIV infection as early as the first few weeks after delivery.
2. Infants that are infected during labour and delivery, or via breast milk, usually present much later and have a more slowly progressing illness. Signs of HIV infection usually present between six months and five years.

The earlier the infection with HIV the sooner the clinical signs of symptomatic HIV infection appear. The onset of symptomatic HIV infection can be delayed by antiretroviral treatment.

4-10 At what age do HIV-infected infants die of AIDS?

Without treatment with antiretroviral drugs, infants who present with AIDS soon after delivery usually die within the first three months of life. Most infants who present with AIDS in the first three months after birth are dead by six months of age without treatment while infants who present with AIDS after three months may survive beyond five years. The earlier the infection with HIV, the sooner AIDS develops and the worse the prognosis.

PREVENTING HIV INFECTION IN NEWBORN INFANTS

4-11 Can antiretroviral drugs be given to the infant after delivery to reduce the risk of HIV transmission?

Yes. If the mother is HIV positive, the infant should be given antiretroviral prophylaxis after delivery. This is most effective in reducing the risk of HIV transmission if the mother has been given antiretroviral prophylaxis during pregnancy and labour (AZT from 14 weeks plus a single dose nevirapine early in labour).

All HIV-exposed infants, whether the mother has received antiretroviral treatment, antiretroviral prophylaxis or no antiretrovirals at all, should be given an oral dose of nevirapine after birth followed by a daily dose of nevirapine to the age of six weeks. The dose of nevirapine is 15 mg for infants weighing 2500 g or more, and 10 mg for infants weighing less than 2500 g.

Daily nevirapine can be stopped when the infant is six weeks old if the mother is on antiretroviral treatment or if the infant has been exclusively formula fed since birth, or if infant is HIV infected and starting antiretroviral treatment. In breastfed infants of mothers who are not on antiretroviral treatment, prophylactic nevirapine should be continued until after the last feed of breast milk.

NOTE For a number of years HIV-exposed infants in South Africa were given a single dose of nevirapine after delivery followed by a daily dose of AZT for seven days. The dose of AZT syrup was 1.2 ml (12 mg) 12-hourly for infants weighing 2000 g or more, and 0.4 ml/kg (4 mg/kg) 12-hourly for infants under 2000 g. This was a very successful regimen.

All HIV-exposed infants should be given a daily dose of nevirapine for six weeks after delivery.

4-12 Can antiretroviral drugs given to the infant reduce the risk of vertical transmission?

Yes. Giving antiretroviral drugs, such as daily nevirapine for six weeks, to the infant after delivery may reduce the risk of HIV transmission from mother to infant during labour and delivery (post-exposure prophylaxis) even if the mother had not been given antiretroviral prophylaxis. However, every effort must be made to give the correct antiretroviral prophylaxis to both mother and infant. If the mother has not been treated, the dose of nevirapine to the infant must be given as soon as possible after delivery, preferably within one hour.

If a rapid test is used to detect HIV-positive women during or immediately after labour, the use of antiretroviral therapy in the infant can still reduce the risk of vertical transmission.

HIV TRANSMISSION IN BREAST MILK

4-13 What is the risk of HIV transmission from breastfeeding?

Most studies show that non-exclusive (mixed) breastfeeding for up to two years increases the risk of HIV transmission by an additional 15% if antiretroviral prophylaxis is not given to the infant. Therefore, if an HIV-positive woman breastfeeds and gives other liquids or solid food (mixed breastfeeding) for a prolonged period, the overall risk of vertical transmission without antiretroviral prophylaxis increases from 20% to 35%. The longer the mother breastfeeds, the greater is the risk of HIV transmission. The risk of HIV transmission with mixed breastfeeding is 5% in the first six months, a further 5% in the second six months and then another 5% in the second year. These estimates all refer to mixed breastfeeding, i.e. breastfeeding plus other foods such as formula, cereal, cows' milk and water.

Prolonged mixed breastfeeding adds 15% to the risk of vertical transmission of HIV if prophylaxis is not given.

The risk of HIV transmission with exclusive breastfeeding appears to be much less than the risk with mixed feeding, especially in the first few months after delivery. Therefore, all breastfeeding mothers should be urged to breastfeed exclusively.

Studies of exclusive breastfeeding suggest that the HIV transmission rate in the first three months is very low. The risk with prolonged exclusive breastfeeding remains uncertain.

The HIV transmission rate is lower with exclusive breastfeeding than with mixed breastfeeding.

NOTE The reason why mixed feeding, with both breast milk and formula or solids, increases the risk of HIV infection might be because formula and solids can cause mild bowel inflammation. This may allow HIV in breast milk to pass into the bloodstream.

4-14 When can HIV be transmitted in breast milk?

HIV is present in breast milk. Therefore, infants can be infected with HIV at any time while they are still breastfed or receive expressed breast milk. Some infants may be infected by breast milk many months after delivery.

4-15 Can an infant be infected with HIV from another woman's breast milk?

Yes. An infant born to an HIV-negative mother may become infected with HIV if the infant receives breast milk from an HIV-positive woman. Breastfeeding another woman's infant, or using breast milk from anyone other than the infant's mother, is dangerous.

Pasteurised breast milk donated from HIV-negative women can be safely used under strict control in newborn-care nurseries.

4-16 What factors may increase the risk of HIV transmission by breast milk?

- If the mother becomes infected with HIV while she is still breastfeeding, the risk of HIV transmission to the infant is as high as 50%. Therefore, breastfeeding women who are HIV negative should not have unprotected sexual intercourse.
- The risk is also increased in women who have a low CD4 count or clinical signs of AIDS.
- Cracked or bleeding nipples and mastitis or breast abscess increase the risk of transmission. Good breast care is, therefore, important for HIV-positive women who breastfeed.
- Sores in the infant's mouth, such as oral thrush, may increase the risk of HIV infection. HIV mothers should take their infants to a clinic for treatment if they notice oral thrush.
- Mixed feeding, with breast milk plus formula feeds or solids, increases the risk of HIV transmission.

Good breast care and breastfeeding management are important to reduce the risk of HIV transmission.

NOTE Inflammation or infection of the breast increases the viral load of HIV in the milk.

BREASTFEEDING HIV-EXPOSED INFANTS

4-17 Should all HIV-positive mothers breastfeed?

There are both dangers and advantages to HIV-positive women breastfeeding. The great danger of mixed breastfeeding is the additional 15% risk of HIV transmission to the infant. However, the advantages of breastfeeding are the lower risk of gastroenteritis and undernutrition, especially in poor communities. Therefore, many HIV-

positive mothers from poor communities should be advised to exclusively breastfeed their infants. The final choice must be the mother's. She should be helped to make an informed decision.

