

## WORKING DRAFT – Lesotho National ART Guidelines

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## FOREWORD

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In 2004, the Government of Lesotho made a momentous decision to provide comprehensive care and treatment for HIV and AIDS in the public sector, to complement ongoing efforts for prevention, behaviour change, care and support. Since then, remarkable progress has been made in turning the tide of the HIV and AIDS epidemic in Lesotho. More than 17,966 people living with HIV and AIDS – 1,436 of them children less than 15 years of age – were receiving antiretroviral therapy (ART) by the end of 2006 at hospitals, health centres and private practitioners' clinics across the country. As a result, they are able to live healthy, productive lives and contribute to the development of their families, communities and the nation.

The Government of Lesotho's commitment to providing high-quality care and treatment services to her citizens is unwavering. Consistent with the 2006 Brazzaville Commitment, the aim is to achieve universal access to treatment, as well as prevention, care and support, for all Basotho by 2010. To achieve this goal, the Ministry of Health and Social Welfare (MOHSW) is scaling up existing efforts and implementing new interventions which are leading the way for the response to HIV and AIDS in the region, including:

- Conducting a nation-wide Know Your Status campaign to offer HIV testing and counselling (HTC) for all Basotho above the age of 12;
- Adopting a provider-initiated model for HTC at all health facilities, for all adults and children;
- **Decentralising care and treatment to health centre level;**
- **Rolling out HIV services to rural communities in the highlands; and**
- **Bolstering human resource capacity by mobilising lay counsellors, expert patients and community health workers; expanding the role of nurses; and improving recruitment and retention of clinical staff.**

The Government of Lesotho is also leading the way in demonstrating its commitment to providing the highest quality care and treatment possible for Basotho living with HIV and AIDS. Since the launch of the national ART programme in 2004, several important developments in the field of HIV and AIDS have emerged which must be considered in the development of national policies that govern the programme. Research has yielded greater knowledge to inform protocols about dosing, initiation of treatment, and management of HIV in pregnancy. New drugs and new combinations of existing drugs have become available which can help improve the quality and longevity of treatment for patients. In response, the MOHSW has revised the National Antiretroviral Treatment Guidelines to reflect these developments and ensure that treatment in Lesotho is consistent with the highest regional and international standards. Importantly, the guidelines are also designed to maximise cost-effectiveness while maintaining a high standard of care. This is critical to ensuring the long-term sustainability of the ART programme, particularly as increasing numbers of patients require second-line therapies. These Guidelines are intended **to aid healthcare workers treating patients with HIV and AIDS in the public and private sectors, and to ensure that treatment practices are harmonised and simplified to the greatest extent possible.** These doctors, nurses, pharmacists, counsellors and other workers are at the heart of the ART programme and, indeed, the national response to HIV and AIDS. On behalf of all

Basotho, we thank them for their hard work and commitment to people living with HIV and AIDS.

**Dr. Mphu Ramatlapeng**

**Honourable Minister of Health and Social Welfare**

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## **ABBREVIATIONS AND ACRONYMS**

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<b>3TC</b>	lamivudine
<b>AFASS</b>	affordable, feasible, acceptable, sustainable and safe
<b>AFB</b>	acid-fast bacilli
<b>AIDS</b>	Acquired Immune Deficiency Syndrome
<b>ALT</b>	alanine aminotransferase
<b>ANC</b>	antenatal care
<b>ART</b>	antiretroviral therapy
<b>ARV</b>	antiretroviral
<b>ATT</b>	anti tuberculosis treatment
<b>AZT</b>	azidothymidine, also known as zidovudine
<b>CDC</b>	Centres for Disease Control and Prevention
<b>CTC</b>	care and treatment clinics
<b>CTX</b>	co-trimoxazole
<b>CXR</b>	chest X-ray
<b>D4T</b>	stavudine
<b>DBS</b>	dry blood Spot
<b>DNA</b>	deoxyribonucleic acid
<b>EFV</b>	efavirenz
<b>ELISA</b>	enzyme-linked immunosorbent assay
<b>FBC</b>	full blood count
<b>HAART</b>	highly active antiretroviral therapy
<b>HCW</b>	healthcare worker
<b>Hb</b>	haemoglobin
<b>HBsAg</b>	Hepatitis B surface antigen

<b>HCV</b>	Hepatitis C Virus
<b>HIV</b>	Human Immunodeficiency Virus
<b>HTC</b>	HIV testing and counselling
<b>IPT</b>	isoniazid prophylaxis therapy
<b>LFTs</b>	liver function tests
<b>MCH</b>	maternal and child health
<b>MOHSW</b>	Ministry of Health and Social Welfare
<b>MTCT</b>	mother-to-child transmission of HIV
<b>NGO</b>	non-governmental organisation
<b>NVP</b>	nevirapine
<b>NRTI</b>	nucleoside reverse transcriptase inhibitor
<b>NRTI</b>	nucleotide reverse transcriptase inhibitor
<b>NNRTI</b>	non-nucleoside reverse transcriptase inhibitor
<b>OI</b>	opportunistic infection
<b>PJP</b>	pneumocystis jirovecii pneumonia
<b>PCR</b>	polymerase chain reaction
<b>PEP</b>	post-exposure prophylaxis
<b>PLWHA</b>	people living with HIV and AIDS
<b>PMTCT</b>	prevention of mother-to-child transmission of HIV
<b>RUTF</b>	ready-to-use-therapeutic-food
<b>STI</b>	sexually transmitted infection
<b>TB</b>	tuberculosis
<b>TDF</b>	tenofovir
<b>TLC</b>	total lymphocyte count
<b>VDRL</b>	venereal disease research laboratory (syphilis test)
<b>VHW</b>	village health worker

<b>WBC</b>	white blood count
<b>WHO</b>	World Health Organization
<b>ZDV</b>	zidovudine, also known as azidothymidine (AZT)

## EXECUTIVE SUMMARY

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While the global response to HIV and AIDS has resulted in a decrease in the overall prevalence of infection, the epidemic continues to have devastating effects on the communities affected. According to the most recent UNAIDS report, in 2007 there were an estimated 33.2 million people living with HIV, 2.5 million people were newly infected and 2.1 million people died from AIDS.

Lesotho has the third highest adult HIV prevalence in the world at 23.2%. In Lesotho, there are an estimated 62 new HIV infections and about 50 deaths due to AIDS each day. There are an estimated 270,000 people living with HIV in Lesotho as of end 2007. Of these, there are 11,801 infected children and 258,472 infected adults. Females continue to be more infected with an estimated 153,581 infected compared to 116,692 males. There has been no significant change in the national adult HIV prevalence since 2005. The sentinel surveillance conducted in 2007 showed that there is no major difference in HIV prevalence among women attending ANC clinics.

However there appears to be a slightly downward trend in the HIV prevalence among 15-24 year old young people dropping to 8.9% ( 7.2% - 11.0%) in 2007 from 11% in 2005. The adjusted HIV prevalence among females aged 15-24 was 14.9% compared to 5.9% among males of the same age. It is now estimated that 81,270 (63,100-98,200) people were in need of ART at the end of 2007. The sentinel HIV/Surveillance of 2007 shows that 1.4% of ANC clients and 2.3% of STI clients had syphilis. The prevalence of HIV among STI patients was high at 56.2%, indicating a need for accelerating STI treatment alongside other prevention measures.

Lesotho has embarked on an accelerated programme to achieve universal access to HIV prevention, treatment, care and support by 2010, in line with the commitments made at the UN General Assembly High Level meeting in 2006. In response, the government of Lesotho has put in place several programmes and developed policies to provide the guidance and support for those who care for and treat those infected with HIV and to prevent new infections.

In 2007 the total number of people who have ever received an HIV test in Lesotho was 229,092 of 12% of the population. This represents an increase of nearly three times the number tested in 2005. At the end of 2007, 161 health centres offered HIV Testing and Counselling (HTC). By the end of December 2006 18,000 of the 57,000 Basotho in need of treatment were receiving it (31%) and December 2007 the number of people ever enrolled in ART were 31,249 adults and children 0-14 years 2,335 which brings the total of people ever enrolled in ART to 33,584 (59%) by the end of December 2007. At the end of 2007, an estimated 21,710 people were currently receiving antiretroviral treatment both adults and children the current estimated number of people in need of ART by the end of 2007 is 81,000 and 25% of adults and adolescent and 26% of children in need of treatment were receiving ART.

With an estimated 50,000 pregnancies annually, 12,800 infants are born to HIV-infected women each passing year. In the absence of any intervention to prevent vertical transmission of HIV, this translates to 5,120 new infections annually. At least 4,059 pregnant women with HIV received anti-retroviral treatment to prevent mother to child transmission (PMTCT) of HIV in 2007. The coverage of PMTCT programmes has increased from an estimated 5% in 2005 to 31.7% in 2007, which is a fivefold increase over the corresponding period. 19 hospitals and 116 health centres and private clinics out of 167 health facilities are offering antenatal care (ANC), postnatal care (PNC) and maternity services (103).

These guidelines are focused on HIV prevention, treatment, care and support. These integrated guidelines address specific issues regarding; adults and adolescents, pregnant women and children. These guidelines are related and linked to other guidelines; HIV testing and counselling, prevention of mother to child transmission, home-based Care, nutrition and HIV, male circumcision, TB, TB/HIV, behavior change communication Strategy, health systems and roles, Infection Prevention and Control, post-exposure prophylaxis, programme monitoring and evaluation and sexually transmitted infections.

This revision of the National ART Guidelines has been made in order to halt the progression of the HIV and AIDS epidemic, to increase the number of people who receive the care and treatment they need and to improve the quality of care available. In particular, these guidelines provide a comprehensive approach to ART and include several important updates, including:

- Integration of information for the treatment of children and pregnant women, along with adults
- Use of early infant diagnosis using DNA or RNA PCR based tests
- Introduction of routine and provider initiated HIV testing and counselling
- Addition of Tenofovir (TDF) as a first-line drug for adults and Atazanavir/ritonavir (ATV/r) as a second-line drug
- Using combination therapy for ARV prophylaxis for pregnant women with CD4 > 350 and HAART for pregnant women with CD4 count <350.
- Initiation of HAART for adults and adolescents with CD4 counts <350
- Development of tools and reports to support programme monitoring and evaluation of key indicators

These guidelines addresses specific issues related to diagnosis of HIV, initiation of care and treatment, management of pregnant women and prevention of mother to child transmission, ARV regimens, monitoring of patients on ART, adherence and disclosure, management of opportunistic infections, nutrition, HIV positive living, post exposure prophylaxis, infection control and programme monitoring and evaluation.

## CHAPTER 1: Introduction

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The “3 by 5” Initiative launched in 2004 by WHO, led to a revolution in the care of people with HIV in developing countries. More and more people infected with HIV who need ARV therapy are gaining access to the life saving medicine. Importantly governments and international communities are more committed in making resources available towards scaling up access to ART.

WHO has therefore revised their ART guidelines to assist countries and regions in providing effective antiretroviral therapy to the millions of individuals in immediate or imminent need of treatment. Stand-alone, comprehensive guidelines have been developed for adults, paediatrics and PMTCT, based on a public health approach in order to support and facilitate the management and scale-up of ART including that of infants and children.

Lesotho, a resource-limited setting and one of the countries hardest hit by the epidemic, has made unprecedented efforts and remarkable progress since 2004 when it set its ‘3 by 5’ target of putting on treatment 50% (28, 000) of the population who need ART by the end of 2005. However, this urgency and intensity of effort have met with less success in extending the provision of ART especially to HIV-infected pregnant women for prevention of mother-to-child transmission (PMTCT) as well as to HIV-infected children. By the end of 2006 17,966 of 57,000 who need them were started on treatment of which 1,436 were children. Similarly a 15.6% of HIV pregnant women received ARV for PMTCT by the end of 2006.

The country nevertheless, has seized the opportunity of the global commitment to universal access of HIV prevention and care including ART to renew its efforts to achieve universal access to ART by 2010. **As part of this commitment, the 2004 ART guidelines have been revised into a comprehensive guideline in which the component on paediatrics has been strengthened to meet regional and global standards of care and treatment.**

The National ART guideline is intended to support and facilitate the proper management and scale-up of ART in the years to come through a public health approach.

