

SECTION 1: INTRODUCTION

Guiding principles

As signatories of the UN Convention of the Rights of the Child, health-care providers in South Africa must comply with the following four principles:

- Right to life, survival and development.
- Right to equitable treatment and care.
- Right to participate in activities and decisions that affect them.
- All actions should be based on the best interests of the child.

In managing HIV-positive children and their caregivers, apply the following principles, which are consistent with the practice of palliative care medicine:

- Do not discriminate.
- Be compassionate and show empathy.
- Maintain confidentiality at all times.
- Establish and maintain clear two-way communication between all levels of the health-care system (clinics and hospitals) regarding management of the child.
- Involve all health-care personnel and parents/caregivers in important patient care decisions.
- Pay attention to pain and suffering, and preserve quality of life for as long as possible, particularly in the later stages of the illness.

Principles of medical management

While HIV-infection is still not curable at present, it can now be managed as a chronic disease. There are interventions that can significantly improve the child's quality of life and survival time.

- Most care and support can be provided at a primary-care level. Where referral is indicated, provide the child's caregiver with a clear explanation of the illness, a referral letter and a follow-up plan.

- Caregivers of all children on outpatient care must know the clinical features (danger signs) requiring urgent attention by a health-care provider.
- As the common childhood infections are also the most frequent cause of illness in HIV-infected children, management is according to well-established Integrated Management of Childhood Illness (IMCI) protocols. However, particular attention needs to be given to the management when the illness becomes persistent or very severe. Prevention of these illnesses is of great importance as they may adversely affect the prognosis.
- Indiscriminate use of antibiotics should be strongly discouraged to avoid the development of drug-resistant organisms. Limit antibiotic usage to conditions where a bacterial cause is very likely.
- At all times, consider the possibility of pain and suffering and make every effort to keep the child as comfortable and pain-free as possible.
- Antiretroviral therapy (ART) suppresses HIV activity and should be given to children who meet certain criteria.
- Consider terminal care for children with AIDS-defining illnesses.

The human immune system

As HIV and AIDS affect the immune system all health-care providers need to be familiar with some basic facts about the immune system. The system consists of several parts such as:

- Polymorphs – these are white blood cells with several functions. One of the most important is to attack invading organisms, particularly bacteria.
- Lymphocytes – these are also white blood cells with different functions to polymorphs. They are programmed to attack other organisms, such as viruses, tuberculosis and fungi. There are sub-groups, such as the CD4 lymphocytes.
- Monocytes – these are similar to lymphocytes with slightly different functions to lymphocytes.

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- Antibodies – these are complex chemical substances that can be found in the serum. They are largely produced by white blood cells as a result of a stimulus, such as an illness or vaccination.
- Lymphoid tissue – is a large number of lymphocytes, which form a structure, such as the regional lymph nodes or glands.

The pathogenesis of HIV

The Human Immunodeficiency Virus (HIV) has certain unusual characteristics. These are responsible for the clinical and laboratory manifestations.

HIV carries all its genetic material in two single strands of ribonucleic acid (RNA). It contains no deoxyribonucleic acid (DNA), which is necessary for replication. The virus can survive only in certain human cells, which are then used for replication. Once the HIV has entered the bloodstream it seeks out certain blood and tissue cells. The most important of these are lymphocytes and macrophages, which are types of white blood cells. These cells, in particular CD4 lymphocytes, are targeted by the virus. They have receptor sites to which the virus can attach itself and penetrate into the lymphocyte. The virus also attaches itself to some monocytes and interferes with their function. This results in organ dysfunction.

After entry into the cell, viral RNA is converted to a double strand of viral DNA by the reverse transcriptase enzyme. Viral DNA then enters the nucleus of the cell and is incorporated into the host DNA using the integrase enzyme. During cell activation the viral genetic material is replicated, and protein molecules are made and enter the lymphocyte cytoplasm.

These particles are split by the protease enzyme and are then assembled and packaged using the cell membrane to create new viruses. Many millions of viruses can be made in this way daily. Eventually the invaded CD4 lymphocytes are destroyed by this process.

Effect on the immune system

The CD4 lymphocytes play an important role in protecting the body against infection. When a large proportion of these lymphocytes has been destroyed immunodeficiency results, which has given the disease its name. The infected CD4 cells are also unable to perform their normal defensive function. As the CD4 count drops the disease manifestations become more severe.

The lymphocyte count in the blood varies considerably with age, and reaches adult levels only at the age of about 5 years. Destruction of the cell is brought about by various mechanisms, such as accumulation of viral DNA material.