Women should be advised to breastfeed unless the risk of HIV transmission in breast milk is greater than the dangers of formula feeding. If mothers choose to breastfeed, they should exclusively breastfeed.

A recent study from Botswana showed that the overall mortality in HIV-exposed infants from poor communities is similar when women who breastfed were compared to women who formula fed. More breastfed infants died of AIDS while more formula fed infants died of other infections.

Women should be advised to exclusively breastfeed if the risk of HIV transmission via breast milk is less than the dangers of malnutrition and other infections with formula feeding.

4-18 What breastfeeding information should be given to HIV-positive women?

The choice of infant feeding in an HIV-positive mother usually depends on her socio-economic circumstances.

- If a woman is given free milk formula (milk powder) or can afford to buy milk formula, and has access to a safe water supply, she should probably formula feed and not breastfeed. Many women who live in towns can safely formula feed their infants.
- However, women who do not have access to clean water or who cannot afford to buy formula should probably breastfeed. Most poor women living in rural areas should, therefore, breastfeed.

The WHO suggests that women should only formula feed if all the following are present:

1. Formula is available and affordable.
2. There is access to clean water.
3. The mother is able to clean bottles and teats, or cups, safely.

4. The mother can mix formula correctly.
5. There is good primary care at local clinics.

HIV-positive women should exclusively breastfeed unless they can access milk formula and clean water.

The decision to breastfeed or not may, therefore, differ from one woman to the next. Rather than being offered advice about the method of infant feeding, women should be given information so that they can make the best choice. Exclusive breastfeeding should probably still be encouraged in communities with a high infant mortality rate due to malnutrition and infections such as gastroenteritis and pneumonia.

4-19 How should women feed their infants if their HIV status is unknown?

Many mothers do not know whether they are HIV positive or negative. If the HIV status of a woman is not known, she should be encouraged to breastfeed. All women who breastfeed should exclusively breastfeed.

4-20 For how long should HIV-positive mothers breastfeed?

The longer an HIV-positive mother breastfeeds, the greater the risk of HIV transmission to her infant. Therefore, HIV-positive mothers who choose to breastfeed, and who are not receiving antiretroviral prophylaxis or antiretroviral therapy, should stop breastfeeding at six months. They should *only* continue breastfeeding beyond six months if they are unable to afford other protein-rich foods.

- From six to 12 months, the risk of HIV transmission with mixed breastfeeding is 5% if antiretroviral prophylaxis or treatment is not given. After six months, the danger of HIV transmission is usually less than the danger of malnutrition and gastroenteritis for infants in poor rural areas. Therefore, women in poor rural

areas may continue breastfeeding well beyond six months even though solids are introduced into the infant's diet.

- As mixed feeding is more dangerous than exclusive breastfeeding, it may be important for women to wean from breastfeeding within a month of starting the infant on solids.
- If women are receiving antiretroviral treatment or prophylaxis, it may be safe for them to breastfeed.

4-21 How can feeding breast milk be made safer for an HIV-exposed infant?

Heat treatment of breast milk by boiling or pasteurisation kills HIV but also reduces the level of anti-infective properties, especially white cells. Home pasteurisation can be done as follows:

- Boil 450 ml water in a pot.
- Remove the pot from the heat when the water starts to boil.
- Place a glass jar, containing 50 to 150 ml expressed milk, into the hot water and allow to stand for 15 minutes.

Pouring boiling water from a kettle around the jar of milk standing in an empty pot can also be used. This method is particularly useful when caring for HIV-exposed preterm infants in hospital. Commercial pasteurisers are available but are very expensive.

4-22 How can feeding formula milk be made safer for any infant?

Cup feeding with formula milk is safer than bottle feeding as a cup is easier to clean with soap and water. After washing well, allow the empty cup to stand and dry. A feeding cup, which can be used to measure water, mix formula and give a feed, is now commercially available. Cup feeding can also be used to give expressed breast milk to preterm infants who are not able to breastfeed yet.

It is easier and safer to clean a cup than a bottle.

All hospitals should use cups rather than bottles to formula feed infants.

NOTE Specially designed feeding cups can be obtained from Sinapi Biomedical (chrisd@sinapi.co.za or 021 887 5260).

4-23 Should HIV-negative women breastfeed?

Yes. It is very important that all HIV-negative women be encouraged to breastfeed for as long as possible. Formula feeding in these mothers has many disadvantages, especially in poor communities where infection and undernutrition are common. All breastfeeding women should practise safer sex.

HIV-negative women should breastfeed their infants.

The many advantages of breastfeeding, especially exclusive breastfeeding, include:

- Breast milk provides infants with a balanced diet that meets all their nutritional needs.
- Breastfeeding reduces the risk of infections, especially gastroenteritis.
- It is cheap.
- Exclusive breastfeeding reduces the risk of becoming pregnant again soon after the delivery of the infant.
- It promotes bonding between mother and infant.
- It is usually socially and culturally acceptable.

4-24 When should women decide on the method of feeding their infants?

Whenever possible this decision should be made before or during pregnancy and not after delivery. This allows the woman time to consider all the advantages and disadvantages of breastfeeding. There is also time for counselling HIV-positive women.

The final decision must be made by the mother herself once she has been advised and she has discussed the options with family or friends.

The medical and nursing staff must support the mother in whatever feeding methods she decides is best for her and her infant.

FORMULA FEEDING HIV-EXPOSED INFANTS

4-25 What advice should be given to a mother who decides to use milk formula?

- She must be sure that she can afford to buy adequate amounts of milk formula, and that she will have regular access to milk formula.
- She must have access to a source of safe, clean water. Fuel (such as wood or paraffin) or electricity is needed to boil water to sterilise bottles.
- She must be taught to mix the milk powder correctly and not to make the milk too weak or too strong.
- She should use a cup, rather than a bottle and teat, to feed her infant as a cup is easier to clean, especially if facilities to sterilise bottles and teats are not available.
- If bottles and teats are used, they should be cleaned and sterilised before each feed.
- She should wash her hands with soap and water before preparing a feed.
- She should exclusively formula feed and not give a few breastfeeds as well.

If a woman chooses not to breastfeed, it is important that she is taught to formula feed safely.

4-26 Why may an HIV-positive mother decide to breastfeed even if she can afford milk formula?

- It may be traditional in that family or society to breastfeed.
- She may be afraid that the community will realise that she is HIV positive if she formula feeds.
- She may decide that the advantages of breastfeeding are greater than the dangers.

4-27 What can be done to help poor HIV-positive women obtain milk formula?

Sometimes poor women in urban areas meet the criteria for safe formula feeding but cannot afford to buy formula. For these women:

- The state could provide them with free milk formula.
- The state could subsidise milk formula and, thereby, lower the price.
- The milk industry could lower the selling price of milk formula.