## **CHAPTER 2:           Diagnosis**

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In order to access proper HIV care and treatment, adults and children must first be tested for HIV. Clinical signs and symptoms suggestive of HIV infection may be present, but it must be emphasized that asymptomatic individuals may likewise be HIV-infected. Laboratory diagnosis, using rapid testing and/or DNA PCR or RNA – based tests, is the essential first step to identifying people infected with HIV and subsequently enrolling them into proper care.

Because of the risk of mother to child transmission of HIV during pregnancy and breast-feeding, and rapid progression of the disease particularly in infants, priority for early diagnosis of HIV has to be given to pregnant women and infants.

### **HIV Testing**

Efforts must be made to identify adults and children who are likely to be HIV positive, in order to enrol them into appropriate care.

### **Consent for HIV Testing**

Adults and children who are 12 years of age and above have the right to give their own informed consent for testing. For children under 12 years of age, a parent or the caretaker who brings the child for care can give a written or verbal informed consent to testing. Pre and post testing counselling must be offered to the patient or caregiver.

If the health care provider determines that the adult or child is at risk for HIV exposure or infection, consent is not required and the provider may initiate testing with the understanding that the individual maintains the right to 'opt out' (see Routine Testing)

Written consent for testing should be obtained if testing is performed outside of a health facility. Verbal consent for testing is acceptable in health facilities.

### **Who Can Conduct Rapid Tests and Perform DBS for DNA PCR:**

All those trained and accredited in HTC including:

- Lab Technicians and Technologists
- Counsellors (including lay counsellors under close monitoring)
- Midwives
- Nurses/Nursing Assistants
- Doctors
- Pharmacists/Pharmacy Technicians
- Social Workers
- Ward Attendants
- Village/Community Health Care Workers (under close monitoring)
- Expert Patients (PLWHAs) (under close monitoring)

## Routine Testing

HIV testing should be offered at all clinical interactions with a health care facility and explained to be important in one's medical management. Individuals are tested unless he/she (or caregiver for a child) opts out. Those who test should receive post test counselling whether result is positive or negative. Those who opt out should be further counselled on prevention, the benefits of knowing his/her/child's status, and different ways to be tested if desired in the future.

**TABLE 2.1 HIV testing is strongly recommended and must be performed for the following individuals:**

<b>Pregnant Women**</b>
<ul style="list-style-type: none"> <li>▪ Every pregnant woman who presents at ANC. If she opts out initially, at each follow up visit she should be encouraged to be tested.</li> <li>▪ During labour for women of unknown status, or immediately after delivery if not possible during labour</li> <li>▪ Testing should be repeated in women who tested negative earlier in pregnancy</li> </ul>
<b>Children</b>
<ul style="list-style-type: none"> <li>▪ Children who are admitted to hospital wards, regardless of the diagnosis</li> <li>▪ Children diagnosed with TB and/or malnutrition</li> <li>▪ Orphans (with the consent of the guardian)</li> <li>▪ Abandoned children</li> <li>▪ Children who come to any health facility sick or who are failing to thrive</li> <li>▪ Children who have multiple visits to a health facility</li> <li>▪ Children who present in Under 5 Clinic with illness</li> <li>▪ Children of HIV positive mothers and fathers</li> <li>▪ Victims of sexual abuse (in line with the sexual offences act 2003 and to facilitate provision of PEP)</li> </ul>
<b>Adults**</b>
<ul style="list-style-type: none"> <li>▪ Adults who are admitted to hospital wards, regardless of the diagnosis</li> <li>▪ Adults diagnosed with TB, malnutrition, or STIs</li> <li>▪ Adults receiving community home-based care</li> <li>▪ Victims of sexual abuse</li> </ul>

\*\* Informed pregnant women and adults may decide to 'opt out' of testing at the time when the test will be performed.

**TABLE 2.2 Provider Initiated HIV testing should be offered to the following individuals:**

<b>Children</b>
<ul style="list-style-type: none"> <li>▪ Children receiving immunizations, who have not been previously tested (may opt to test mother instead to determine infant's exposure status)</li> <li>▪ Children of any adult who is receiving chronic HIV care or is on HAART</li> </ul>
<b>Adults</b>

- Adults seen as outpatients in any clinic
- Any caretaker of a child receiving an chronic HIV care or receiving HAART
- Health care providers

**HIV testing should be offered during all clinical interactions with a health facility.**

### **HIV and AIDS Diagnosis in Children**

More than 90% of HIV infection in children is acquired from the mother during pregnancy, labour and delivery, and after childbirth through breastfeeding. Infants and children have an immature immune system and are thus less able to suppress HIV viral replication once infected. Hence, HIV disease can progress much more rapidly in infants and children than it does in adults. This is particularly true for infants less than 12 months of age. If untreated, approximately 40% of HIV-infected children will be dead by their first birthday, and 50% will be dead by age 2.

Therefore, it is of paramount importance to diagnose HIV-exposed and HIV-infected infants and children *early* with rapid testing and/or DNA PCR or RNA – based tests before they get sick, so appropriate interventions can be made.

### **Rapid Testing**

The common tests used to screen for HIV in Lesotho are tests for HIV antibody (rapid tests or ELISA). These tests do not test for the presence of HIV itself – rather, they test for the body's immune response to HIV by detecting antibodies that the body has developed to fight HIV. By detecting the presence of HIV antibodies, these tests are 96% reliable at 12 months of age and confirmative after 18 months of age to diagnose HIV infection in children and in adults.

Infants born to HIV infected mothers receive maternal HIV antibodies through the placenta. Due to this maternal transfer of HIV antibodies, interpretation of positive antibody tests (rapid tests or ELISA) in infants < 18 months of age can be difficult. Rapid tests and ELISA cannot distinguish between maternally-produced HIV antibody and infant-produced HIV antibody. Hence, a positive rapid test or ELISA in an infant < 18 months of age cannot definitively diagnose an infant with HIV infection. HIV antibody tests (rapid tests or ELISA) are useful to determine the HIV **exposure status** of infants younger than 18 months. An **HIV exposed** infant is an infant born to an HIV infected mother; the infant has been *exposed* to the virus sometime during pregnancy, labour and delivery, or breastfeeding, and may be HIV infected.

Over time, the levels of these maternal antibodies in the infant's bloodstream decline. By the age of 18 months, all maternal antibodies should be gone and antibody tests alone may be used to diagnose HIV infection as in adults. In fact, 93% of HIV-exposed infants have lost maternal antibody by 9 months of age. Hence, a positive rapid test or ELISA in an infant > 9 months of age is highly suggestive of HIV infection; the antibody detected likely belongs to the infant, not the mother.

A positive HIV antibody (rapid test or ELISA) test in an infant less than 18 months of age means that the infant has been *exposed* to HIV and may be HIV infected.

Rapid tests conducted in children less than 18 months of age should be done using parallel HIV testing. This means that two rapid tests, for example Determine and Double Check, should be done at the same time to ascertain HIV exposure status. Tests should be interpreted as follows:

**TABLE 2.3 Interpretation of parallel rapid HIV testing in Infants < 18 months of age**

<b>1<sup>st</sup> rapid test</b> <i>e.g. Determine</i>	<b>2<sup>nd</sup> rapid test</b> <i>e.g. Double Check</i>	<b><u>Test Result</u></b>	<b><u>Test Interpretation</u></b>
POS	POS	POS	<b>HIV exposed</b> , possibly HIV infected
NEG	POS	Indeterminate	<b>HIV exposed</b> , possibly HIV infected
POS	NEG	Indeterminate	<b>HIV exposed</b> , possibly HIV infected
NEG	NEG	NEG**	<b>HIV negative</b> , if outside of window period,* <b>HIV exposed</b> , possibly HIV infected, if within window period*

\*The window period is the time period (from last exposure) necessary for a test to indicate a positive result in an infected individual. In Lesotho, the window period for a rapid test is considered to be 3 months. Note, however, that 95% of individuals exposed to HIV would have produced detectable antibody within 6 weeks of exposure. During the window period, a person may in fact be HIV-infected, but test negative on the rapid test.

\*\*Must always consider window period when interpreting HIV negative test results

If the infant is determined to be **HIV exposed**, he/she could possibly be HIV infected, and **co-trimoxazole prophylaxis** should be initiated. Refer to CHAPTER 3, Initiation of Care and Treatment.

All exposed infants must be started on **co-trimoxazole prophylaxis** at 4-6 weeks of age or as soon as possible thereafter, and enrolled in **care for an exposed infant**.

Only tests which look for the HIV virus itself can *definitively* confirm infection in infants below the age of 18 months. HIV DNA PCR or RNA – based tests are a direct test that can confirm HIV diagnosis definitively in an infant less than 18 months of age. See section below regarding DNA PCR testing and refer to Annex 1 for details regarding when DNA PCR should be performed.

#### **DNA PCR or RNA – based tests**

Direct tests for HIV in infants are called HIV DNA PCR or RNA – based tests. These tests detect the presence of HIV DNA or RNA. Thus it indicates that the virus itself is present in the blood, as opposed to detecting HIV antibodies, like rapid tests. DNA PCR

or RNA – based tests are the recommended method for *definitively* diagnosing HIV in infants below the age of 18 months.

Currently, DNA PCR or RNA – based tests are recommended for infants below 18 months who have confirmed HIV exposure status (one documented positive rapid test in the infant or mother). See Annex 1 for algorithm for diagnosis of HIV in children when DNA PCR is available.

**TABLE 2.4 Interpretation of DNA PCR Testing in Infants < 18 months of age**

<u>DNA PCR result</u>	<u>Test interpretation</u>
POS	Definitively HIV infected; proceed to section for care of HIV infected infant
NEG**	Definitively HIV negative, if outside of window period* HIV exposed and possibly HIV infected, if still within window period*

\*Window period for DNA PCR test is 6 weeks. Repeat DNA PCR testing will need to be performed 6 weeks after last exposure (6 weeks after cessation of breastfeeding)

\*\* Must always consider window period when interpreting HIV negative test results

If the infant is still breastfeeding, then the window period is irrelevant as the child is still being exposed.

There are some drawbacks to DNA PCR or RNA – based tests. It is an expensive test. In Lesotho, it is provided free of charge for infants. The turnaround time for test results is usually 4-6 weeks.

While waiting for DNA PCR or RNA – based test results, an infant must be managed as an **EXPOSED** infant and started on co-trimoxazole. Some infants may even be initiated on ARV medications if they qualify by “presumptive diagnosis of severe HIV disease” (see below).

It is important to ensure that infants who receive DNA PCR testing or RNA – based tests are given follow-up appointments to obtain their results and enrolled in appropriate care while awaiting results. Like all tests, DNA PCR or RNA – based tests needs to be performed with proper technique and correctly labelled, stored, and transported to ensure valid and timely results.

### **Diagnosis of HIV in Infants between 0 and 9 Months of Age**

Infants below the age of 9 months who have a known exposure to HIV can only be confirmed *definitively* HIV positive by a DNA PCR test.

If the HIV status of the mother is unknown or undocumented, a rapid test should be performed on either the mother or the infant to determine HIV exposure status.

If the result of the rapid **HIV test is positive or indeterminate**, then the infant has been **exposed** to HIV.

The exposed infant should be

1. Enrolled in HIV exposed infant care (see CHAPTER 3, Initiation of Care and Treatment, Care of an Exposed Infant)
2. Started on co-trimoxazole prophylaxis (at 4-6 weeks of age)
3. Referred for DNA PCR testing, if available (See Annex 1 Infant Diagnosis Algorithm for a guide to testing, diagnosis, and appropriate patient management).

All **EXPOSED** infants (infants born to HIV-infected mothers, or infants with positive or indeterminate rapid tests) should receive DNA PCR testing or RNA – based tests at 6 weeks of age for early infant diagnosis and should be started on co-trimoxazole prophylaxis at 4-6 weeks of age.

See Table 2.4 for interpretation of DNA PCR results and see Annex 1 for the infant diagnosis algorithm.

If **DNA PCR is positive**, then the infant can be declared definitively HIV positive and should be enrolled into care for an HIV-infected infant.

If **DNA PCR is negative and outside window period**, then the infant can be declared definitively negative.

If **DNA PCR is negative and still within window period** (i.e. still breastfeeding or cessation of breastfeeding was less than 6 weeks ago,), then the baby is still considered to be HIV exposed, possibly infected and needs to be enrolled into care for an exposed infant as described in Chapter 3. Repeat HIV DNA PCR testing should be performed 6 weeks after cessation of breastfeeding.