In adults the absolute CD4 count indicates the degree of immune suppression. In children it is the percentage of CD4 cells that is the best indicator. Thus $>25\%$ means that there is no immune suppression; $15-24\%$ means moderate suppression and $<15\%$ means severe suppression. The CD4 count is a good immunological marker of disease progression.

Lymphoid tissue/organs become infected at an early stage of the infection with more RNA viral material in these tissues than in the bloodstream. Initially only isolated nodes are affected, but as the disease progresses others are involved. At a late stage of the disease the lymphoid structure collapses and viral particles escape into the circulation.

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Modes of HIV transmission to children

- Mother-to-child transmission (MTCT) accounts for most HIV-infected children.
- Sexual abuse: particularly in countries with a high level of child abuse, such as South Africa.
- Transmission by blood transfusion: rare as long as transfused blood is carefully screened. There is a risk where the blood donor was in the window period.
- Insufficiently sterilised instruments, traditional scarification.
- Wet-nursing with HIV-contaminated breastmilk.

The risk factors for MTCT

Maternal factors	Infant factors
High viral load*	Prematurity
Low CD4 count	Breastfeeding
Advanced AIDS	Mouth problems
Low Vitamin A level**	Invasive foetal monitoring during labour
Prolonged rupture of membranes	
Cracked nipples or other breast condition	
<p>* HIV <i>re-infection</i> may be one of the factors responsible for high viral load during the perinatal period or subsequently.</p> <p>** Maternal Vitamin A supplementation does not decrease MTCT and may increase the risk of breastmilk transmission.</p>	

Prognostic factors

Without intervention most of the children that are infected at the time of birth will develop features of the disease by 6 months.

The disease progresses with opportunistic infections (OIs) becoming apparent and with a downward course much more rapid than in adults. This rapid progression of the disease is largely determined by the immature immune system. There are additional factors that may contribute to the rapid progression, such as the maternal viral load at birth.

Some authorities have divided this progression into three categories:

Category 1: Rapid progressors die within the first year. ($\pm 25\text{--}30\%$)

Category 2: Features of infection appear early in life and disease progresses more slowly with death occurring within 3–5 years ($\pm 50\text{--}60\%$)

Category 3: Long-term survivors who live beyond 8 years of age ($\pm 5\text{--}25\%$)

Some of the things affecting the prognosis are:

- In-utero infection
- Signs of infection before the age of 4 months
- Maternal high viral load and low CD4 count at time of delivery
- Rapid downhill course of the mother
- Maternal death

Prevention of paediatric HIV-infection

Effective methods of prevention of paediatric HIV-infection have been well demonstrated both in resource-rich as well as poor countries.

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Prevention of primary infection

- Reduce heterosexual transmission, ensuring that men are involved in these interventions to reduce the epidemic.
- Prevent infection during pregnancy and lactation – educate men and women about the increased risk of HIV-infection during pregnancy and lactation.
- Keep adolescent girls and boys in school with appropriate health/sexuality education.
- Comprehensive management of sexually transmitted infections (STIs).

Prevention of unintended pregnancies among HIV-infected women

- Integration of family planning with the prevention of mother-to-child transmission programme (PMTCT).
- Counselling regarding the dual risk of unintended pregnancies and STIs and HIV.

PMTCT

- Optimal antenatal care including good nutrition, iron and multivitamin preparations.
- Addressing all issues that have an increased risk of premature labour.
- Infection prevention and management, including STIs, urinary infections, malaria and pneumocystis pneumonia.
- Counselling and HIV testing: every pregnant woman needs to have the necessary counselling and testing for HIV.

- All HIV-positive mothers need to have infant feeding counselling during the pregnancy and immediately after birth.
- Every PMTCT programme needs to include, at a minimum, single-dose nevirapine given at the onset of labour and to the neonate as soon as possible after birth. Pregnant women meeting the criteria for initiation of ART should receive triple therapy, where possible. Combination AZT and nevirapine has been demonstrated to be highly effective in PMTCT in non-breastfeeding women.

Safer delivery technique

- Most of the MTCT occurs during labour and delivery.
- The risk is increased by prolonged rupture of membranes, assisted instrumental delivery, invasive monitoring procedures, episiotomy and prematurity.
- Restrict suctioning of the baby to the presence of meconium-stained liquor.
- The neonate should be dried carefully at birth.
- Elective caesarean section reduces the MTCT risk appreciably, but is not recommended as a routine.