It is unlikely that the state could provide free milk formula to all infants born to HIV-positive mothers in rural areas. Formula feeding for the first six months requires at least 40 x 500 g tins of milk, which is very expensive.

Providing free formula for HIV-exposed infants born in towns and cities may be a disadvantage if mothers are planning to take their infants back to rural areas soon after delivery. This could be disastrous for these infants if their mothers lose their breast milk and do not have access to free or affordable formula once they leave town. Equally dangerous is the practice of mix feeding in town so that they will be able to breastfeed when they return to the rural areas where free milk is often not available.

4-28 How could the state control the distribution of free or cheap milk formula to infants of HIV-positive women?

This problem does not have a simple answer. Formula milk could be dispensed by primary-care clinics and hospitals. If possible, milk should not be dispensed by those clinics where breastfeeding is promoted as this gives a confusing message to mothers. Every effort must be made to discourage the distribution of free milk formula to HIV-negative women or women who do not know their HIV status. Breastfeeding must be promoted in these women. In order to receive free milk formula the mother will need a letter from the clinic or hospital stating that she is HIV positive. A patient-carried record card would be useful

to document the dates and amounts of milk dispensed.

4-29 How could the price of milk formula be reduced?

- Milk formula could be distributed in sachets (plastic bags) rather than metal cans.
- The state could contract with the private milk companies to produce a national milk formula. This would be a formula suitable for term infants. No company name or advertising would be allowed. As large amounts of national milk formula would be produced, the cost of each sachet would drop.

4-30 What would be the advantage of a national milk formula?

More HIV-positive women would be able to receive free or cheap milk formula. This would reduce the number of infants infected with HIV via breast milk. An additional advantage would be that cheap milk formula would also be available for undernourished infants and older infants at risk of undernutrition. An increased production of milk formula in the country would also benefit the dairy industry. This would be a great help to small farmers.

4-31 What would be the danger of a national milk formula?

Women who are HIV negative would be tempted to buy cheap milk formula rather than breastfeed. Their infants would then miss all the advantages of breastfeeding. To avoid this, every effort must be made to educate women about infant feeding and persuade HIV-negative women to breastfeed.

Breastfeeding must be protected and promoted in HIV-negative women.

4-32 How could the dangers of cheap milk formula be reduced?

By screening all pregnant women for HIV and advising all HIV-negative women to breastfeed their infants.

CARE OF HIV-EXPOSED INFANTS

4-33 Should all HIV-exposed infants be followed up after delivery?

Yes, as these infants must be correctly managed. It is very important that they are not lost to the health services after delivery.

4-34 How should infants born to HIV-positive mothers be followed up?

They should be followed routinely at the local mother-and-baby clinic for the first six weeks after delivery. During this time mothers must be encouraged to give their infants daily prophylactic nevirapine.

A PCR test should then be done at six weeks after delivery on all HIV-exposed infants:

- If the PCR test is positive the infant has been infected with HIV.
- If the test is negative and the mother has never breastfed or given breast milk, the infant is not infected
- If the test is negative but the mother has breastfed or given breast milk, the infant should be follow up and the test repeated six weeks after the last feed of breast milk. This is to assess whether the infant might have been infected late with HIV via breast milk.

It is cost-effective to use PCR testing as infants who are not HIV infected can receive routine infant care only. Infants with a positive PCR test are infected with HIV and need special follow-up care.

NOTE If PCR testing is not available a rapid screening test for HIV should be done at 18 months on infants born to HIV-positive women.

If the test is negative, then the mother can be reassured that her infant is not infected, provided that she is no longer breastfeeding. If the test is positive, then the infant is infected. Many infants who are born to an HIV-positive woman, but are not infected themselves, will already have a negative HIV test at nine months. Therefore, a screening HIV test at nine months is useful in excluding HIV infection in many infants.

HIV INFECTION IN INFANTS

4-35 What is the management of infants infected with HIV?

- The mother must be counselled and informed about the diagnosis and management.
- Give routine immunisations.
- Look for early signs of HIV infection.
- Ensure that the infant is well nourished.
- Monitor growth on a Road-to-Health chart.
- Provide multivitamin or vitamin A supplements.
- Start co-trimoxazole prophylaxis.
- Start antiretroviral treatment for life.

All infants under one year of age with HIV infection must be started on antiretroviral treatment as the risk of symptomatic HIV and death is high in infants infected before, during or soon after delivery.

All infants under one year of age with HIV infection must be started on antiretroviral treatment.

4-36 What immunisation can be given safely to HIV-positive infants?

Infants born to HIV-positive women should receive all the routine immunisations.

It is important to immunise HIV-infected infants against these important infections, while they are still well. However infants with clinical signs of symptomatic HIV infection must not be given live vaccines (BCG, polio,

measles, mumps and rubella). They can safely be given killed vaccines (DPT, Haemophilus and Hepatitis B).

Routine immunisations should be given to HIV-positive infants if they have no clinical signs of HIV infection.

NOTE In countries where TB is uncommon, BCG immunisation is not given to HIV-exposed infants until it is shown by PCR testing that the infant is not infected with HIV. Only then is the BCG given as there is a risk developing local or generalised BCG disease in HIV-infected infants.

4-37 Why should co-trimoxazole prophylaxis be given to HIV-infected infants?

Prophylaxis against Pneumocystis infection and other bacterial infections should be given to all HIV-infected infants. Usually treatment is started at six weeks of age with co-trimoxazole syrup. Prophylaxis should be stopped if the PCR test is negative. Prophylaxis can usually be stopped at one year of age in infants on antiretroviral treatment. Co-trimoxazole (Septran, Bactrim, Purbac) syrup is started as a 2.5 ml dose every day. Adverse effects to co-trimoxazole are uncommon in young children. However, the drug should be stopped immediately if the child develops a generalised rash.

Prophylaxis against tuberculosis is usually not given routinely.

4-38 What is the importance of vitamin A supplements in infants with HIV infection?

In undernourished communities mothers may be deficient in vitamin A during pregnancy. As a result young infants may also be vitamin A deficient. A lack of vitamin A reduces the function of the immune system. Therefore, giving supplements of vitamin A to HIV-infected infants may reduce the risk of opportunistic infections and may slow the progress to AIDS. It is recommended that all

HIV-infected infants receive 50 000 units of oral vitamin A at six weeks.

4-39 What are the presenting signs of HIV infection in a young infant?

- Failure to thrive with poor weight gain or with weight loss
- Severe or persistent oral thrush
- Generalised lymphadenopathy
- Hepatomegaly and splenomegaly
- Chronic, watery diarrhoea
- Infections
- Severe eczema or itchy papules

4-40 What infections are commonly seen in children with HIV infection?