### **Diagnosis of HIV in Infants between 9 and 18 Months of Age**

At 9 months of age, most infants (93%) no longer possess maternally-transferred antibodies. Therefore, a parallel HIV testing should be performed on the infant before referral for DNA PCR testing or RNA – based tests. See ANNEX 1 for algorithm.

If the **rapid test result is positive or indeterminate**, then the infant is HIV **exposed** and possibly infected. Using only a rapid test, it is not possible to determine whether an infant is infected and producing his/her own antibodies or is not infected but still has maternal HIV antibodies.

The exposed infant should be

1. Enrolled in HIV exposed infant care (see CHAPTER 3, Initiation of Care and Treatment, Care of an Exposed Infant)
2. Started on co-trimoxazole prophylaxis (at 4-6 weeks of age)

3. Referred for DNA PCR testing, if available (See Annex 1 Infant Diagnosis Algorithm for a guide to testing, diagnosis, and appropriate patient management. See Table 2.2 for interpretation of DNA PCR results.)

If the **rapid HIV test is negative and the infant is outside of the window period** (3 months after last exposure, labour/delivery or breastfeeding), then the infant has not been infected with HIV and can be considered definitively negative. See Table 2.3 for interpretation of parallel rapid HIV testing in infants.

If the **rapid HIV test is negative and the infant is still within the window period**, then the baby is still considered to be HIV **exposed** and may be infected and should be treated as an exposed infant. The baby should be started on co-trimoxazole prophylaxis and monitored closely. A DNA PCR or RNA-based test does **not** need to be performed. Rapid HIV testing should be conducted again 6 weeks after cessation of breastfeeding, and again 3 months post-exposure. Rapid testing can be repeated sooner if clinically indicated (i.e. the infant has signs and symptoms suggestive of HIV infection)

All exposed infants tested prior to 18 months of age, should have rapid HIV testing performed after 18 months of age to confirm diagnosis. Repeat rapid testing may be done at any time if clinically indicated.

### **Presumptive Clinical Diagnosis of HIV in Infants under 18 Months of Age**

In cases where DNA PCR is not available, or results are not yet available, presumptive diagnosis of severe HIV disease is essential to prevent early mortality. A child diagnosed with these clinical criteria may be eligible for HAART, even before definitive DNA PCR test results are available.

Listed below are clinical criteria for presumptive diagnosis of severe HIV disease in infants and children < 18 months of age.

**TABLE 2.5 Criteria for presumptive diagnosis of severe HIV disease in infants and children < 18 months of age**

**A presumptive diagnosis of severe HIV disease should be made if:**

- The infant is confirmed HIV antibody positive; *and*
- Diagnosis of any AIDS-indicator condition(s) can be made; or
- The infant is symptomatic with two or more of the following:
  - Oral thrush<sup>a</sup>;
  - Severe pneumonia<sup>b</sup>;
  - Severe sepsis<sup>c</sup>.

**Other factors that support the diagnosis of severe HIV disease in an HIV seropositive infant include:**

- Recent HIV-related maternal death; *or* advanced HIV disease in the mother;
- CD4 < 20% in infant.

**Confirmation of the diagnosis of HIV infection should be sought as soon as possible**

IMCI definition:

a. Oral thrush: Creamy white to yellow soft small plaques on red or normally coloured mucosa which cannot easily be scraped off (pseudomembranous), or red patches on tongue, palate or lining of mouth, usually painful or tender.

b. Severe pneumonia: Cough or difficult breathing in a child with chest indrawing, stridor or any of the IMCI general danger signs; i.e., lethargic or unconscious, not able to drink or breastfeed, vomiting, and presence or history of convulsions during current illness; responding to antibiotics.

c. Severe sepsis: Fever or low body temperature in a young infant with any severe sign such as fast breathing, chest indrawing, bulging fontanelle, lethargy, reduced movement, not feeding or sucking breast milk, convulsions

Refer to Annex 2 for Infant Diagnosis Algorithm where DNA PCR is not available.

**Diagnosis of HIV in Children Older than 18 months and Adults**

By the age of 18 months, all infants have lost their maternal HIV antibodies. Thus, serial rapid HIV testing can accurately confirm infection in the infant. In serial testing, one rapid test (e.g. Determine) is performed first. If the result is negative, no further tests are done. If the result is positive, a second rapid test (e.g. Double Check) is performed to confirm the diagnosis.

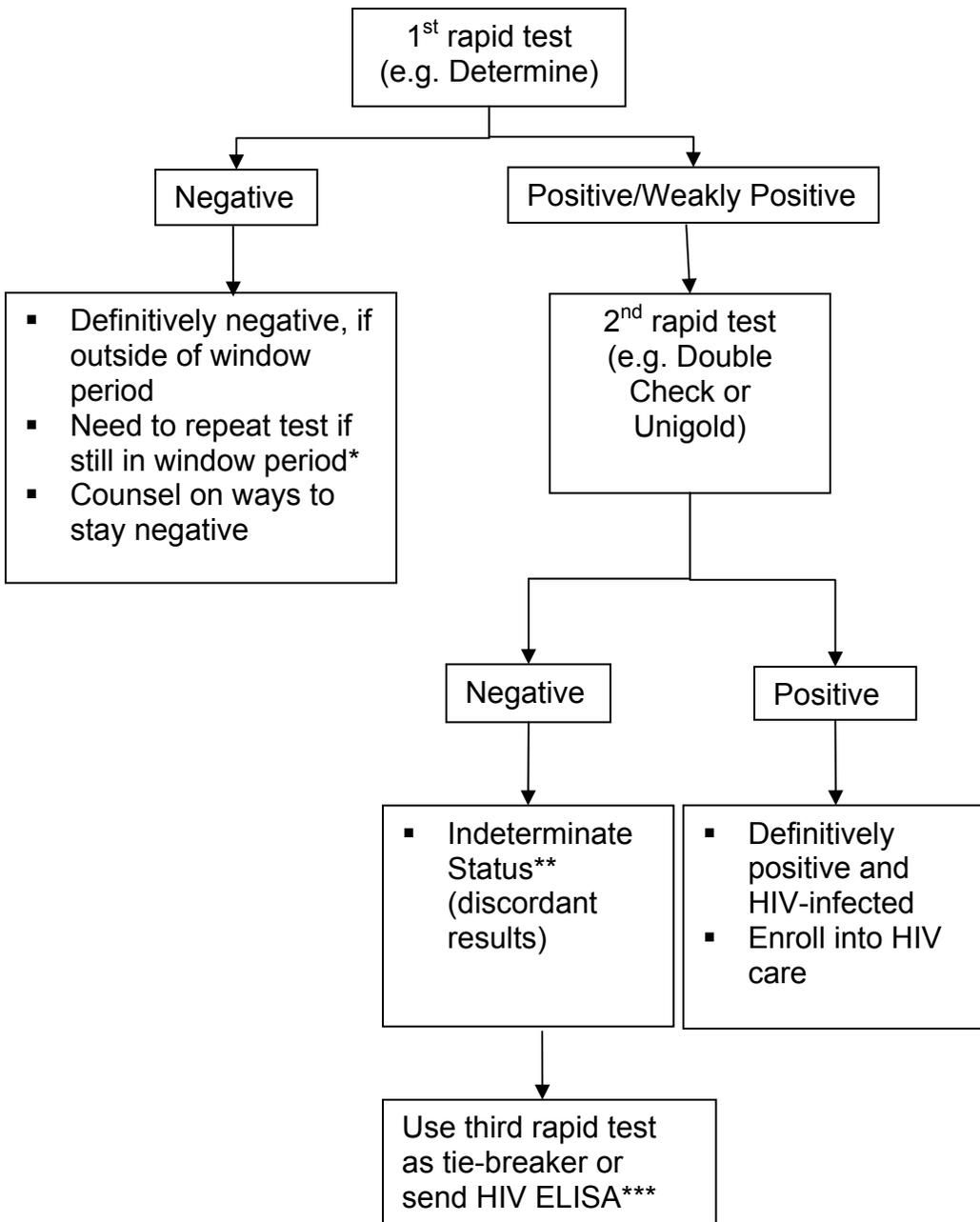
Serial testing is done in children over the age of 18 months and in adults to determine HIV infection status.

**Table 2.6**

Infant less than 18 months	→	parallel HIV rapid testing in mother or infant, followed by DNA PCR or RNA – based tests, as indicated
Infants more than 18 months, and adults	→	serial HIV rapid testing

- If the first test (e.g. Determine) is negative, the person is declared definitively negative; counselling to stay negative is conducted, and repeat testing is recommended for subsequent exposures or high risk behaviour.
- If the first test (e.g. Determine) is positive, a different confirmation test is carried out.
- If the second test (e.g. Double Check or Unigold) is also positive, the person is definitively positive.
- If the second test (e.g. Double Check or Unigold) is negative, then the result is considered “indeterminate”. A third rapid test is done as a “tie-breaker” (e.g. Bioline). If a third rapid test is not readily available, then an HIV ELISA is sent. The result of the third rapid test or HIV ELISA will be the preliminary test result for the patient. Repeat serial rapid testing will be performed after 6 weeks or earlier in pregnant women to confirm preliminary status.
- If a pregnant woman has an indeterminate test result, then she will be treated as if she is positive and enrolled in appropriate care until her true status can be confirmed.

**FIGURE 2.1 Algorithm for serial rapid testing in children  $\geq$  18 months of age and adults**



\* A child who has breastfed from an HIV-infected mother within 3 months of the rapid test is considered to still be in the window period and repeat testing must be performed.

\* An adult who has engaged in unprotected sexual activity within 3 months of the rapid test is considered to still be in the window period and repeat testing must be performed. Counseling on remaining negative should be provided.

\*\*Pregnant women—if indeterminate, treat as if positive

\*\*\* Positive ELISA result is considered as definitely HIV positive. Negative ELISA result is considered definitely HIV negative if test has been performed outside window period. Repeat rapid tests must be performed after 3 months for negative ELISA results during the window period.

## Confidentiality

- Test results are given to the patient and/or primary caretaker
- Test results may be shared with other service providers, as necessary for proper care of the patient

## Documentation of Test Results

Test results, both HIV test and DNA PCR or RNA – based tests, are recorded in the hard cover of the “Bukana” as follows:

### FIGURE 2.3 Recording HIV status in the Bukana

HTC done: Y or N

Date\*: \_\_\_\_\_

Type of test:

1<sup>st</sup> rapid test: P or N

2<sup>nd</sup> rapid test: P or N

3<sup>rd</sup> tie breaker; P or N

DNA PCR or RNA – based tests\*: P or N or I

Where:

P = Positive

N = Negative

I = Indeterminate

U = Unknown

\*Record the date that DNA PCR or RNA – based tests is done and result can be filled in when it arrives

If available, the Under 5 stamp should be used in the Bukana and test results recorded as indicated on the stamp. Test results may also be recorded on the PMTCT stamp where available.