Laboratory tests to establish HIV-infection of the baby

Currently available tests

- HIV antibodies are usually detected using the ELISA technique. The test does not distinguish between maternal and the baby's antibodies. In the great majority of babies all the maternal antibodies are cleared by the age of 15 months. Rarely they remain up to 18 months. However, if the test is negative before this time, one can assume that the baby is not HIV-infected, provided he is not breastfed any longer. However, if the test is positive at 18 months, the antibodies are being produced by the HIV-infected baby.
- HIV DNA PCR (polymerase chain reaction) tests for the presence of intracellular HIV DNA material. It is highly sensitive and specific in children from 6 weeks of age. The gold standard infant diagnostic guidelines recommend that 2 concordant HIV DNA PCRs are done at 6 weeks and 4 months to establish whether the infant is truly infected. However, because the test is so sensitive and specific even from 6 weeks of age, one HIV DNA PCR is sufficient provided that the clinical picture matches the laboratory findings. In some areas this test is routinely offered for all babies of HIV-infected mothers in order to establish the infant's HIV status as early as possible. It is anticipated that this test will become available for all infants born to HIV-infected mothers in the future.
- Other tests are being evaluated and may become available for general use.
- See Figure 1 on page 14 for the recommended testing process.

HIV diagnostic protocol for abandoned infants

6 weeks of age

1. HIV ELISA to assess HIV exposure at birth.
(Omit if the HIV ELISA of the mother is confirmed positive.)
2. HIV DNA PCR if HIV ELISA of infant or mother* is positive.

3 months of age

Repeat HIV DNA PCR to confirm 6-week result.
(Omit if HIV ELISA was negative.)