- Gastroenteritis
- Severe bacterial infections such as pneumonia, meningitis, septicaemia, arthritis, osteitis or abscesses
- Recurrent, mild bacterial infections such as otitis media
- Severe herpes simplex infection
- Tuberculosis
- Severe chickenpox or measles
- Unusual infections often associated with AIDS, such as those caused by *Pneumocystis*. These are known as opportunistic infections. *Pneumocystis* usually presents as a severe pneumonia.

4-41 How is the clinical diagnosis of HIV infection confirmed?

1. A positive PCR or ultrasensitive p24 antigen test in infants less than 18 months
2. A positive HIV screening test in infants over the age of 18 months

4-42 Who should care for an infant who is infected with HIV?

If possible they should be followed up regularly by a local primary-care clinic. However seriously ill infants may need to be referred to a special HIV clinic or to a hospital. All children with clinical signs of HIV infection who are not on antiretroviral treatment should be urgently

referred as they need to start treatment. The aim is to identify those untreated HIV-infected infants before they have a damaged immune system and become seriously ill. It is important that there is good communication between the primary-care clinics and the HIV clinics in each health district.

First-line antiretroviral treatment in young infants is given with ABC (abacavir), 3TC and lopinavir/ritonavir.

4-43 What is an AIDS orphan?

One of the major tragedies of the HIV epidemic is that thousands of children are abandoned as orphans when their mothers die of AIDS. Many of these infants are not infected with HIV and yet are at risk of dying from malnutrition and neglect. Many HIV-infected mothers will die before their children are teenagers. It is the responsibility of families, the community and the state to care for these children. Often the child is cared for by a grandmother. Every effort must be made to keep AIDS orphans in their original community. This will require state subsidies and pensions.

If mothers are provided with antiretroviral treatment, many AIDS orphans can be prevented. Many of the infants who have lost their mother but are not orphaned, are not well cared for by the extended family who may already be caring for other infants whose mothers have died of AIDS. There are already thousands of orphaned infants in South Africa.

CASE STUDY 1

An 18-year-old primigravida woman with promiscuous sexual behaviour delivers an infant at term. She books at 38 weeks. An HIV test is requested and is found to be positive. Unfortunately, she and her infant are not given nevirapine. She is not counselled about the choice of infant feeding and she breastfeeds and gives porridge. When the infant attends a well baby clinic at three months a PCR test is

done and found to be positive. Although the infant is clinically well, the mother is told that her infant will develop AIDS.

1. Why is this woman at high risk for HIV infection?

Because of her promiscuous lifestyle. Promiscuity of a woman or her sexual partner places her at high risk of HIV infection.

2. What is the risk of vertical transmission of HIV in this woman?

About 35% as she is using mixed breastfeeding and has not received antiretroviral prophylaxis. The risk of vertical transmission is about 20% up to the time of delivery and then an additional 15% with prolonged mixed breastfeeding.

3. Should the infant have had a PCR test sooner than three months?

If the mother is HIV positive, the infant should have a PCR test at six weeks. The sooner the diagnosis of HIV infection is made in the infant the better.

4. What counselling should she have been given about the method of feeding her infant?

She should have been warned about the dangers of HIV transmission in her breast milk, especially with mixed feeding. The health risks of bottle feeding should also have been discussed. Then she should have been asked which method of feeding she was going to choose. This woman may have decided not to breastfeed if she had received antenatal counselling.

5. How do you think this mother should feed her infant?

If she can afford to buy or obtain free milk formula and safely prepare formula feeds, she should probably stop breastfeeding. If she cannot access formula, she should exclusively breastfeed to six months. The longer she gives

mixed breastfeeds, the greater the risk that her infant will become infected with HIV.

6. What are the advantages of cup feeding?

If the mother is unable to clean bottles and teats safely, it is better to use cup feeding. A cup is easy to clean with soap and water.

7. Will this infant develop AIDS?

Not if the infant is correctly followed up and managed. The use of early antiretroviral treatment should prevent this infant becoming seriously ill with AIDS. The mother's HIV infection should also be correctly managed and her syphilis must be treated.

CASE STUDY 2

An infant with clubbed feet is born to a woman with HIV infection. She received zidovudine (AZT) from 14 weeks of pregnancy and was given nevirapine during labour. No HIV prophylaxis is given to the infant. She decides to exclusively bottle feed her infant. Both polio and BCG immunisation is given to the infant after delivery.

1. Does maternal HIV infection cause clubbed feet?

No. HIV infection during pregnancy does not cause congenital abnormalities. Most HIV-infected infants appear healthy and normal at birth.

2. Is this infant at risk of vertical transmission of HIV?

Yes. All infants born to HIV-positive women are at risk of being infected with HIV. However, receiving AZT from 14 weeks, together with nevirapine in labour, should halve the infant's risk of HIV infection. The risk would have been lower if her infant had been correctly managed.

3. What management should the infant have been given?

The infant should have received nevirapine daily for six weeks after delivery.

4. Is this infant at risk of becoming infected with HIV during the first few months of life?

No. Because the mother is not breastfeeding, the infant is not at risk of HIV infection after delivery. A transfusion of HIV-contaminated blood is the only way this infant is likely to be infected. In South Africa all donor blood is screened for HIV.

5. Should this infant have received polio and BCG immunisation after birth?

Yes. Polio and BCG immunisation is routinely given to all infants in South Africa.

CASE STUDY 3

A healthy male infant is born to an HIV-positive woman. She breastfeeds as she cannot afford to bottle feed. At two months she brings her son to the clinic for the first time since delivery. The infant has not gained weight and has severe oral thrush and loose stools. On examination, generalised lymphadenopathy is noted as well as an enlarged liver and spleen.

1. What diagnosis would you suspect with the history of failure to thrive and oral thrush?

Severe thrush in an HIV-negative infant may result in poor weight gain as the infant finds sucking very painful. However, the combination of thrush, poor weight gain and loose stools in an infant born to an HIV-positive woman suggests very strongly that this infant has developed symptomatic HIV infection.

2. Would the clinical signs on examination support this diagnosis?

Yes. Generalised lymphadenopathy, hepatomegaly and splenomegaly all suggest that the diagnosis of AIDS is correct.

3. What blood tests could be used to confirm this diagnosis?

A positive PCR test would confirm the diagnosis of HIV infection.

4. If this infant developed signs of pneumonia, what additional diagnosis would you suspect?

The infant would probably have a bacterial pneumonia, *Pneumocystis pneumonia* or tuberculosis.

5. How can *Pneumocystis pneumonia* be prevented?

By starting co-trimoxazole prophylaxis at six weeks.

CASE STUDY 4

A preterm infant is born to an undernourished woman who was found to be HIV positive when screened at booking. She did not receive prophylactic zidovudine (AZT) during pregnancy and neither mother, or infant received nevirapine prophylaxis. The infant was given expressed breast milk by nasogastric tube for two weeks. Now the infant takes the breast well.