## **CHAPTER 3:           Initiation of Care and Treatment**

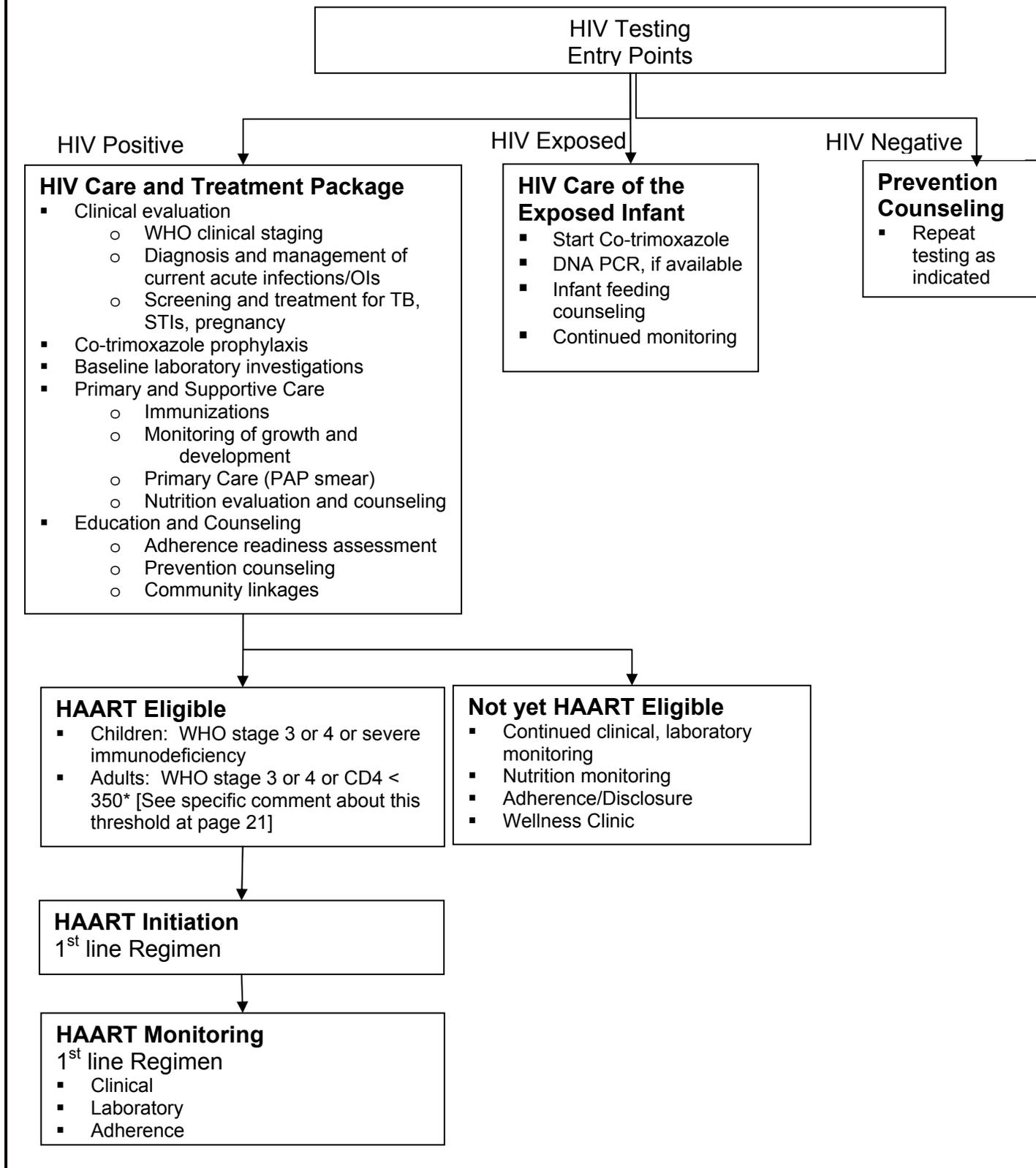
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After a person becomes infected with HIV, the virus causes a slow and progressive weakening of a person's immune system. Eventually, without treatment, opportunistic infections such as PJP pneumonia, thrush, malignancy, and other HIV-related conditions will develop.

Once diagnosed with HIV, children and adults should receive a package of care from trained Health Care Providers that includes the following:

- 1) Clinical evaluation
  - a) staging of clinical disease
  - b) screening for:
    - i) tuberculosis
    - ii) sexually transmitted infections
    - iii) pregnancy
  - c) diagnosis and management of any current opportunistic infections and co-morbid conditions
- 2) Prevention of new infections with co-trimoxazole prophylaxis and INH prophylaxis for TB
- 3) Baseline laboratory investigations
  - a) CD4 count for immunologic staging
  - b) VDRL to screen for Syphilis for adults, HBs Ag to screen for Hepatitis B infection (when ALT is raised) and Hepatitis C serology
  - c) Haemoglobin, (if AZT is considered to be used) ALT, Creatinine (if Tenofovir is being considered in the first-line regimen), pregnancy test (if TDF and/or EFV are considered to be used)
- 4) Primary and supportive care
  - a) Routine immunizations (in children), Vitamin A and other supplements as indicated (in children), and de-worming (in children)
  - b) Monitoring of growth and development (in children and adolescents)
  - c) Cervical smears (Pap Smear) in sexually-active women annually
  - d) Nutrition evaluation and counselling
  - e) Safe water supply
  - f) Treatment preparedness and adherence evaluation
- 5) Education and Counselling
  - a) Psychosocial assessment and support, including education about the HIV and adherence readiness
  - b) Reinforcement of the need to prevent HIV transmission
  - c) Community linkages, family education and support

**FIGURE 3.1.** Adult and Child HIV Management



## HIV Care and Treatment Package

### Clinical Evaluation of the HIV positive patient

A thorough clinical evaluation must be performed on all newly-diagnosed HIV-positive children and adults. A comprehensive history and physical examination allow for accurate assessment of the WHO clinical stage, screening for active TB, and diagnosis and management of any other opportunistic infections (OI's) including Hepatitis B and C.

The history should consist of the following components:

- (i) current symptoms
- (ii) past medical history
  - a. birth history in children
  - b. growth and developmental history in children (Annexes 5, 6, 7)
  - c. obstetric/gynaecology and STI history (in adolescent girls and women)
  - d. past hospitalizations
- (iii) assessment of TB symptoms and history (Chapter 8)
- (iv) nutritional assessment, including a feeding history and date of last breastfeeding (in children) (Chapter 9)
- (v) Immunization assessment
- (vi) Medications, including any traditional medicines, prior ARVs, history of PMTCT, and known food or medication allergies
- (vii) Family history
  - a. HIV status of current household members
  - b. Possible TB contacts
- (viii) Social history, including initial assessment for potential barriers to adherence (familial, financial and mental status) , work history, school attendance, functional ability, family planning, birth control, and alcohol / tobacco / marijuana / drug use
- (ix) Review of symptoms

Physical examination should proceed from head to toe, and include the following areas:

- (i) Growth measurements
  - a. Weight (to be repeated at every visit)
  - b. Baseline length or height for all (repeated every 3 months in children)
  - c. Head circumference for children  $\leq 3$  years of age (repeated every 3 months until age 3 years) and MUAC
- (ii) General appearance (wasting, respiratory distress, pallor, jaundice, parotid enlargement, generalized oedema)
- (iii) Scalp (tinea, sores, signs of malnutrition)
- (iv) Conjunctivae (paleness, keratoconjunctivitis)
- (v) Ears (discharge)
- (vi) Mouth, oropharynx (thrush, ulcers, dental caries, gingivitis)
- (vii) Lymphadenopathy (submandibular, cervical, axillary, inguinal)

- (viii) Lung sounds (wheeze, crackles, rhonchus); respiratory distress (nasal flaring, chest in drawing)
- (ix) Heart sounds (murmur, gallop, tachycardia, irregular rhythm, extra heart sounds); peripheral pulses
- (x) Abdomen (hepatomegaly, splenomegaly, distension, tenderness)
- (xi) Genital area
  - a. Tanner staging in older children
  - b. Evidence of STIs (ulcers, warts, discharge)
- (xii) Extremities
  - a. Fingers (paronychia, clubbing, paleness)
  - b. Peripheral oedema
  - c. Musculoskeletal (joint swelling, joint pain, back pain, muscle tenderness)
- (xiii) Skin lesions
- (xiv) Neurological (sensory abnormalities, hypotonia, hypertonia, decreased strength, developmental milestones)

### Clinical Evaluation: WHO Staging

After a thorough history and physical examination have been completed, the patient should be 'clinically staged' according to WHO criteria (see Annexes 3 and 4). The 2006 WHO staging should be preferentially based on the evaluation of current conditions. Past conditions can be considered for staging only if they are well documented. History of repeated chest infection, HSV and/or other OIs is more concerning for an advanced clinical stage. If **documented and confirmed**, episodes of PJP, cryptococcal meningitis or toxoplasmosis clearly indicate severe HIV infection.

Note that the term 'AIDS' refers to the condition in which a person's immune system is severely compromised and serious infections have already occurred. An adult or child in WHO clinical stage 4 or with severe immunodeficiency is described as having AIDS.

Note that the paediatric clinical classification of HIV-related disease has been revised (increased from three to four stages) and is now harmonised with the adult classification system.

Table 3.1. WHO Classification of HIV-associated clinical disease

WHO clinical stage	Classification of HIV-associated clinical disease
1	Asymptomatic
2	Mild
3	Advanced
4	Severe

### Clinical Evaluation: Diagnosis and Management of Opportunistic Infections and Co-morbid Conditions

Prior to initiation of ARVs, opportunistic and acute infections should be stabilized. A guide to diagnosis and management of OIs and commonly associated HIV-diseases appears in **CHAPTER 8 and ANNEX 10.**

### **Clinical Evaluation: Screening for Tuberculosis, STIs, and Pregnancy**

Screening for tuberculosis, STIs, and pregnancy is an essential component of the HIV care package.

HIV increases susceptibility to TB and increases the risk of progression from TB infection to active disease in children as well as reactivation of latent TB in older children and adults.

In children and adults, TB screening must be done during the initial assessment. If active TB disease is present, it must be treated prior to ART initiation.

#### ***Screening for active tuberculosis***

Active TB is common in HIV-infected children and adults, and can be divided into 3 possible categories:

- i) Smear-negative pulmonary TB
- ii) Extra-pulmonary TB (meningitis, lymphadenitis, abdominal TB, etc)
- iii) Smear-positive pulmonary TB

Prior to initiation of ART, it is very important that active TB be ruled out. A thorough assessment is important, including history, physical examination, and appropriate investigations.

**Signs and symptoms of possible TB infection include:**

- History of TB contact
- Chronic cough (> 2 weeks)
- Prolonged fever (> 2 weeks)
- Night sweats
- Weight loss
- Lymphadenopathy

**Possible investigations include:**

- Sputum to look for acid-fast bacilli (AFB)
- Chest x-ray (CXR)

In **children**, active TB is notoriously difficult to diagnose. There should be a low threshold to start TB treatment. If possible, sputum for AFB should be obtained. Initiation of anti-tuberculous treatment (ATT) is based on the clinical suspicion of active TB, in combination with CXR findings (if available):

**TABLE 3.2. Diagnosing TB in Children**

Clinical Suspicion	CXR findings	Management
High <ul style="list-style-type: none"> <li>▪ TB contact</li> <li>▪ Clinical symptoms</li> </ul>	Suspicious	Initiate TB treatment
	Not suspicious	Initiate TB treatment
Moderate <ul style="list-style-type: none"> <li>▪ Clinical symptoms</li> </ul>	Suspicious	Initiate TB treatment
	Not suspicious	Monitor and consider initiating TB treatment if no response to antibiotics; consider other diagnoses
Low <ul style="list-style-type: none"> <li>▪ Intermittent clinical symptoms</li> </ul>	Suspicious	Monitor and consider initiating TB treatment if no response to antibiotics; consider other diagnoses
	Not suspicious	No TB treatment needed

In **adults** with progressive symptoms of active TB, but negative AFB results, a smear-negative algorithm can be used to diagnose smear-negative TB earlier, and initiate TB treatment before ART (see WHO Smear-negative algorithm in Annex 9).

### **Screening for STI/pregnancy**

Treatment for commonly associated STIs, such as gonorrhoea, chlamydia, herpes simplex, and genital warts is likewise important. Details regarding management can be found in National STI Guidelines.

Lastly, a pregnancy test is crucial to identify pregnant women early and will assist in determining which ARV regimen should be initiated.

### **Prevention of new infections with co-trimoxazole prophylaxis**

Co-trimoxazole has been shown to be an inexpensive and cost-effective way to reduce morbidity and mortality in HIV-infected children and adults. Daily co-trimoxazole protects against:

- *Pneumocystis Jirovecci* pneumonia (PJP)
- Toxoplasmosis
- Diarrhoea caused by *Isospora belli* and *Cyclospora* species
- Bacterial infections, including bacterial pneumonia and urinary tract infections

Co-trimoxazole prophylaxis is recommended for the following **children**:

- All HIV-exposed children born to HIV-positive mothers starting at 4-6 weeks of age. It should be continued until:
  - HIV infection has been definitively excluded in the child, and
  - The infant is no longer at risk of acquiring HIV through breastfeeding
- All children < 5 years of age confirmed to be infected with HIV
- For children ≥ 5 years of age, follow adult and adolescent guidelines
- All children with a history of PJP pneumonia
- For dosing, see Table 3.4

Co-trimoxazole prophylaxis is recommended for the following **adults and adolescents**:

- All those in clinical stages 3, and 4
- Note that this implies that all those receiving TB treatment should simultaneously be receiving daily co-trimoxazole.
- Those in clinical stage 1 and 2 where the CD4 count is known to be less than 350 cells/mm<sup>3</sup>.