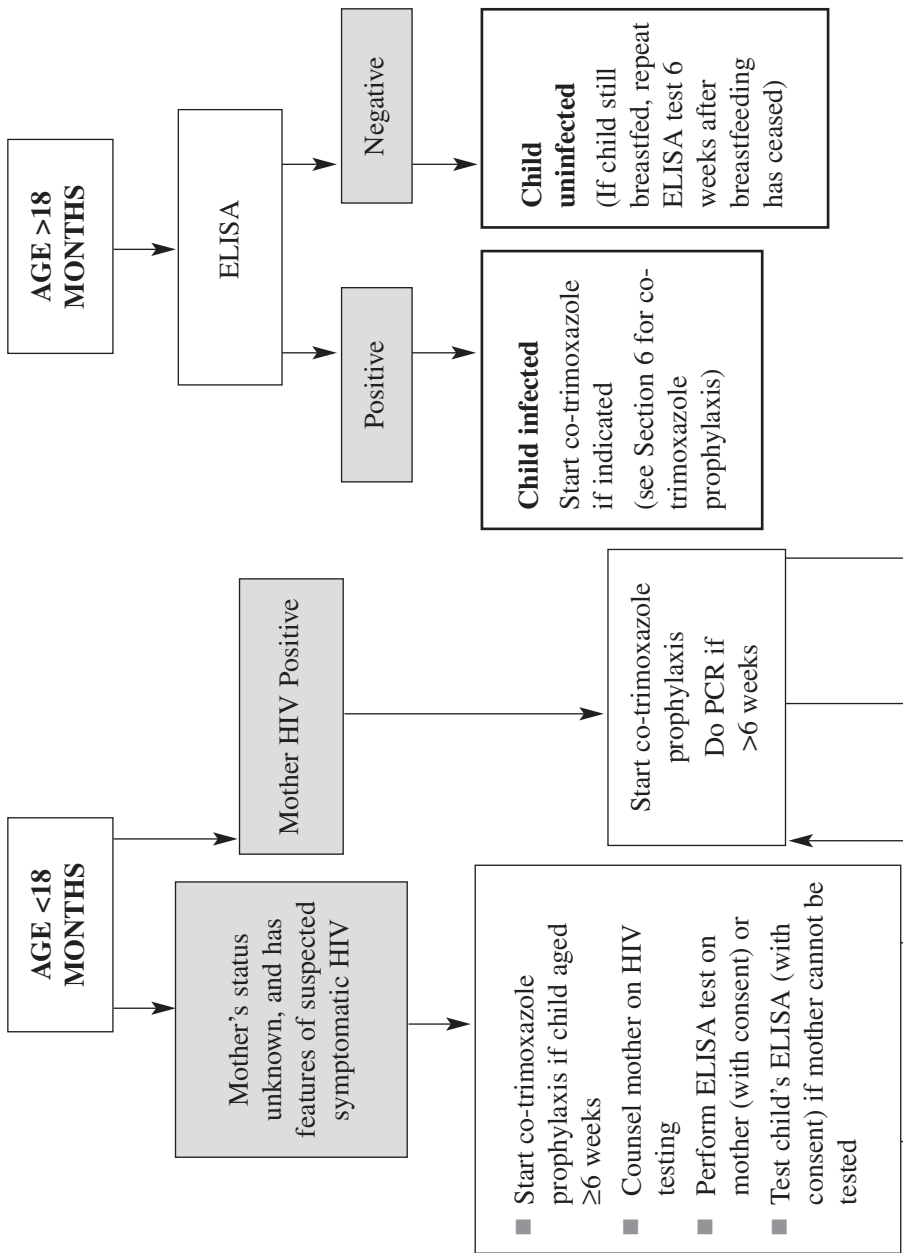
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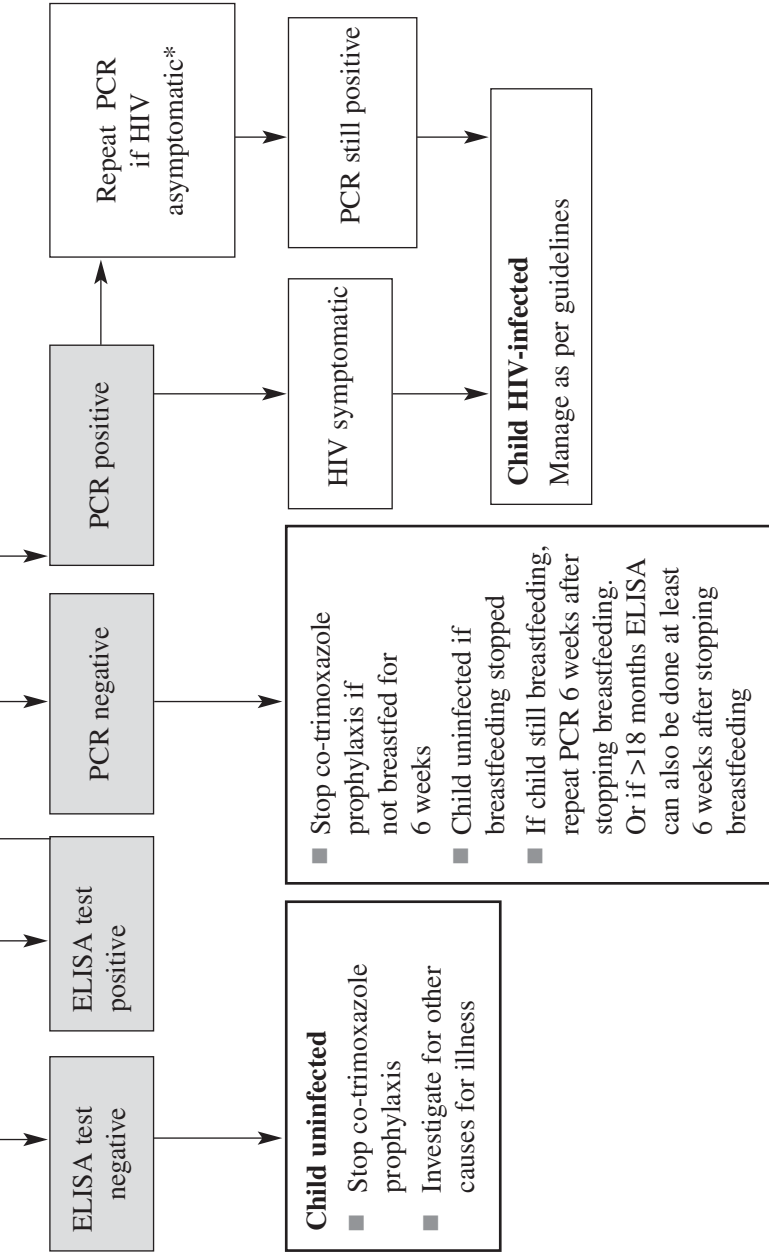
1. A clinical examination to assess for symptoms and signs of HIV-infection should be performed during all visits, and especially at 6 weeks and 3 months of age. The infant should then be followed up as per recommendations for all children (see above).
2. At 6 weeks of age, blood should be taken for both HIV ELISA and DNA PCR tests and the PCR analysed only if the HIV ELISA test result is positive.
3. Postnatal transmission of HIV-infection is likely to be evident by 6 weeks after termination of breastfeeding*. Nevertheless it is recommended that the final qualitative HIV PCR test on abandoned infants be performed 6 weeks after breastfeeding* has stopped.

* In most instances information on the mother and breastfeeding will not be available unless hospital records are accessible.

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Figure 1: HIV testing guidelines





Note: *Contact laboratory if results are discrepant.

PCR testing may not be available at all centres immediately.

In the absence of PCR, perform HIV ELISA testing at 12 and, if positive, at 18 months.