1. Why is this infant at an increased risk of HIV infection before delivery?

Because the infant is born preterm and the mother did not receive AZT prophylaxis. She and her infant should have been given nevirapine. Her undernourished state could also be a sign of AIDS. This would suggest that she has a high viral load.

2. Do you agree with the choice of feeding method?

If possible, this woman should not breastfeed. However, if she cannot afford to buy milk formula, and if she cannot be provided with free formula, then she should exclusively breastfeed. She should, however, not breastfeed beyond six months.

3. How should this mother and infant be managed?

Both mother and infant need to be assessed for antiretroviral treatment.

4. What is the danger of supplying free milk formula?

Women who are HIV negative may be tempted to stop breastfeeding and use free

milk formula. It is very important that all HIV-negative women be advised and assisted to breastfeed. Free or cheap milk formula should only be supplied to HIV-positive mothers. The offer of free milk will result in few women breastfeeding, even if they plan to move soon to a rural area where free milk is not available.

5. What management should the mother receive?

She should be investigated for symptomatic HIV infection and assessed for antiretroviral treatment. This will prolong her life and may prevent her young infant becoming an AIDS orphan.

5

HIV and counselling

Before you begin this unit, please take the corresponding test at the end of the book to assess your knowledge of the subject matter. You should redo the test after you've worked through the unit, to evaluate what you have learned.

Objectives

When you have completed this unit you should be able to:

- Explain the meaning of counselling.
- List the characteristics of a good counsellor.
- List the key principles and process of counselling.
- Provide counselling before and after an HIV screening test.
- Explain the advantages and disadvantages of taking an HIV test.
- Describe the possible reactions of a woman to a positive HIV test.
- Describe the legal rights of an HIV-positive woman.
- Counsel an HIV-positive woman who plans a pregnancy.
- Promote safer sex practices.

INTRODUCTION TO COUNSELLING

5-1 What is counselling?

Counselling is a process by which a counsellor helps other people manage difficult situations in their lives so that they are able to find realistic ways to solve their problems. Counselling helps people to make their own choices rather than simply giving them advice or telling them what to do. Counselling empowers people to act on their choices and decisions, and provides them with an opportunity for personal growth and self-discovery.

Counselling is not simply about giving advice and instructions but rather about empowering people to solve their own problems.

5-2 What is a counsellor?

A counsellor is a person who helps people manage their own lives as effectively as possible. A counsellor is not someone who has all the answers and can solve other people's problems for them. Rather, a counsellor helps people make their own decisions in order to take the best course of action in solving their

problems. It is important that the counsellor explains his/her role when a person is first given counselling.

5-3 What is the role of a counsellor?

The role of a counsellor is to:

- Be a good listener.
- Ask appropriate questions.
- Summarise what the person has said.
- Provide relevant information.
- Give emotional support.
- Help facilitate decision making.

5-4 What is the difference between counselling and education?

Although counselling includes the provision of information, it is much more than education alone. Counselling also provides emotional support and helps people to understand themselves and their problems. It also helps people to make their own decisions and to plan their future actions. Counselling always respects and maintains a person's confidentiality. Counselling requires active listening.

5-5 What is active listening?

Active listening includes hearing not only the words people say but also noting their body language and listening for the meaning behind their words. In order to understand what a person is saying and to respond appropriately the counsellor must become skilled in listening to people.

A good listener should:

- Stop talking. You cannot listen if you keep talking.
- Put the person at ease so that they can feel free to talk.
- Remove distractions. Close the door. Do not fiddle with notes or tap your pencil.
- Empathise. Try to put yourself in their place so that you can see the problem from their point of view.
- Be patient.
- Keep one's temper.
- Not argue or be critical.

Active listening is the key to effective counselling.

5-6 Who are counsellors?

A nurse, social worker, doctor or lay person can be a counsellor. A counsellor **should have** received training in counselling and be able to keep personal information confidential. The training of enough lay counsellors is one of the major challenges facing countries with high HIV rates.

5-7 What are the characteristics of a good counsellor?

A good counsellor should:

- Be a good listener and good communicator.
- Be respectful of the other person's feelings and point of view.
- Be kind, caring and understanding.
- Be non-judgemental (does not judge what is right or wrong).
- Be trustworthy and respectful of people's confidentiality.
- Be relaxed and calm.
- Be warm and approachable.

A counsellor should communicate confidence in a person's ability to make a good decision and to be able to cope.

5-8 What are the requirements of counselling?

- Sufficient time to reach out to the person and win their trust and confidence
- Accepting the person for who they are without judgement or prejudice
- Providing consistent and accurate information
- A place to speak privately
- Respect for confidentiality

5-9 What are some common errors in counselling?

Common errors counsellors make include:

- Talking more than listening
- Concentrating on facts not feelings
- Not accepting the other person's feelings or point of view
- Being judgemental
- Asking too many questions
- Avoiding silences
- Telling the other person what to do or how to feel
- Treating the other person like a child
- Assuming that they know what is best for the other person
- Giving their own opinions
- Using words and terms that the other person does not understand
- Allowing their own feelings to interfere in counselling
- Giving advice all the time
- Offering solutions before the problem has been explored
- Being impatient

A counsellor should do more listening than talking.

5-10 What are the key principles in counselling?

1. Allowing people to make their own decisions

People must make decisions for themselves. The counsellor's role is to facilitate this and not to make decisions for them. This is called client-centred decision making.

2. Empowering people

People should be encouraged to believe in themselves and their abilities. Counselling should help people to take control over their lives and set goals for the future.

5-11 What steps does a counsellor follow in providing counselling?

1. Exploring the problem

The counsellor should help people to:

- Define the actual problem
- Express their feelings

The counsellor can do this by listening actively, by asking appropriate open-ended questions (i.e. any answer is acceptable) and by allowing people to share their feelings.

2. Understanding the problem

The counsellor should help people to:

- Gain a clearer understanding of the problem
- Consider the options to solve the problem and decide on which one to follow

The counsellor can do this by explaining appropriate options and by encouraging people to look at the consequences of each option.

3. Taking action

The counsellor should help people to:

- Decide what steps to take to implement their decisions
- Overcome difficulties they may experience in taking action to solve the problem

Counselling should encourage people to believe in themselves and their abilities to make good decisions for themselves.

HIV COUNSELLING

5-12 What is HIV counselling?

HIV or AIDS counselling provides information and support to people with HIV infection to enable them to cope with their diagnosis and illness. It also helps them make the appropriate behaviour changes. Counselling helps people live positively and productively.

5-13 What are the goals of HIV counselling?

The main goals of HIV counselling are to:

1. Provide information
2. Provide emotional and psychosocial support
3. Give hope

4. Help people to improve the quality of their lives

5-14 What kind of information should be provided in HIV counselling?