**Table 3.3: Co-trimoxazole Prophylaxis in Adults and Adolescents**

WHO Clinical Staging	CD4 is available	CD4 is not available
4	Daily Co-trimoxazole (CTX)	
3	Daily CTX	
2	Daily CTX if CD4 < 350	Do not give CTX routinely
1	Daily CTX if CD4 < 350	Do not give CTX routinely

### Dosing of Co-trimoxazole

The recommended daily dosage of co-trimoxazole is based on a child's age:

**Table 3.4 Dose of CTX for prevention of PJP in infants and children**

Age	Suspension (200/40mg per 5 ml)	Single Strength adult tablet (400/80mg)	Double Strength adult tablet (800/160mg)
< 6mo	2.5ml	¼ tablet	--
6 mo- 5yrs	5 ml	½ tablet	--
6-14 yrs	10 ml	1 tablet	½ tablet
>14 yrs	--	2 tablets	1 tablet

Adults should receive a total of 960 mg daily (2 SS tabs or 1 DS tab).

**Co-trimoxazole should be avoided in the following situations:**

- A history of a severe rash with prior use of CTX (or other 'sulfa' drug)
- Pre-existing severe renal disease
- Pre-existing severe hepatic disease

Note that those patients who are unable to take Co-trimoxazole should be offered Dapsone 100 mg daily (children: 2mg/kg daily) to help prevent against *Pneumocystis jirovecci* pneumonia (PJP) and as an alternative for co-trimoxazole in all situations..

**When to Discontinue Co-trimoxazole Prophylaxis**

Co-trimoxazole prophylaxis should only be discontinued in adults and children  $\geq 5$  years of age on ART, following two consecutive CD4 counts  $> 350$  cells/mm<sup>3</sup>. Since CD4 counts are to be monitored routinely every 3-6 months in those on ART, this implies that the CD4 count has been  $> 350$  cells/mm<sup>3</sup> for at least 6 months.

Co-trimoxazole should **NEVER** be discontinued in any child with previously diagnosed with *Pneumocystis jirovecci* pneumonia (PJP), regardless of the CD4 count.

**Baseline Laboratory Investigations**

Laboratory investigations enhance clinical evaluation. Clinical assessment is the primary tool for evaluating patients both before initiation and after ART treatment has been initiated. Laboratory investigations can help inform when to start ART and which regimen to choose, but are not essential for the initiation of ART. The following are recommended baseline laboratory investigations:

- Hb or FBC
- ALT or LFT
- CD4 count/percentage
- Creatinine if Tenofovir being considered (adults only)
- HBsAg if ALT is elevated and HCV serology
- VDRL (adults)
- Pregnancy test

Inability to perform laboratory investigations should not prevent adults or children from being initiated on ART. They should be initiated on ART if they are in WHO stage 3 and 4 in the absence of a CD4 count machine.

**CD4: Immunological staging**

CD4 count testing, measured in cells/mm<sup>3</sup>, gives an approximate measure of the strength of a person's immune system. The CD4 count result can predict the risk and type of subsequent opportunistic infections (OIs). CD4 count declines with disease progression. After clinical staging and treatment of any infections, blood should be taken for CD4 count testing, in order to help with immunological staging in children and adults.

Note that the CD4 parameters in children differ from adults. Absolute CD4 count varies with age. In children without HIV, absolute CD4 counts are comparatively higher than adults

- Normal absolute CD4 counts in children slowly decline over time and reach adult levels by 5 years of age.
- CD4 percentage is less variable than absolute count.
- CD4 percentage is the preferred immunological parameter for monitoring disease progression in children less than 5 years of age.
- CD4 count/percentage can decline very rapidly in infants < 12 months of age. (not a reliable indicator of risk of disease progression)
- Due to their immature immune system, HIV-infected infants < 12 months of age may suffer from opportunistic infections regardless of their CD4 count/percentage. Therefore, close clinical monitoring is imperative in young infants.
- Diagnosis such as tuberculosis and severe malnutrition can also cause low CD4 count/percentage, resulting in severe immunosuppression.

The following table delineates WHO immunological staging according to percentage for children:

**Table 3.5. WHO Immunologic Classification of HIV-Associated Immunodeficiency in Infants and Children**

Classification of HIV-Associated Immunodeficiency		< 11 Months (%)	12-35 Months (%)	36-59 Months (%)	≥ 5 Years (cells/mm <sup>3</sup> )
Not significant		> 35%	> 30%	> 25%	> 500
Mild		30-35%	25-30%	20-25%	350-499
Advanced		25-30%	20-25%	15-20%	200-349
Severe	CD4%, or absolute CD4 count	< 25%, or < 1500 cells/mm <sup>3</sup>	< 20%, or < 750 cells/mm <sup>3</sup>	< 15%, or < 350 cells/mm <sup>3</sup>	< 15%, or < 200 cells/mm <sup>3</sup>

Source: WHO

If there is a discrepancy between CD4% and CD4 absolute count, then CD4% should be used for children < 5 years of age, and CD4 absolute count should be used for children ≥ 5 years of age.

If no CD4% is available, then severe immunosuppression should be categorized using CD4 count as noted above. CD4 percentage can also be calculated using the following formula:

$$\text{CD4\%} = \frac{\text{CD4 absolute count} \times 100}{\text{total lymphocyte counts (TLC)}}$$

TLC = white blood count (WBC) x % lymphocytes

Example:

10 month old female with  
CD4 absolute of 1,000,  
WBC of 8,000, and lymphocytes of 50%  
TLC= 8,000 X 0.50= 4,000

$$\text{CD4\%} = \frac{1,000 \times 100}{4,000} = 25\%$$

This infant falls into the severe immunodeficiency category by both CD4% and absolute CD4 count

TLC = total lymphocyte count; WBC = white blood cell count

**Table 3.6. WHO Immunologic Classification of HIV-Associated Immunodeficiency in Adolescents and Adults**

<b>Immunological Category</b>	<b>CD4 Count</b>
No significant immunodeficiency	> 500 cells/mm <sup>3</sup>
Evidence of mild immunodeficiency	350-499 cells/mm <sup>3</sup>
Evidence of advanced immunodeficiency	200-349 cells/mm <sup>3</sup>
Evidence of severe immunodeficiency	< 200 cells/mm <sup>3</sup>

### ***Recording of Staging***

The following information should be clearly documented on the ART card, in the clinic file, and in the Bukana:

- Date, Age
- WHO clinical stage
- CD4 result (percentage and/or absolute count)

The importance of accurate, legible documentation must be emphasized to ensure appropriate medical management.

## **Primary and Supportive Care**

### ***Immunisations***

Immunisations in an HIV-infected child may follow the standard Lesotho immunisation schedule:

**Table 3.7: Immunisation Schedule**

Age	Immunizations
Birth	BCG
0-2 weeks	OPV
6 weeks	DPT, Hep B, OPV
10 weeks	DPT, Hep B, OPV
14 weeks	DPT, Hep B, OPV
9 months	Measles
18 months	Measles, DT

- Children who have, or are suspected to have HIV infection but are not yet symptomatic should be given all appropriate vaccines, including BCG, measles, and yellow fever vaccine (if indicated).
- BCG and yellow fever vaccines should not be given to a child who has symptomatic HIV infection or who is severely immunodeficient. Virtually all HIV-exposed and HIV-infected infants are asymptomatic at birth and can receive the BCG vaccine at birth.
- Consider giving measles vaccine early (at 6 months and again at 9 months) in children with HIV infection. Measles vaccine may be given to a child with symptomatic HIV infection, but should not be given to a child with severe immunodeficiency

***Routine Oral Vitamin A Supplementation***

The following dosages should be offered to children every 6 months:

<u>Age</u>	<u>Dose of Vitamin A</u>
6 months	100,000 Units
12 months to 5 years	200,000 Units

***Treatment for Worms***

Children should receive treatment against worms routinely, every 6 months:

**Table 3.8: Treatment for de-worming**

Age	Weight	Albendazole		Mebendazole (alternative)
12-24 months	<10kg	Avoid in children < 24 months. Give 200 mg if necessary.	or	100 mg twice daily for 3 days, or 500 mg once daily
>24–60 months	>10kg	400 mg once		500 mg once
> 5 yrs				

*Table taken from 'Guidelines for the management of HIV-infected children', National Dept of Health, South Africa, 2005.*

### ***Cervical Smear***

Routine cervical PAP smears should be performed to screen for cervical cancer in women. A Pap smear should be done soon after the initial visit and annually thereafter. Patients with abnormal PAP smears should be referred to the appropriate specialist.

### ***Nutrition***

The nutritional status of adults and children needs to be addressed as part of the comprehensive care package. All HIV-infected individuals, especially children, should be screened for malnutrition. Refer to CHAPTER 9 and the Lesotho National Guidelines for the Integrated Management of Acute Malnutrition for details regarding nutritional assessment and management. Nutritional status should be optimised prior to ARV initiation.

### ***Education and Counselling***

In preparation for ARV initiation, HIV education and counselling should be initiated early on.

Counselling should reinforce the importance of preventing HIV transmission and preparation for ARV treatment.

A psychosocial assessment should be performed. This will assist with future adherence counselling and identification of potential barriers to successful treatment and adherence as well as potential strategies to optimise care and treatment. Discussing existing community linkages and support networks with the patient or caregiver can also be beneficial for the future care of the patient.

Community support can assist with patient adherence, disclosure, stigma, and defaulter tracking.

Refer to CHAPTER 7 for details regarding adherence and disclosure issues and strategies.

### **Criteria for Selecting Patients for Antiretroviral Therapy (ART)**

Concerns about long-term toxicity, problems with adherence, and the risk of development of viral resistance led to conservative criteria for initiation of ART in the past. Today, however, it is generally considered that the most favourable time to begin ART is before the development of the first opportunistic infection, and before the CD4 count drops below 350 cells/mm<sup>3</sup>. Criteria for ARV initiation is based on a combination of WHO Clinical Staging and Immunological Staging (CD4 result).

## Eligibility for ART

**Children** who are in WHO clinical stage 3 or 4 are eligible for ART, irrespective of CD4 count or percentage. Note that if a CD4 result is not readily available or cannot be obtained, a child who is in WHO clinical stage 3 or 4 can still be initiated on HAART. **An infant or child who has been diagnosed using presumptive criteria can also be initiated on HAART.**

Children < 1 year of age who are HIV-infected are very vulnerable and have a high risk of mortality. Studies indicate that initiating treatment earlier will improve future outcomes. If readiness is assessed and there is a high likelihood of excellent adherence, including a motivated, consistent caregiver, then HAART initiation may be considered in infants < 12 months of age who have been definitively diagnosed as HIV-infected (positive DNA PCR), regardless of clinical or immunological stage after consulting with an HIV expert.

The following table describes when a child should be considered HAART-eligible:

**TABLE 3.9 Eligibility criteria for ART initiation for children/infants**

<u>WHO Clinical Paediatric stage</u>	<u>CD4 readily available</u>	<u>CD4 not readily available</u>
4	Treat all	
3	Treat all	
2	CD4-guided	Do not treat
	Less than 1 year of age and DNA PCR positive: consider treating regardless of CD4 count*	
1	CD4-guided	Do not treat
	Less than 1 year of age and DNA PCR positive: consider treating regardless of CD4 count*	

- in consultation with an HIV expert

**TABLE 3.10 Eligibility criteria for ART initiation for children/infants**

<u>WHO Clinical Paediatric stage</u>	<u>&lt;12 months</u>	<u>&gt; 12 months</u>
4	Treat All	<u>Treat All</u>
3	Treat All	<u>Treat All</u>
2	Treat all Consult a specialist for assistance	<u>CD4 - guided</u>
1	Treat all Consult a specialist for assistance	<u>CD4 - guided</u>

### **Immunologic eligibility for ART Initiation**

If the child is WHO clinical stage 1 or 2, then a CD4 result is used to guide eligibility for initiation. The following table describes the CD4 criteria to initiate HAART

**TABLE 3.11 Immunological criteria for ART initiation for children/infants**

(Modified from WHO's 'CD4 Criteria for Severe HIV Immunodeficiency', 2006)

	<b>≤ 12 months</b>	<b>12-35 months</b>	<b>36-59 months</b>	<b>≥ 5 years</b>
<b>CD4 %</b>	Treat All	<20%	<20%	<15%
<b>CD4 Absolute Count</b>	Treat All	<750 cells/mm <sup>3</sup>	<350 cells/mm <sup>3</sup>	<350 cells/mm <sup>3</sup>

Note:

- If there is a discrepancy between CD4% and CD4 absolute count, then CD4% should be used for children < 5 years of age, and CD4 absolute count should be used for children ≥ 5 years of age.
- These immunologic criteria supplement clinical assessment, and should always be used in combination with clinical staging.
- Note well that the initiation criteria for children ≥ 5 years of age has been changed such that initiation occurs at CD4 < 350.