PCR = HIV DNA PCR

ELISA = HIV ELISA

SECTION 2: CLINICAL FEATURES

Opportunities for reaching children in need of HIV care and possible ART

Constant vigilance for HIV-infection in every child that enters a primary health-care facility or hospital is essential. Pro-active steps to detect these children include:

- PMTCT records should identify all HIV-exposed children.
- Children with severe pneumonia, severe malnutrition, chronic/persistent diarrhoea and TB must be tested for HIV-infection.
- Siblings of children diagnosed as HIV-infected should be tested.
- Orphans and vulnerable children (OVC) are at special risk of HIV-infection.

N.B.

Every effort must be made to identify children with possible HIV-infection as part of the routine primary-care activities.

It is important to identify children that are HIV-infected at an early stage to ensure that they and their families obtain optimal care. As the disease progresses more rapidly in children than in adults, they might be the first to be identified as such in the family.

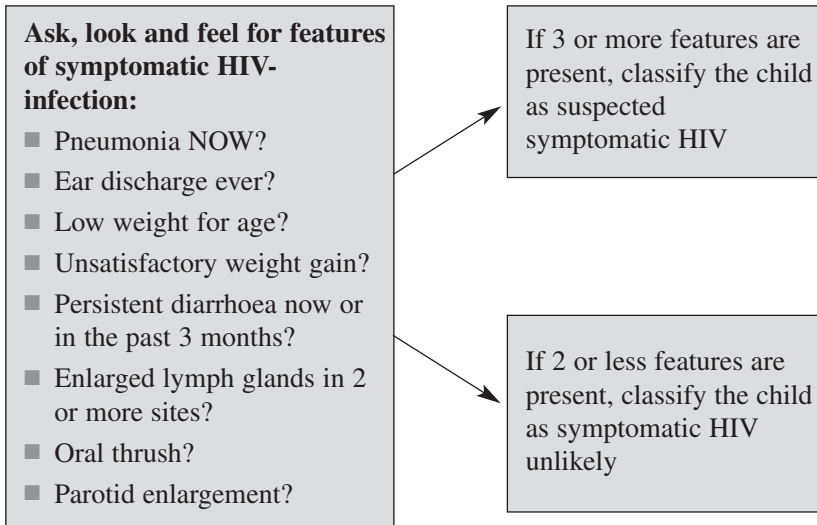
Early identification makes it possible to:

- Develop an action plan for regular follow-up and ART if required.
- Commence interventions to prevent common childhood infections.
- Access social development grants and other support structures.
- Approach the family to establish whether others are HIV-infected and offer clinical and social support.

See Figure 2 for clinical signs of HIV-infection.

An extensive study was undertaken to identify the child with suspected symptomatic HIV-infection. For purposes of IMCI case management Figure 2 below can be used with confidence to classify the child.

Figure 2: Clinical signs of HIV-infection



The above clinical features and classification are strongly indicative of HIV-infection. Confirmation of the diagnosis depends on laboratory investigations discussed above.

The child that has clinical features suggestive of HIV-infection should be referred for laboratory investigation. Accurate and comprehensive counselling of the caregiver is essential to obtain informed consent for the test(s).

N.B.

Hepato- and splenomegaly are further common features of HIV-infection. However, adding these to the eight features above does not alter the validity of algorithm.

Figure 3 on the following page shows a more extensive list to assist with the diagnosis of HIV-infection.

CLINICAL FEATURES OF HIV-INFECTION

Figure 3: Clinical signs or conditions that may suggest HIV-infection in children

Signs and conditions common in HIV-infected children but uncommon in uninfected:

- Severe bacterial infections, especially if recurrent
- Persistent or recurrent oral thrush
- Bilateral painless parotid swelling
- Generalised lymphadenopathy other than inguinal
- Hepatosplenomegaly
- Persistent or recurrent fever
- Neurologic dysfunction
- Herpes zoster – single dermatome
- Persistent generalised dermatitis not responding to treatment

Signs and conditions common in HIV-infected children but also common in ill uninfected

- Chronic ear infection
- Persistent or recurrent diarrhoea
- Severe pneumonia
- Tuberculosis
- Bronchiectasis
- Failure to thrive
- Marasmus

Signs and conditions very specific to HIV-infection

- *Pneumocystis jiroveci* pneumonia (PCP)
- Oesophageal candidiasis
- Extrapulmonary cryptococcosis
- Invasive salmonella infection
- Lymphoid interstitial pneumonitis (LIP)
- Herpes zoster affecting several dermatomes
- Kaposi's sarcoma
- Lymphoma (not necessarily)
- Rectovaginal or rectovesical fistula

Clinical staging of HIV-infection

The WHO is developing a 4-stage system, which has yet to be validated and finalised. Previously WHO had developed a 3-stage system, which had been modified by the SA Working Group to reflect local pathology. A 4-stage system has been developed to be similar to the adult 4-stage classification as well as the paediatric classification of the CDC (see Appendix 1, page 118).