The following should be discussed:

- The difference between asymptomatic HIV infection and symptomatic HIV infection (e.g. AIDS)
- The ways in which HIV can and cannot be transmitted
- Sexual behaviours which may transmit HIV
- Safer sexual practices that reduce the risk of becoming infected with HIV
- The increased risk of becoming infected with HIV if the person has another sexually transmitted disease
- The link between HIV and tuberculosis
- The HIV screening test
- The risk of HIV infection in pregnancy and breastfeeding
- The effectiveness of antiretroviral prophylaxis and treatment

It is very helpful to give the person a pamphlet which explains these important points so that they can be read about at home.

5-15 How can HIV counselling help a pregnant woman?

HIV counselling helps a pregnant woman by providing emotional support as well as appropriate information so that she can make decisions and then act on these. Women may need help with the following issues:

- Whether to have the HIV screening test
- Options for practising safer sex
- Coming to terms with being HIV positive
- The risks of being HIV positive and pregnant
- Breastfeeding and the risk of HIV transmission to the infant
- How to tell her sexual partner of her HIV status

5-16 Which pregnant women need HIV counselling?

- Women who are offered antenatal HIV testing (screening)
- Women who are worried that they may be infected with HIV
- Women who are concerned that they may transmit HIV to others, including their infants
- Women who are HIV positive or have AIDS

All pregnant women in South Africa should be given HIV counselling when they first book for antenatal care.

5-17 Do women have a choice as to whether or not they are tested for HIV?

Yes. HIV testing (screening) may be offered to a woman but it is her choice as to whether she is tested or not. Women must never be forced to be tested. A decision to be tested should be an informed one which means that a woman should get counselling before the test is done. Her written consent must be obtained before the HIV test is done.

The decision to take an HIV test should always be the woman's own choice.

All pregnant women should be given provider-initiated HIV counselling. HIV testing is done routinely unless the woman asks not to be tested. This practice of 'opt out' testing increases the number of women who agree to be screened for HIV. This makes HIV screening similar to that for other infections such as syphilis.

5-18 What counselling is needed when a pregnant woman is tested for HIV?

The implications of having an HIV test are potentially devastating. A woman should be counselled before the test is done and again when the results are given to her. Women who are HIV positive usually need further counselling as they face the life-changing

implications of a positive test. Knowing that she is HIV positive may change her relationship with her present partner, and with any future partners. Good counselling is essential if an HIV screening programme is to be successful and accepted by the public.

COUNSELLING FOR ANTENATAL HIV SCREENING

5-19 What counselling is needed before HIV screening?

The importance of pre-test counselling cannot be underestimated. This is where the woman is most likely to absorb information and identify the people who will help her cope with the test result. The following topics should be discussed:

- Information about HIV infection and AIDS
- Why the HIV screening test is being offered
- The advantages and disadvantages of taking an HIV test
- The meaning of a positive and a negative result
- The woman's own risk factors for becoming infected with HIV
- Who she will tell if she is HIV positive
- What support systems she has, as well as who will support her emotionally, financially, socially and spiritually
- Safer sexual practices
- The procedure for taking the blood sample and giving the results
- How long she will have to wait for the results
- The confidentiality of the result

The counsellor should provide an opportunity for the woman to ask questions. Ideally pre-test counselling should be provided on an individual basis. However, due to staff shortages, a pre-test information session, rather than individual counselling, may have to be given to small groups of women.

An information session should always be provided before a person takes the HIV test.

5-20 What are the advantages of taking an HIV test?

- It may relieve the woman's anxiety and uncertainty about being infected with HIV.
- It could help motivate women with high-risk sexual behaviours to change these behaviours.
- It allows for planning in the pregnancy. For example, if a pregnant woman is found to be HIV positive she can make informed decisions about termination of pregnancy.
- It allows for better management of her pregnancy and delivery if she is found to be HIV positive. Antiretroviral prophylaxis greatly reduces the risk of the infant being infected with HIV.
- The woman can be encouraged to practise a healthier lifestyle.
- It will allow earlier diagnosis and treatment of HIV infection in both mother and infant.

5-21 What are the disadvantages of taking an HIV test?

If the test is positive:

- The woman may experience intense feelings of despair, anxiety, rage, fear, depression and loss.
- The woman may suffer from loss of self-confidence, self-imposed isolation and a sense of loss of control over her life.
- The woman may risk losing her employment with resultant financial difficulties should her employer find out that she is HIV positive. South African law protects women from unfair dismissal.
- The woman may experience difficulties in obtaining medical and dental treatment should she say that she is HIV positive. Refusing healthcare to HIV-positive people in South Africa is illegal.
- The woman may not be able to obtain life insurance or take out a house bond. Again, people cannot be discriminated against because of their HIV status in South Africa.
- The woman has to live with the uncertainty of having to wait and see if and when she will develop signs and symptoms of AIDS.

- The woman may experience problems with relationships (love, family and friends) should she tell them that she is HIV positive.
- The woman may face stigma, discrimination, prejudice, blame and abandonment.

All pregnant women should be offered routine HIV testing.

5-22 How should the HIV test result be given?

The result should always be given in person, privately, gently and sensitively. The counsellor should give the result immediately as social chit-chat only heightens a woman's anxiety. With the rapid test, results should be available on the same day as the test.

5-23 What counselling is needed after a negative HIV result?

Usually the woman is relieved and pleased to hear the result. It is necessary to allow her time to express her feelings. The following topics should be discussed during the counselling session:

- The meaning of a negative result
- The meaning of the 'window period'
- Safer sexual practices for the future

During the window period, which lasts a few weeks after the time of infection, the screening test for HIV may still be negative in spite of the fact that the person is infected with HIV.

5-24 What counselling is needed after a positive HIV result?

Counselling should always be offered at the time that the positive HIV test result is given. The discussion should be private and confidential. The counsellor needs to provide emotional support as well as explain the meaning of a positive test. Often the woman is too shocked and upset to absorb much information. It is vitally important that the

woman is given an opportunity to deal with her feelings. This is not the time to provide too much information or to discuss her prognosis. One session is not enough and the woman should always be offered at least one follow-up session. The following guidelines should be used in post-test counselling sessions:

- Allow the woman time to absorb the news.
- Deal with feelings arising from the result.
- Identify the woman's immediate concerns.
- Identify a support system (family, friend, church).
- Discuss the problem of telling her sexual partner.
- Repeat information provided in pre-test counselling. It is important to clarify the facts.
- Review safer sexual practices.
- Discuss a plan for medical follow-up.
- Give information about any local support organisations.
- Encourage the woman to ask questions.
- Remember the importance of encouraging hope rather than despair.
- Summarise and reflect on the woman's feelings at the end of the counselling session.
- Offer a follow-up counselling appointment.