The following two categories of HIV-infected **adults and adolescents** should be considered for ART:

- All adults and adolescents in WHO Clinical Stages 3 and 4, regardless of CD4 count
- All adults and adolescents in WHO Clinical Stages 1 and 2, with CD4 counts below 350 cells/mm<sup>3</sup>. If a CD4 count is not available in this latter group, then ART should be deferred.

**Table 3.12 Eligibility criteria for ART initiation for adults and adolescents**

<b>WHO Clinical Stage</b>	<b>CD4 is available</b>	<b>CD4 is not available</b>
<b>4</b>	<b>Treat all</b>	
<b>3</b>	<b>Treat all</b>	
<b>2</b>	<b>CD4 &lt; 350</b>	<b>Do not treat</b>
<b>1</b>	<b>CD4 &lt; 350</b>	<b>Do not treat</b>

It is acknowledged that raising the CD4 threshold from 200 to 350 in WHO Clinical Stages 1 and 2 will increase the number of people eligible for ART in Lesotho, and will lead to greater demand for ART. Therefore it is important to prioritise those being prepared to start ART, to prevent asymptomatic or less symptomatic patients, who are better able to attend clinics, from displacing sicker and more vulnerable patients from being initiated.

The following groups of patients should take priority:

- those with very low CD4 counts (CD4 counts below 200)
- children
- pregnant women

It is important to recognize that there are several limitations of CD4 testing:

- CD4 counts can fluctuate in the same individual during the course of a day
- CD4 counts are affected by intercurrent illnesses (such as TB)
- CD4 testing requires a certain level of quality in the local laboratory

If a CD4 count is not available, this should not delay the initiation of ART in an adult or child who is WHO Clinical Stage 3 or 4.

Such patients have already suffered from a major opportunistic infection related to advanced immunodeficiency, and require ART regardless of their CD4 count.

### **Not yet eligible for ART**

**Children** who are not yet eligible for ART on clinical or immunological grounds must be assessed regularly. In children, HIV disease can progress very rapidly, especially in infants < 12 months of age, even in those infants with seemingly good CD4 counts. Hence, continual, close clinical monitoring in HIV-infected children is of utmost importance. These children should continue to access the comprehensive package of care outlined above. The follow-up schedule for infants and children who are not yet eligible for ART is:

**TABLE 3.13 Monitoring of children who are not yet eligible for ART**

Age	Clinical evaluation	CD4 investigation
< 12mo	every 1 month	every 2-3 months
12mo – 5yrs	every 3 months	every 3 months
> 5yrs	every 3 months	mild–advanced immunodeficiency: every 3 months no immunodeficiency: every 6 months

Closer follow-up or more frequent CD4 investigation should be done if clinically indicated.

**Adults and adolescents** in the early stages of HIV infection (clinical stages 1 and 2) with CD4 counts > 350 cells/mm<sup>3</sup> do not need ART. Instead, they need to access the comprehensive package of medical care outlined at the beginning of this section.

An important aspect of care for this group of people is a healthy, positive lifestyle, which is outlined in Chapter 10 ('Wellness' Programme). Regular follow-up of these people does not need to take place in the clinic setting, unless there is a new significant infection (or other HIV-related illness). Often, regular support group sessions every 3 months outside of the clinic are a suitable setting to address lifestyle issues.

Laboratory monitoring in this group is a less important aspect of care, and does not need to be done frequently. CD4 testing should be limited as follows:

- CD4 count > 350: recheck CD4 count in 6 months

CD4 count for adults and adolescents can be checked more frequently as clinically indicated.

This schedule differs in pregnant women. Refer to CHAPTER 4 for details on CD4 monitoring in pregnant women who are not yet eligible for HAART with a CD4 > 350.

### **Other criteria to assess readiness to start ART**

ART requires a life-long commitment. The patient must understand the treatment, and be willing to comply to the rules of adherence before being prescribed the treatment.

All patients should receive 1-3 counselling sessions in order to learn about the following aspects of ART (list not exhaustive—refer to CHAPTER 7 for more details on adherence):

- HIV, its life-cycle, and how it affects a person's immune system
- How HIV is transmitted
- The difference between HIV and AIDS
- The value of CD4 testing
- How antiretroviral medication works
- Possible side effects of ARVs
- Consequences of non-adherence ('resistance')

Other criteria that can help assess a patient's readiness to begin ART include:

- The **involvement of a Treatment Supporter** (also known as a 'treatment buddy' or 'treatment assistant'): this is usually a friend or family member who can help with adherence, and implies that the patient has disclosed her/his status to at least one person. The participation of a Treatment Supporter is strongly encouraged, but not mandatory. If a patient has difficulty in identifying a Treatment Supporter, the health facility should help to identify a suitable person, often through a Support Session or Group or Community Health Worker. The Treatment Supporter should live within walking distance of the patient's home, and be older than 12 years of age. For children, a reliable, consistent caregiver should be identified to give medicines to the child and bring the child to clinic visits. If possible a **second caregiver** should also be identified to assist with medications when the primary caregiver is unavailable.

- **Determination to attend a clinic despite the distance:** it is recommended that patients receive ART from the nearest clinic to their home. However, this is not obligatory, since there are valid reasons that may force patients to seek ART in a clinic elsewhere. Once such patients are stable on ART, and if all parties agree, the person can be transferred to the nearest clinic using a standardized Transfer Letter (**Annex 16**).
- There are **tools to help assess patient readiness**, an example of which can be found in Chapter 7
- **Psychosocial issues:** a stable, consistent home environment is recommended prior to initiating ARVs. Factors that should be considered include a patient's or caregiver's mental health status, alcohol or drug abuse, or the presence of domestic violence and financial status.

**Refer to CHAPTER 7 for more details regarding adherence counselling and readiness assessment.**

### **Care of the HIV-Exposed Infant**

Most infants with HIV infection are asymptomatic at birth. Without identification and treatment close to half of HIV infected infants will die before their second birthday. It is therefore, essential that infants exposed to HIV are placed on appropriate prophylaxis and monitored closely until their status is confirmed.

#### ***Objectives for Care:***

- Complete prophylaxis regimen for PMTCT (AZT)
- Early recognition of HIV infection
  - ◆ All exposed infants should receive a DNA PCR test at 6 weeks of age
  - ◆ All exposed infants who are currently breastfeeding or still in “window period” should receive a **second** DNA PCR test 6 weeks after cessation of breastfeeding, if the first DNA PCR was negative.
  - ◆ All exposed infants should receive confirmatory rapid test at 18 months of age
- Recognition and prevention of opportunistic infections
  - ◆ All exposed infants must be initiated on co-trimoxazole prophylaxis at 4-6 weeks of age until confirmed HIV-negative.
- Monitoring of growth and development
- Appropriate infant feeding counselling (see Chapter 9 and Infant and Young Child Feeding National Guidelines for more details)

#### ***Monitoring Schedule for HIV-Exposed Infant***

- 1 week
  - clinical evaluation as noted below
  - discontinue AZT only if mother is on HAART therapy
  - if mother has not enrolled into ART care encourage her to do so, especially if she is breastfeeding

- 6 weeks
  - start co-trimoxazole prophylaxis, may start as early as 4 weeks of age if infant presents for care at that time
  - do DNA PCR #1
  - clinical evaluation as noted below
- 10 weeks
  - clinical evaluation as noted below
  - give DNA PCR results if available and refer as necessary
- 14 weeks
  - clinical evaluation as noted below
  - give DNA PCR results if available and refer as necessary
- Every 1 months until age 12 months, then every 2-3 months
  - clinical evaluation as noted below and refer as necessary
  - give DNA PCR results if available and refer as necessary

All efforts should be made to ensure that HIV-exposed infants are not lost to follow-up. HIV-exposed infants should be followed at the health facility until their status is definitively known. If they are definitively negative, they can be discharged from routine monitoring and care. If they are definitively positive, then they should be referred for appropriate care and treatment.

### ***Clinical evaluation***

- Growth and Development
  - ◆ Measure weight, height, and head circumference
  - ◆ Developmental milestones
- History and Physical
  - ◆ Assess for opportunistic infections and signs and symptoms suggestive of HIV infection, such as persistent oral thrush, hepatosplenomegaly, and lymphadenopathy. Treat as indicated.
  - ◆ Assess for signs and symptoms of AZT induced anaemia
- Initiation and continuation of co-trimoxazole prophylaxis (initiation at 4-6 weeks of age or anytime thereafter when infant presents for care; see section below for details regarding when to discontinue)
- Continue PMTCT prophylaxis (AZT 1.2 ml twice a day) as indicated (discontinue at 1 week of age for infants born to mothers who received HAART, discontinue at 4 weeks of age for infants born to mothers who received PMTCT prophylaxis regimen or did not receive any ART)
- Nutritional assessment and dietary advice
  - ◆ Review infant feeding practices (see Chapter 9 and Infant and Young Child Feeding National Guidelines)
- Primary and supportive care: Immunizations, Vitamin A, and de-worming for children as indicated
- Re-assess need for repeat testing (DNA PCR or RNA based test) depending on age and exposure history (Consult algorithm, Annex 1)

## Identifying Infants with Signs and Symptoms of HIV Infection

Infants may be HIV-infected but completely asymptomatic. There are also certain clinical signs and symptoms, which may suggest HIV infection (see table 3.1). All HIV-exposed infants may be HIV-infected and must be started on co-trimoxazole prophylaxis and followed closely as outlined above. DNA PCR testing or RNA – based tests should be performed to determine definitive diagnosis. If an infant is very sick before DNA PCR testing or RNA – based tests can be done or if DNA PCR or RNA – based tests results are still pending, then there are criteria for presumptive diagnosis of severe HIV disease and the sick infant may be started on HAART therapy.

<b>Likely (common in both HIV+ and HIV- children)</b>	<b>Suggestive</b>	<b>Pathognomonic</b>
Otitis media-persistent or recurrent Diarrhoea-persistent or recurrent Severe pneumonia Tuberculosis Failure to thrive	Recurrent severe bacterial infection Persistent or recurrent oral thrush Parotid enlargement Generalized lymphadenopathy Hepatosplenomegaly (non-malaria areas) Persistent or recurrent fever Neurologic dysfunction Persistent generalized dermatitis	Oesophageal candidiasis Herpes zoster (shingles) Invasive salmonella infection Pneumocystis Jirovecci pneumonia Extrapulmonary cryptococcosis Lymphoma Kaposi's sarcoma

### Co-trimoxazole Prophylaxis

All exposed infants must be started on co-trimoxazole prophylaxis starting at 4-6 weeks of age.

Co-trimoxazole can only be discontinued once HIV is definitively excluded. An HIV-exposed infant or child can be declared definitively HIV-negative (has escaped infection) if he or she fulfils the following requirements:

- negative rapid test and outside of window period (3 months after cessation of breastfeeding), or
- negative DNA PCR and outside window period (6 weeks after cessation of breastfeeding)

### Presumptive Diagnosis

If an infant fulfils criteria for presumptive diagnosis, then the infant qualifies for HAART initiation and must be referred for treatment. See Table 2.3 for criteria for presumptive diagnosis for initiation of HAART in infants < 18 months of age.

Do not wait for DNA PCR or RNA – based tests results to start treatment if an infant fulfils criteria for presumptive diagnosis. Refer immediately to ART Centre for treatment.