Stage I: Asymptomatic

Stage II: Mild symptoms

Stage III: Moderate severity

Stage IV: Severe

The clinical staging is important because:

- It helps to determine the prognosis.
- It strengthens the clinical diagnosis when laboratory testing is unavailable or delayed.
- It guides the management and consideration for ART.

The above clinical features and classification are strongly indicative of HIV-infection. Confirmation of the diagnosis depends on laboratory investigations discussed above.

There are many common associated illnesses. Some of the opportunistic infections and illnesses are seen only in association with HIV-infection. These are referred to as AIDS-defining illnesses. (See Sections 6 and 7.)

The severity of HIV and AIDS clinical features has been further categorised into stages, which are listed in Appendix 1.

The updated WHO staging system will be circulated as soon as it has been finalised.

SECTION 3: CARING FOR HIV-

HIV-exposure

HIV-exposure occurs during pregnancy and birth as well as during breastfeeding. Without any intervention MTCT occurs in about 30% of infants. Interventions such as those mentioned in previous sections can reduce this considerably, particularly if infant feeding is according to the counselling provided. See Section 5.

It is important for all health-care providers to be aware of the fact that the risk of dying even for HIV-uninfected children of mothers who have died of AIDS is increased 3–4 times. This means that particular vigilance and accurate counselling of caregivers is very important at every visit to the primary health-care centre.

What should be done at clinic visits?

Counselling of the mother

- Potential common HIV-related features, both in the mother or the infant, need to be brought to the mother's attention. Clinical advice should be sought as soon as possible should these occur.
- The need for implementation of co-trimoxazole prophylaxis for PCP at the age of 6 weeks must be stressed so that she returns to the clinic.
- A clear follow-up schedule needs to be negotiated.

Growth monitoring

- This is of particular importance in these children as failure to gain weight is an important indicator of HIV-infection or failure to respond to ART.
- Weight should be recorded on the Road-to-Health Chart and the curve interpreted.
- If there is growth failure, intensify assessment for HIV-related features. Also try to identify a treatable cause, e.g. acute or chronic infections (such as respiratory, gastro-intestinal or urinary tract infections or TB).
- Introduce food supplementation (see Section 5: Nutrition support) after excluding and treating for any infections.

Dietary advice

See Section 5: Nutrition support.

Immunisation

- HIV-infected and HIV-exposed children should be immunised according to the routine national immunisation schedule.
- BCG can be given routinely at birth.
- HIV-positive children should receive all vaccinations, including live vaccines.

Table 1: Routine oral Vitamin A supplementation

Routine oral Vitamin A supplementation		
Target group	Dosage	Schedule
Non-breastfed infants 0 to 5 months	50 000 IU	A single dose at the age of 6 weeks
All infants 6 to 11 months	100 000 IU	A single dose at the age of between 6 and 11 months (preferably at 9 months when child comes for immunisation)
All children 1 to 5 years	200 000 IU	A single dose at 12 months and then every 6 months until the age of 5 years

CARE FOR HIV-EXPOSED CHILDREN

Treat for worms routinely

Table 2: Treatment for worms

Age	Weight	Albendazole	Mebendazole
12–24 months	<10 kg	Avoid in children <24 months. Give 200 mg if necessary	100 mg twice daily for 3 days or 500 mg once
>24–60 months	>10 kg	400 mg once	500 mg once
>5 years			
Treatment should be repeated every 6 months			

Co-trimoxazole prophylaxis

Co-trimoxazole prophylaxis should be provided to children who require it (see co-trimoxazole prophylaxis on page 41).

Counselling and social support

Health-care personnel should:

- Be trained in counselling, which should be available at all clinics. Many non-governmental organisations (NGOs), traditional healers and community-based organisations (CBOs) play an increasingly important role in the care of people living with HIV, including assisting with counselling (see Section 14: Counselling).
- Take note of local support organisations and resources and refer patients to these organisations whenever appropriate.

SECTION 4: CARING FOR HIV-POSITIVE

Health care for HIV-positive children

Health care for HIV-positive children includes the following:

- Confirmation of the HIV status even where the IMCI classification is that of Suspected Symptomatic HIV-infection.
- Staging of the disease is essential for decisions regarding management (see Appendix 1).
- Treatment for all infections and opportunistic infections (OIs) must be provided (see Sections 6 and 7).
- Regular monitoring of growth and development.
- Nutrition support (see Section 5).
- Apart from the above, particular attention has to be paid to micronutrient deficiency such as iron and Vitamin A.
- Completion of the immunisation schedule.
- Preventing infections such as PCP by providing co-trimoxazole prophylaxis.
- Counselling of the mother/caregiver (see Section 14).
- Consideration for ART (see Section 10).