Information can only be provided once the counsellor has allowed the person time to express their feelings and concerns.

Often one or more counselling sessions are needed after a woman is told that she has HIV infection.

RECEIVING BAD NEWS

5-25 What are common responses on being told that the HIV test is positive?

People may react differently to news of HIV infection. The person's personality, spiritual and cultural values often have a major effect

on how they responds to bad news. The following are some common responses:

1. Shock

Often people are shocked when told that they are HIV positive. At this stage support is what is needed. They may sweat, feel dizzy and even feel that they are going to faint. Many will cry.

2. Denial

Often people go into a state of denial and believe that 'there must be some mistake'. This is a common response and results from feelings of anxiety and helplessness. It is not helpful to attempt to convince the woman at this stage that she should face reality. Rather, encourage her to talk about her feelings and anxieties and provide emotional support. This initial response is common and with effective counselling is usually short-lived. A good counsellor can help a woman to accept the result and begin to develop positive ways to manage her infection.

3. Fear

Most people respond to the news with a feeling of fear and panic. Many people with HIV infection fear abandonment and rejection by friends and family. They may fear pain, suffering, discomfort and dying.

4. A sense of loss

People who are HIV positive usually experience a tremendous sense of loss in their lives. The following are examples of these losses:

- Loss of control
- Loss of future dreams and hopes
- Loss of self esteem
- Loss of physical ability and health
- Loss of loved ones
- Loss of independence
- Loss of sexual relationships
- Loss of other relationships
- Loss of employment and income

5. Guilt

People may experience feelings of guilt over the manner in which they became infected with HIV, as well as guilt over other people they

may have infected. This is particularly common for a woman who has infected her infant.

6. Anger

Some people with HIV infection experience episodes of anger for a variety of reasons:

- Anger that they have become infected
- Anger at the person who has infected them
- Anger because their life may be shortened

7. Depression

The feeling of helplessness and lack of control associated with the many losses experienced may lead to depression and even suicidal thoughts.

8. Anxiety

People with HIV infection have many anxieties:

- Anxiety about their own illness and death
- Anxiety about others finding out about their diagnosis
- Anxiety about being rejected
- Anxiety about family that will be left behind, especially children

These emotional responses are similar to those experienced when hearing about the death of a close friend or family member.

COUNSELLING WOMEN WITH HIV INFECTION

5-26 How can a counsellor help a woman who is HIV positive tell her husband or partner about her infection?

Deciding to tell a partner is very difficult. Many HIV-positive women fear being rejected or abandoned. They are afraid of being blamed for what has happened and fear that their partner will tell others. Not telling a partner presents problems. The couple may then not be able to discuss whether or not to have children. They will also have trouble coping with illness or death. An unaffected partner may become infected after unprotected intercourse. Some suggestions for the counsellor are:

- Explore how the woman feels about telling her sexual partner and what her fears are. Women often have real fears that they will be assaulted or abandoned. A woman's physical safety is of top priority and it should be her choice as to whether to tell her sexual partner or not.
- Discuss her sexual partner's possible reactions.
- Do a roleplay with the woman.
- Offer to see her and her partner together if she chooses.

If the counsellor feels unsure as to how to handle a particular situation she should contact a local resource person, such as a social worker or priest, to obtain help.

5-27 Should a woman with a positive HIV test tell other people about her diagnosis?

The counsellor should help the woman to identify at least one person whom she trusts and who she would be able to turn to for support. She should reflect on the following questions:

- Who do I tell?
- Who would I not tell?
- What might happen if I tell people?
- How will my friends and family respond?

It is important that a woman does not rush into telling people before she has thought through the implications of doing so, such as losing her job or being rejected by people.

Encourage the woman to tell at least one person whom she can trust about her diagnosis so that she can get their support.

5-28 What should a counsellor do if a person with HIV infection asks her how long they have to live?

The counsellor should never attempt to make a prognosis of how long the person has to live, even if this question is asked. Rather encourage the woman to consider that she may have many healthy years ahead of her and to take good

care of herself. Life expectancy and quality of life can be greatly improved with antiretroviral treatment. Always give people hope.

5-29 Is an HIV-positive woman required by law to tell her employer of her HIV status?

No. There is no law requiring an employee (worker) to tell her employer (boss) what her HIV status is. This is her own choice and she should be encouraged to disclose this personal information only if her employer is likely to be fair and sympathetic.

The law does not require an employee to tell her employer of her HIV status.

5-30 What happens if a woman's employer finds out that she is HIV positive?

A person cannot be fired from their job simply because they are HIV positive. This is against the law (the constitution) in South Africa, and applies also to domestic and farm workers. The counsellor should contact the local HIV information centre for advice on how to manage this situation if the person faces dismissal.

5-31 How should an HIV-positive woman be counselled if she wants to fall pregnant?

Questions about pregnancy and HIV are among the most difficult to answer and should be handled with great sensitivity by the counsellor. Do not try to persuade the woman not to fall pregnant or you will drive her away from the health services. The counsellor should do the following:

- Explore why the woman wants to fall pregnant despite the risks involved.
- Explore what the effect would be for the woman if she did fall pregnant.

The counsellor should be able to help the woman make a wise and informed choice. These issues should be discussed in a kind, supportive and non-judgemental way.

5-32 Why may an HIV-positive woman want to fall pregnant?

- In many communities a woman's status depends on her ability to have children.
- She may prefer falling pregnant rather than telling her partner that she is HIV positive because of her fear of rejection, divorce or physical harm.
- Often women are prepared to take a chance because they feel that their infant will not be infected.
- They may want to leave behind a survivor if other children have died of AIDS.

5-33 What are the implications if an HIV-positive woman should fall pregnant?

The HIV-positive woman should consider:

- The possibility of having to care for a sick or dying infant
- What practical and emotional help she has to care for her child
- Who will care for the child if she and her partner die of AIDS
- Feelings of guilt, sadness and regret if her infant is infected with HIV
- Possible effects of pregnancy on her own health
- The risks associated with breastfeeding

With antiretroviral prophylaxis or treatment during pregnancy the risk of transmitting HIV to the fetus can be greatly reduced. The risk should be less than 5%.

SAFER SEX COUNSELLING

5-34 What is safer sex counselling?

Safer sex counselling is not a series of commands to a woman. It is counselling which helps a woman to consider her risk of becoming infected with HIV or of passing HIV on to her partner. She also needs to make an informed choice as to how she will protect herself and her partner from infection.

Safer sex counselling should provide a woman with information and support to enable her to make choices that will protect her and her partner from becoming infected with HIV.

5-35 What options does a woman have to protect herself and her partner from HIV?

- Keeping to one HIV-negative sexual partner who she knows to be faithful.
- Reducing the number of sexual partners she has.
- Using a condom every time she has sexual intercourse.
- Avoiding intercourse if she or her partner has another sexually transmitted disease.
- Getting early treatment for other sexually transmitted diseases.
- Practising non-penetrative sex such as mutual masturbation.