***Positive DNA PCR or RNA – based tests***

For infants with a positive DNA PCR or RNA – based tests:

- Refer immediately for evaluation, immunological staging (CD4 count), and continued follow-up
- Document referral in Bukana
- Check records at the ART clinic to confirm that the infant presented for care
- See Chapter 3 for details regarding initiation of care and treatment in an HIV-infected infant
- Repeat rapid testing should be performed after 18 months of age for confirmation of status

***Negative DNA PCR or RNA – based tests***

For infants with a negative DNA PCR or RNA – based tests and continues to breastfeed or test was performed within window period, ongoing monitoring is required because the baby is still considered exposed and possibly infected,

- Clinical evaluation at 10 weeks, 14 weeks, every 1-2 months until 1 year of age, then every 2-3 months thereafter
- Evaluate more frequently if problems arise
- Maintain on co-trimoxazole prophylaxis
- Repeat testing with DNA PCR or RNA-based tests 6 weeks after cessation of breastfeeding
- For infants with a negative DNA PCR who are no longer breastfeeding and are out of window period, the infant can be proclaimed definitively negative. Families should be counselled on maintaining negative status. Infants should have confirmatory HIV testing at 18 months even if negative.

## **CHAPTER 4: Management of Pregnant Women Including PMTCT**

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HIV poses major challenges to clinicians managing pregnant women. Not only do we want the mother to have a healthy pregnancy, but we also want to prevent the baby from becoming infected with HIV before, during, and after delivery.

### **Diagnosing HIV in Pregnant Women**

The HIV testing and counselling (HTC) approach used in Lesotho Maternal and Child Health (MCH) settings provides for routine testing of MCH clients. Information on benefits of knowing one's HIV status including services available for those infected is shared in a group session. The healthcare provider should then proceed with testing unless a client explicitly declines (Opts-Out). Such a client should be offered the test during subsequent visits until she is tested. There is no requirement for a written consent.

### **Treatment versus Prevention**

Different interventions are recommended depending on the women's CD4 count:

- If a pregnant woman has a high CD4 count (> 350), then ARVs are given to the mother and newborn to prevent mother-to-child transmission (PMTCT) of the virus.
- If a pregnant woman is in stage 3 or 4 or has a CD4 count <350, triple ART regimen should be initiated. For other situations, i.e., stage 1, 2 and stage 3 with a CD4 > 350, PMTCT prophylaxis regimens should be used. If HAART is given for at least 3 months during the pregnancy, then the risk of transmission of HIV from mother-to-child will be very low. This risk can be further reduced if the newborn receives infant ARV prophylaxis after delivery.
- HIV can also be transmitted from mother-to-child in breast milk. The risk of transmission in this manner can be reduced if:
  - The mother opts for exclusive formula feeding, or
  - The mother opts to exclusively breastfeed for 6 months. Then follow WHO recommendations for feeding after 6 months.

* For further information infant feeding options please see Chapter 9 Nutrition and Infant and Young Child Feeding National Guidelines
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### **Prevention of Mother to Child Transmission of HIV (PMTCT)**

A comprehensive approach to PMTCT entails four elements (or prongs) namely:

1. Primary prevention of HIV infection among women;
2. Prevention of unintended pregnancies among HIV positive women;
3. Prevention of HIV transmission from an infected mother to her child; and
4. Provision of care, treatment and support to HIV infected women, their children and families.

#### **4.1 Primary Prevention of HIV Infection among Women**

Women who test HIV negative in Maternal and Child Health (MCH) should be counselled in ways to avoid sexual risk taking behaviour, including:

1. Reduce the number of sexual partners
2. Consistent and proper use of a condom (either male or female)
3. Seeking prompt treatment for any other sexually transmitted infections (STIs).

Women should be motivated to disclose their status and bring their partner(s) for testing. Mobilizing male involvement in PMTCT services and early detection of discordant couples are key components of primary prevention.

#### **4.2 Prevention of Unintended Pregnancies among HIV Infected Women**

All health care delivery points that interface with HIV infected women (particularly MCH and ART clinics) should offer comprehensive contraceptive services to avoid unintended pregnancies. Dual protection (use of condoms in addition to any other contraceptive of choice) should be emphasized as the standard of care.

#### **4.3 Prevention of HIV Transmission from Mother to Child**

The following key interventions are known to be effective measures of prevention:

1. Use of antiretrovirals (ARVs) for prevention (prophylaxis) or treatment (see section on regimens).
2. Avoiding obstetric practices that facilitate HIV transmission such as amniocentesis, external cephalic version, prolonged rupture of membranes (>4 hours) and prolonged labour, invasive foetal monitoring techniques, routine episiotomies and unnecessary newborn suctioning.
3. Safer infant feeding options, mainly exclusive breastfeeding for the first 6 months exclusive replacement feeding under hygienic conditions.

#### **4.4 Provision of Care, Treatment and Support to HIV Infected Women and Their Families**

Care, treatment and support are important contributors to HIV prevention. HIV transmission is largely influenced by viral load levels, thus individuals on ARV treatment are at a lower risk of transmitting the virus. Establishing a support network for HIV positive women through their families and community is important to address future psychosocial and adherence needs of patients enrolled in HIV care and treatment. It should be clearly noted, however, that ARV treatment does not eliminate the risk of HIV transmission.

## SUMMARY OF ANTENATAL CARE

(See *Reproductive Health Guidelines for further information*)

All pregnant women in Lesotho should be offered a package of antenatal care comprised of nothing less than the following:

- At least four antenatal visits with education about birth preparedness and pregnancy/delivery complications, general clinical assessment, obstetrical assessment (BP, uterine growth and foetal well-being) and risk assessment
- Folic acid in the first trimester
- Multivitamin ± nutritional support
- Blood tests (Hb, VDRL, HIV)
- Iron and folic acid supplementation for those with Hb below 11.0
- For those found to be HIV-positive:
  - Clinical staging and CD4 count if available
  - PMTCT interventions:
    - ARV prophylaxis (prevention) if CD4 > 350, or
    - Treatment with ARVs (HAART) if CD4 < 350
    - Education about infant feeding options

### Initiation of Care and Treatment in HIV-Infected Pregnant Women

Pregnant women infected with HIV require the same care for their own health as for any other adults infected with HIV (See Chapter 3 Initiation of Care and Treatment). In addition, they need special education and counselling about PMTCT, family planning, follow-up of exposed infant(s), partner involvement, family care, and infant feeding options. Pregnant women should be 'fast-tracked' for initiation of ARVs (whether for prevention or treatment) within 3 weeks of diagnosis. The following table summarises care and treatment to be provided to pregnant women based on their clinical and/or immunological staging:

WHO Clinical Stage	CD4 Count	Decision	Patient Monitoring
I	> 500	PMTCT Prophylaxis	Clinical assessment & CD4 after 6 months
	>350 ≤ 500	PMTCT Prophylaxis	Clinical assessment & CD4 after 3 months
	≤ 350	HAART	Co-trimoxazole & HAART monitoring
II	> 500	PMTCT Prophylaxis	Clinical assessment & CD4 after 6 months;
	>350 ≤ 500	PMTCT Prophylaxis	Clinical assessment & CD4 after 3 months;
	≤ 350	HAART	Co-trimoxazole & HAART monitoring
III	Any Count	HAART & OI treatment	Co-trimoxazole & HAART monitoring
IV	Any Count	HAART & OI treatment	Co-trimoxazole & HAART monitoring

\* Co-trimoxazole can safely be used during pregnancy (WHO Recommendations)

## Baseline Assessment for Pregnant Women Eligible for Prevention (Prophylaxis) with ARVs

Anaemia is common during pregnancy and can be aggravated by HIV infection. Pregnant women should be clinically evaluated for signs and symptoms of anaemia. If the haemoglobin is < 8 g/dl, a d4T-based regimen should be initiated or prevention should be delayed until anaemia is corrected. The cause of anaemia should be investigated including ruling out intestinal worms (particularly hook worms). The woman should be started on haematinics (Ferrous Sulphate 120mg and Folic Acid 400µg daily) and haemoglobin checked once a month. Women whose haemoglobin remains below 8 g/dl despite haematinic treatment should only receive the intrapartum and postpartum components of AZT prophylaxis including SD NVP (see section on regimens). See the National PMTCT Guidelines for further details.

## Baseline Assessment for Pregnant Women Eligible for HAART

The baseline assessment for pregnant women in stages 3 and 4, or in stages 1 and 2 with CD4 ≤ 350 should include:

- full blood count (FBC)
- ALT (and other liver function tests if clinically indicated)
- renal function tests if clinically indicated
- VDRL
- Serological tests for Hepatitis A, B and C where feasible.

NB: Lack of availability of these tests should not delay in commencing HAART

Anaemia is not a contra-indication for initiating HAART but for women with severe anaemia (Haemoglobin <8g/dl), AZT should be replaced by D4T. The patient should in this case be monitored for lactic acidosis.

## TREATMENT AND PREVENTION REGIMENS FOR PREGNANT WOMEN

### Scenario-Based Prevention (Prophylaxis) Regimens for PMTCT (CD4 > 350)

#### Scenario 1: Women seen during ANC

ARVs used	ANTENATAL	INTRAPARTUM	POSTPARTUM	
<u>Recommended drugs:</u> Zidovudine (AZT), Lamivudine (3TC) and Nevirapine (NVP)	Mother: AZT 300 mg twice a day starting at 28 weeks of gestation or as soon as possible thereafter	Mother: <b>At onset of labour:</b> NVP 200mg stat AZT 600 mg/3TC 300mg (2 tablets of Combivir) <b>Then</b> AZT 300 mg + 3TC 150 mg (1 tablet of Combivir) every 12 hours until delivery	Mother: AZT 300mg + 3TC 150mg (1 tablet of Combivir) twice daily for 7 days	Newborn: SD-NVP 2mg/kg or 6mg oral suspension within 72 hours and AZT 4mg/kg or 12mg twice daily for 7 days

### Scenario 2: Women seen in Labour having received no Prevention ARVs

ARVs used	ANTENATAL	INTRAPARTUM	POSTPARTUM	
<u>Recommended drugs:</u>  Zidovudine (AZT), Lamivudine (3TC) and Nevirapine (NVP)	Mother:  None	Mother:  <b>At onset of labour:</b> NVP 200mg stat AZT 600 mg/3TC 300 mg (2 tablets of Combivir)  <b>Then</b> AZT 300 mg + 3TC 150 mg (1 tablet of Combivir) every 12 hours until delivery	Mother:  AZT 300mg plus 3TC 150mg twice daily for 7 days	Newborn:  SD-NVP 2mg/kg or 6mg oral suspension within 72 hours and AZT 4mg/kg or 12mg twice daily for 4 weeks

### Scenario 3: Women seen within 72 hours of delivery having received no ARVs

ARVs used	ANTENATAL	INTRAPARTUM	POSTPARTUM	
<u>Recommended drugs:</u>  SD-NVP and AZT	Mother:  None	Mother:  None	Mother:  None	Newborn:  SD-NVP 2mg/kg or 6mg oral suspension within 72 hours and AZT 4mg/kg or 12mg twice daily for 4 weeks

## FIRST-LINE<sup>1</sup> TREATMENT REGIMENS FOR PREGNANT WOMEN (CD4 ≤ 350)

ARVs used	ANTENATAL	INTRAPARTUM	POSTPARTUM	
<u>Recommended regimen for CD4 ≤ 250:</u>  Zidovudine (AZT) Lamivudine (3TC) Nevirapine (NVP)	Mother:  Within 3 weeks of CD4 result, initiate AZT 300 mg BD 3TC 150 mg BD NVP 200mg OD for 2 weeks, then BD thereafter	Mother:  Continuation  AZT 300 mg BD 3TC 150 mg BD NVP 200mg BD	Mother:  Continuation  AZT 300 mg BD 3TC 150 mg BD NVP 200mg BD	Newborn:  AZT 4mg/kg or 12mg twice daily for 7 days
<u>Recommended regimen for CD4 &gt;250 ≤ 350:</u>  Zidovudine (AZT) Lamivudine (3TC) Efavirenz (EFV) <i>*but delay initiation until after the first trimester (14 weeks of gestation)</i>	Mother:  Within 3 weeks of CD4 result*, initiate  AZT 300 mg BD 3TC 150 mg BD EFV 600 mg OD	Mother:  Continuation  AZT 300 mg BD 3TC 150 mg BD EFV 600 mg OD	Mother:  Continuation  AZT 300 mg BD 3TC 150 mg BD EFV 600 mg OD	Newborn:  AZT 4mg/kg or 12mg twice daily for 7 days
<u>Alternative</u> If anaemia (Hb < 8 g/dl)  Stavudine (D4T) Lamivudine (3TC) Nevirapine (NVP)	Mother:  Replace AZT with D4T, but monitor closely for symptoms of lactic acidosis	Mother:  Replace AZT with D4T	Mother:  Replace AZT with D4T	Newborn:  AZT 4mg/kg or 12mg twice daily for 7 days
<u>Alternative</u> If on TB treatment:  Zidovudine (AZT) Lamivudine (3TC) Efavirenz (EFV) <i>*but delay initiation until after the first trimester</i>	Mother  Replace NVP with EFV	Mother  Replace NVP with EFV	Mother  Replace NVP with EFV	Newborn:  AZT 4mg/kg or 12mg twice daily for 7 days

**Initiation of ARV prophylaxis (prevention) or treatment (HAART) should be fast-tracked for women presenting late in pregnancy: Viral suppression is a function of time.**

\* **NB.** Do not use Efavirenz in 1st trimester and may use Nevarapine if absolutely necessary for patients with a CD4 >250 ≤ 350: but need to monitor closely or refer

<sup>1</sup> If a pregnant woman is in need of a second-line treatment regimen, her case should be referred to the Second-line Committee for urgent review.