The HIV-infected child has additional problems

- There are indications that the transfer of normal antibodies from the HIV-infected mother to the child may be impaired. The infant is therefore at greater risk of developing measles at a young age.
- HIV-infected children are at greater risk of developing primary TB and frequent *Haemophilus influenzae* infections.
- Depression of neutrophils.

This increased risk of infection could be addressed by giving:

- Additional immunoglobulins to children who have been exposed to measles.
- Varicella immunoglobulin, recommended for children who have been exposed to chickenpox. However, this vaccine only protects for 2 weeks.

Counselling

Appropriate counselling is ultimately the responsibility of the attending health-care provider. Even though the counselling task can be delegated to a lay counsellor, the health-care provider must make sure that the essential psychosocial issues have been dealt with appropriately.

Exit interviews following lay counselling are essential if one is to depend on the counsellor to convey all the essential information. (See Section 14.)

SECTION 5: NUTRITION SUPPORT

HIV disease in children often leads to multiple nutritional deficiencies. Decreased intake, impaired absorption and increased nutrient requirements all contribute to this.

Infant feeding choices

HIV-infected women should be counselled during pregnancy about infant feeding choices. HIV may be transmitted by breastmilk and can give an additional 5–16% risk of infection after birth, depending on the pattern and duration of breastfeeding. Breastmilk does, however, provide the infant with all the required nutrients as well as helping to protect the infant against common infections. Breastmilk also stabilises the intestinal mucosa. This prevents transmission of HIV to the infant. However, this protection is reduced if any other substance, even water, is fed to the infant during this phase of exclusive breastfeeding.

Mixed feeding, i.e. breastmilk and formula feeds, which unfortunately is very common, is the worst infant feeding option.

Exclusive replacement feeding (exclusive formula feeding) may be difficult in many places, particularly where water, fuel or cleaning utensils and materials are scarce or where the family expects the mother to breastfeed. Exclusive formula feeding under such circumstances subjects the infant to the risk of developing potentially fatal gastroenteritis and other infections. HIV-positive mothers should be counselled on infant feeding options.

N.B.

HIV-negative women and women of unknown HIV status should not be counselled on infant feeding options. They should be supported to exclusively breastfeed for 6 months and to continue breastfeeding for at least 2 years.

Where exclusive replacement feeding is acceptable, feasible, affordable, sustainable and safe (AFASS), avoidance of all breastfeeding is recommended. When all these conditions cannot be met, exclusive breastfeeding for the first few months is recommended. Breastfeeding should stop at 6 months or earlier if these conditions can be met. Exclusive breastfeeding can be very difficult for the mother who does not have the support of her family, particularly where disclosure has not taken place. Stigmatisation of the HIV-infected mother then becomes an important factor requiring multiple interventions.

The HIV-positive mother who has chosen not to breastfeed must be able to prepare feeds: what volume and strength of feed to prepare, how often to feed the infant and how to use a cup rather than a bottle. Cup feeding should be promoted as cups are easy to clean. During discussions on exclusive replacement feeding, all health-care personnel should abide by the Code of Marketing of Breastmilk Substitutes.

Demonstration of replacement milk preparation should be given only to HIV-positive mothers who, after counselling, have chosen not to breastfeed. It must not be given to mothers in the general clinic population.

Regardless of feeding choice, mothers need the support of health-care workers for their choice.

Nutrition intervention

The goals of nutrition intervention

- Appropriate and ongoing counselling of the caregiver:
Caregivers of HIV-infected children should receive appropriate nutritional advice recognising cultural and financial constraints. Provide information on food preparation, hygiene, improving energy and nutrient density of meals and examples of nutritious low-cost foods. (See the *Chart Booklet*, pages 18–19.) The particular susceptibility of HIV-infected infants to gut and other infections must be stressed constantly.

NUTRITION SUPPORT

- Early implementation
- Enhance immune function
- Maintain/improve growth
- Improve quality of life
- Provide preventive nutrition counselling:
 - Vitamin A-rich foods include:
 - fortified maize meal and/or bread
 - carrots, sweet potato, mangoes and pawpaw
 - dark-green leafy vegetables e.g. morogo/imifino and spinach
 - liver, eggs, full-cream milk and small fish
 - Iron-rich foods include:
 - dark-green leafy vegetables
 - legumes
 - germinated foods
 - meat, kidney, spleen, chicken
 - Good sources of antioxidants include:
 - Vitamin C – berries, oranges, dark-green leafy vegetables
 - Vitamin E – nuts, vegetable oils, rice, bran
 - Selenium – nuts, grains, vegetables

Guidelines for feeding children with symptomatic HIV-infection

General advice

- Eat small, regular meals 5–6 times per day.
- Make the food look and taste good. Children who are sick have a poor appetite. Provide at least 1 fruit and 1 vegetable (not including potato) every day.
- If there is space at home, plant a vegetable garden, so that vegetables are always available.