Some sexual practices are safer than others. People are more likely to change their behaviour if they are able to choose which sexual practices they are happy with. Ask the woman to identify the most acceptable option for herself and her partner. Try to promote the idea that safer sex is a sign of caring for each other.

5-36 How does a counsellor promote the use of condoms?

- Discuss whether she has used condoms before and whether she has had good or bad experiences with the use of condoms.
- Discuss how she and her partner feel about using condoms.
- Ask what difficulties she has had in the past in using condoms. Discuss possible solutions to these difficulties.
- Discuss the benefits of using condoms. The risk of pregnancy and sexually transmitted diseases is reduced. The man will not ejaculate as quickly which will give her more pleasure during intercourse.
- Offer to role play in getting her partner to use condoms. This will give her confidence.

5-37 What are the benefits of joining an HIV support group?

A support group provides a person with HIV infection with the opportunity of meeting other people facing similar problems. They can support each other.

SUPPORT FOR HIV COUNSELLORS

5-38 Why may healthcare workers who counsel HIV-positive patients need emotional help themselves?

HIV counselling is extremely stressful work. Therefore, support and mentoring for all counsellors is essential. This helps to prevent burn-out and enables counsellors to continue to be effective. Stress management courses would also be very helpful.

CASE STUDY 1

A woman attends an antenatal clinic and is found to HIV positive. She asks the midwife whether she should continue having sexual relations with her boyfriend. The midwife impatiently tells the woman that she deserves to have AIDS as she has had too many boyfriends. The midwife also lectures the woman on the dangers of being infected with HIV. The woman is very upset and refuses to return for further antenatal care.

1. What was the problem with the midwife's attitude towards the woman?

She was judgemental and impatient, and treated the woman as if she were a child. She also failed to answer the question as to whether the woman should continue to have sexual relations with her boyfriend. The midwife should have listened carefully to her story.

2. Why should a counsellor not lecture a patient?

The goal of counselling is to help people understand their problems in order to decide the best way to resolve them. A counsellor should not tell the person what to do. Counselling is much more than just education.

3. Should the midwife have informed the woman that her infant may become infected with HIV?

The midwife should have provided the woman with the information. However, this should have been done with kindness and understanding. The midwife should have allowed the woman to ask questions and given her simple, honest answers. The woman needs to be told about the importance of antiretroviral prophylaxis.

4. How would you have answered the question about further sexual relations with the boyfriend?

The advantages and disadvantages of continuing the sexual relationship, both for the woman and her boyfriend, should have been explored. The woman would then have been able to make the best decision for herself. It would be important for the boyfriend to be screened for HIV.

5. Should a counsellor ever give advice?

Yes. Good advice may be given by a counsellor. However, this should only be given once the counsellor has listened to the person and explored the problem. Remember that the person being counselled need not necessarily take the advice. The counsellor should respect this decision and support the person even if her advice is refused.

6. Are you surprised that the woman refuses further antenatal care?

No. Her trust in the care of the midwife has been broken. She was not given the support that she needed, and she was treated in an unkind way.

7. What can be done to correct the situation?

A staff member with counselling skills needs to visit the woman at her home. She should provide her with the information and support she needs, and gently persuade her to attend the antenatal clinic again.

CASE STUDY 2

A group of pregnant women are being counselled by a doctor before being tested for HIV. They are instructed that all pregnant women must take the test. As the doctor has a busy clinic ahead, he briefly tells the women that infants can become infected through breastfeeding, and that they should, therefore, not breastfeed if they are HIV positive.

1. Is counselling always necessary before an HIV test?

Yes. It is essential that a woman understands all the advantages and disadvantages of HIV screening before having an HIV test.

2. Should counselling before HIV testing be given to patients as a group?

Whenever possible counselling should be given on a one-to-one basis. However, due to staff shortages, information often has to be given to a small group of women.

3. Does counselling have to be given by a doctor or nurse?

No, lay people can be trained to become very skilled counsellors. A lot of the antenatal counselling in South Africa is given by lay counsellors.

4. Do all pregnant women have to take an HIV test?

No. Women do not have to take an HIV test. HIV screening is voluntary. However, 'opt out' routine HIV testing is provided in South Africa.

5. Why was the pre-test counselling inadequate?

Only the risk to the fetus was mentioned, and no explanation was provided. There are many other important subjects that must be discussed. The doctor was in a hurry and, therefore, there was no time for the women to ask questions. The woman should not have been told that they have to take the test. Information should have been provided so that they could make an informed choice.

CASE STUDY 3

A pregnant woman is told that her HIV test is positive. This is her second pregnancy. She insists that the result must be incorrect. When the midwife assures her that her test is indeed positive, she becomes very distressed and cries. Later she threatens the counsellor. Before she leaves the clinic, she asks whether she should tell her boyfriend the news.

1. Is it common for a person to refuse to accept a positive HIV result?

Yes. Shock and denial are often the first responses to bad news. With time and explanation the result is usually accepted.

2. How can a counsellor help a woman who is very upset after receiving bad news?

By being kind, understanding and supportive. Allow the woman to speak about her fears and anxieties.

3. Why was the woman aggressive towards the counsellor?

Some people respond to bad news with anger and aggression. They are angry that they are infected with HIV, and angry with the person who infected them. They may also be angry with the person who gives them the bad news. Anger usually quickly turns to guilt and depression. A counsellor should not react

negatively to a person who feels angry, but encourage her to talk about her feelings.

4. Should she tell her boyfriend?

She needs to speak to the counsellor about his possible responses and how these will affect her life and that of her child. Women often do not pass on the news as they are afraid of rejection, anger and possibly violence. Each woman has to make her own decision. She should be encouraged to tell one, trusted friend.

CASE STUDY 4

A young woman with a six-month-old infant returns to a clinic for counselling. She was found to be HIV positive when screened during the antenatal period. She told her employer that she was positive, and as a result she lost her job as a waitress. At present she has a new boyfriend and is considering falling pregnant again.

1. Is further counselling needed after delivery in HIV-positive women?

Many HIV-positive women need further counselling as new problems arise.

2. Did her employer have the legal right to dismiss her?

No. An employee cannot be fired from her job simply because she is HIV positive. Contact her local HIV information centre to find out more about what to do regarding this matter.

3. Should she have another child?

Whatever the opinion of the counsellor, the young woman needs to be helped to make the best decision for herself, her child and her boyfriend. She should then be supported in her decision.

4. How can she protect her boyfriend from HIV infection?

Unless he is known to be HIV positive, she and her boyfriend should practise safer sex. If she decides not to fall pregnant again, she should use a condom every time she has sexual intercourse.

Tests

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