- Home-cooked food is better than pre-cooked food in tins or packets. These are expensive and may not be very healthy. Take-away foods like fried chicken are also expensive and not very healthy.
- Sweets, chocolates and crisps are allowed but should not be eaten in place of food. If these snacks are eaten too often, the child will have no appetite for nutritious food like enriched pap, cereals, vegetables and meat.
- Dry beans (sugar beans and brown beans) have a nutritional value similar to meat and should be eaten as often as possible.
- Try to offer at least one portion per day of one of the following: fish, chicken, meat, dry beans, eggs, peanut butter.
- Add margarine or fish oil when cooking the food.
- Bread, pap, samp, rice, mealies or other cereal should be eaten as much as the child wants, provided they are mixed with one of the above and/or sour milk to increase the food value.
- Children with a poor appetite should be encouraged to drink frequently during the day, for example, sour milk, milk, custard, yoghurt, soup or fruit juice.
- Milk is an important part of the child's diet. After 6 months, the child can drink boiled fresh milk (cows' or goats' milk). Children over 1 year of age should drink 2–3 glasses every day of fresh milk or full-cream powdered milk.
- To increase the nutritional value of soup, add some of the following: fish, oil, margarine, dry beans, meat or bones, milk or milk powder, vegetables.
- To increase the nutritional value of porridge add some of the following: eggs, sugar, margarine or oil, peanut butter, sour milk or milk.

Feeding problems

The *Chart Booklet*, page 20, provides management details for feeding problems with infants and young children.

Nausea and vomiting

- For the exclusively breastfed child, continue exclusive breastfeeding.
- For the older child or the child not exclusively breastfed:
 - Encourage small, frequent meals.
 - Give food that the child likes.
 - Allow fluids between meals and not with meals.
 - Offer cold foods, e.g. jelly, if preferred to warm cooked foods.
 - Give extra fluids to replace losses from diarrhoea or vomiting (see below).
 - The child should eat before taking medication.
 - Dry toast, rusks and dry crackers may relieve nausea.
 - Avoid food that is too sweet or fatty.
 - Avoid gravies if they nauseate the child.
 - Avoid tea and coffee and very salty and spicy foods.

Diarrhoea

Also see Gastroenteritis on page 47.

- Increase the frequency and duration of exclusive breastfeeds, where applicable. Only if there is a definite indication give Sugar Salt Solution (SSS) (1 litre of clean or boiled water + 8 level teaspoons of sugar + $\frac{1}{2}$ a level teaspoon of salt) or Oral Rehydration Salts (ORS) (one sachet in 1 litre of clean or boiled water) after every loose stool.
- If the child is not exclusively breastfed, give food-based fluids such as soft porridge or amasi and SSS or ORS after every loose stool.
- Avoid roughage e.g. skin of fruit and beans and peas.
- Avoid left-over, stale, old food.
- Give freshly prepared food.

Sores in the mouth

- Treat for oral thrush or herpes simplex.
- Continue exclusive breastfeeding, where applicable.
- Continue exclusive cup feeding where applicable.
- Give paracetamol half an hour before solid feeds.
- Topical anaesthetics Teejel®, or Bonjela®, may be helpful.
- Avoid: acidic (sour) cold drinks like orange juice and hot curried food or chillies.
- Give: sour milk and porridge, soft and mashed food, ice cream, ice lollies and ice cubes.

Encephalopathy

- Monitor child's feeding skills by watching the child eat and noting whether swallowing is adequate.
- Adjust the consistency of the food to the deteriorating developmental level.
- Modify eating techniques and utensils.
- Refer to speech therapist for assistance with feeding.

Food supplementation

As part of the Integrated Nutrition Programme, the Protein Energy Malnutrition Scheme addresses the problem of malnutrition in children. Food supplementation is provided for children whose weight has been monitored on the Road-to-Health Chart and is found to be below the 3rd percentile.

The programme is administered at primary health-care establishments. Parents/caregivers must also be informed about IMCI feeding recommendations (see the *Chart Booklet*, pages 18–19) and referred to any community support agencies.

An additional food supplement *Philani* and *Philani with Zymune* is being distributed to all ART service points. It is specifically for children and adult caregivers who are HIV positive and malnourished or at risk of malnutrition.