## MINIMUM PMTCT PACKAGE

According to the 2004 Demographic Health Survey (DHS), more than 90% of the women in Lesotho attend ANC at least once. Attendance decreases with each subsequent visit, with only 60% of the women attending four times. Almost half of the women deliver outside health facilities. Whereas all efforts should be made to increase the number of ANC visits, and the number of health facility deliveries, any woman who has attended ANC and tested HIV positive should be given a minimum PMTCT package at 28 weeks of gestation. The minimum package should comprise of:

- A pack of one tablet of NVP (200mg) together with 17 tablets of Combivir (or 17 tablets of AZT 300mg and 17 tablets of 3TC 150mg if Combivir is not available).
- A syringe of 6mg (0.6ml) of NVP suspension.
- A bottle of AZT syrup with a syringe marked for dispensing 12mg (1.2ml) BD for 4 weeks.
- Instructions for the woman to take the single dose of NVP plus 2 tablets of Combivir (2 tablets of AZT 300mg and 2 tablets of 3TC 150mg) at the onset of labour in the event that she delivers outside a health facility.
- Instructions for the woman to continue with Combivir (AZT and 3TC) 1 tablet every 12 hours throughout labour, and for 7 days after delivery.
- Instructions for her to give the newborn the single dose of NVP syrup immediately after delivery and start AZT syrup 12 mg BD for 4 weeks.
- **Community health workers who test pregnant women at home should deliver this minimum package to their clients.**
- **The community health worker should refer the woman to a community medical and psychosocial support service after delivery. The best approach would be to establish a strong family education, child care and support programme. Emphasis on strong linkages with ARV clinic team.**

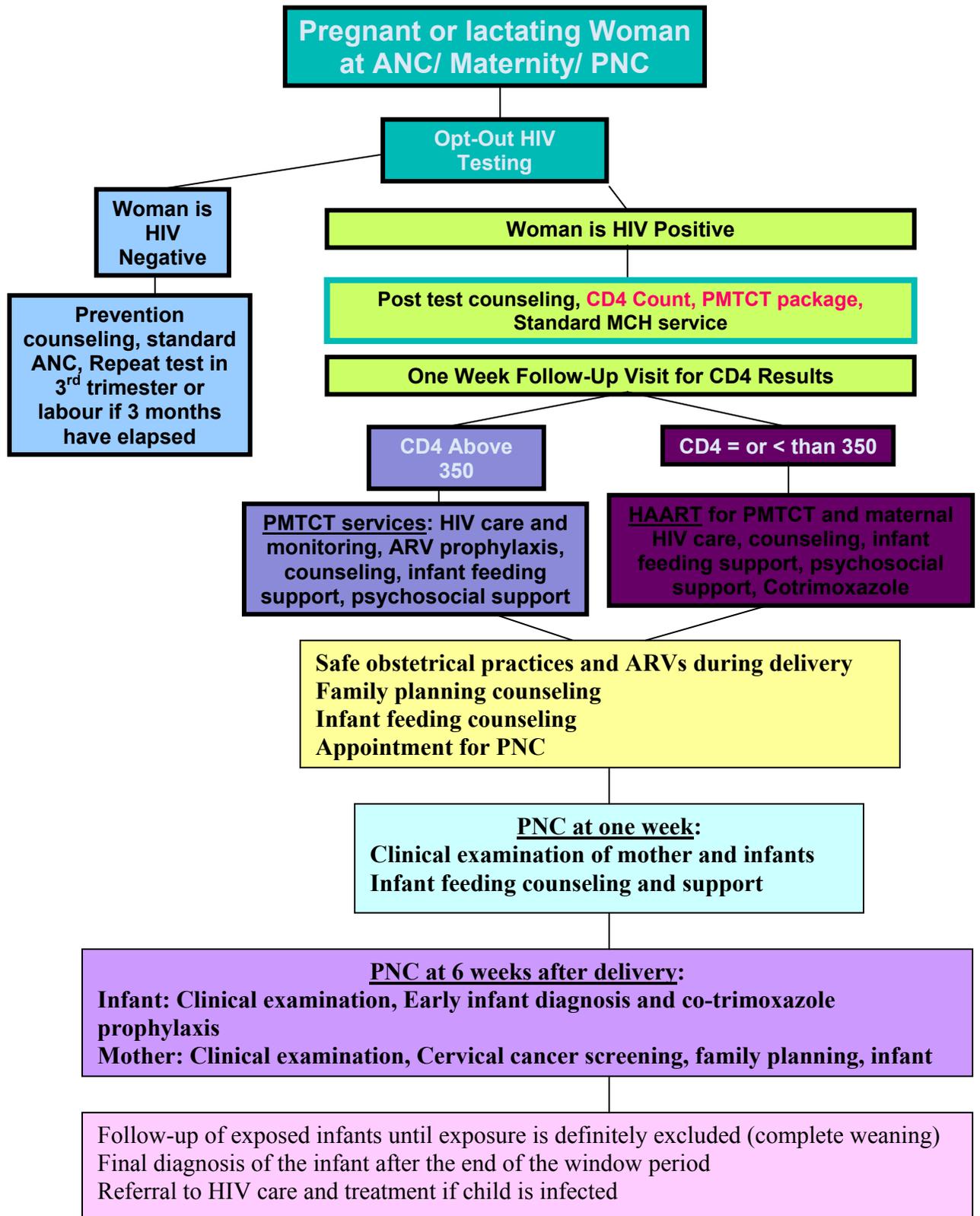
## SUMMARY OF INFANT DOSAGES OF NVP/AZT BY WEIGHT RANGE

The infant dose of NVP is 2mg (0.2ml)/kg; the dose of AZT is 4mg (0.4ml)/kg:

Weight of newborn (in kg)	Single dose of NVP (in ml)	Dose of AZT (in ml) given twice daily for 1-4 weeks
<2	0.4	0.8
2-2.5	0.5	1.0
2.5-3.5	0.6	1.2
3.5-4	0.7	1.4
≥ 4	0.8	1.6

**NB: If the weight is not known NVP dose is 0.6ml and AZT dose is 1.2 ml should be given**

## COMPREHENSIVE PMTCT SERVICES ALGORITHM



## **MONITORING PREGNANT WOMEN ON ARVs**

As with other adults, pregnant women should be clinically assessed 2 weeks after initiation of HAART, and monthly thereafter. The Haemoglobin (Hb) should be checked at 2 weeks, and monthly. If the Hb falls below 8 g/dl, then AZT prophylaxis should be discontinued while the anaemia is investigated and treated.

The rest of the monitoring schedule is similar to that for adults (See Annex 12 Monitoring Schedule for Children and Adults on ART).

For pregnant women not eligible for HAART, with an initial CD4 count between 350-500, the CD4 count should be repeated after 3 months.

## **MANAGEMENT OF TUBERCULOSIS (TB) IN THE CONTEXT OF PREGNANT WOMEN**

Pregnant women with a cough that has lasted more than 2 weeks should be screened for active TB. Screening should include history of contact with a TB patient, sputum for acid-fast bacilli (AFBs) and a chest x-ray. The Radiographer should be informed of the pregnancy status in order to shield the foetus from radiation.

TB drugs are safe during pregnancy and should be used at their usual dosages (see TB Guidelines). The anti TB drug, rifampicin increases nevirapine clearance. Efavirenz should be preferentially used instead of nevirapine if pregnancy is beyond 1<sup>st</sup> trimester (14 weeks of gestation or more) and the woman has to use rifampicin. Effective contraception should be ensured postpartum if an efavirenz-based regimen is used.

## CHAPTER 5: Regimens

### FIRST LINE REGIMENS

For treatment purposes, three anti-retroviral (ARV) drugs are given together (Highly Active Antiretroviral Therapy (HAART)). In a treatment-naïve patient (one who has never used ARVs in the past), the first-line regimen should consist of two Nucleoside Reverse Transcriptase Inhibitors (NRTI's) plus one Non-nucleoside Reverse Transcriptase Inhibitor (NNRTI).

**TABLE 5.1 NRTI and NNRTI antiretroviral drugs available for first-line ART therapy**

Nucleoside/nucleotide Reverse Transcriptase Inhibitors (NRTI)	Non-nucleoside Reverse Transcriptase Inhibitors (NNRTI)
Lamivudine (3TC)	Nevirapine (NVP)
Tenofovir (TDF)	Efavirenz (EFV)
Zidovudine (AZT)*	
Stavudine (d4T)*	

\* AZT and d4T should **NEVER** be used together.

If fewer than 3 ARVs are used for treatment, resistance of HIV to individual ARVs will eventually develop, resulting in treatment failure.

The goals of anti-retroviral therapy (ART) include:

- Reduction in HIV-related morbidity and mortality
- Improvement in quality of life and prolonged survival
- Restoration and preservation of immune function
- Maximal and durable suppression of HIV replication
- Accelerated growth (for children)

1<sup>st</sup> line regimen for children should be chosen using the following considerations:

**TABLE 5.2 1<sup>st</sup> line regimen for children**

AZT or d4T*	+	3TC	+	EFV or NVP
Use d4T for Hb < 8.0 gm/dl or no Hb readily available		Always part of 1 <sup>st</sup> line regimen		Use EFV for any child > 3 years and > 10 kg Use NVP for any child < 3 years or < 10 kg EFV cannot be used for children < 3 years or < 10kg
Use d4T 3 in 1 fixed dose combination (d4T-3TC-NVP) for patients at risk of poor adherence				**Use EFV for those with elevated LFTs (> 2.5 times the upper limit of normal)
				***Use EFV for those on concurrent anti-tuberculous therapy (child should be > 3 yrs and > 10kg)**

\*AZT and d4T should **NEVER** be used together

\*\* For children < 3 years of age or < 10kg with elevated LFTs (> 2.5 times the upper limit of normal) use Kaletra suspension in consultation with an HIV expert

\*\*\* For children < 3 years of age or < 10kg who are also on concurrent anti-tuberculous therapy, treat with standard dose NVP.

**TABLE 5.3 Description of First-line Regimen for Treatment-Naïve Infants and Children**

Age		Regimen			When to use	When to avoid
Less than 3 years of age	4c	Zidovudine (AZT) twice daily	Lamivudine (3TC) twice daily	Nevirapine (NVP) once daily dosing for 2 weeks, then twice daily	<b>Preferred regimen for children &lt; 3 years</b> May use NVP if on TB treatment **	Avoid AZT in children with Hb < 8.0 gm/dl, or no Hb result readily available and clinically appears anaemic
	4a	Stavudine (d4T)+ twice daily	Lamivudine (3TC)+ twice daily	Nevirapine (NVP)+ once daily dosing for 2 weeks, then twice daily	Use d4T in children with Hb < 8.0gm/dl, or no Hb result readily available Preferred regimen in those at risk of poor adherence, if paediatric 3-in-1 fixed-dose combination (FDC) is available May use NVP if on TB treatment **	
Greater than 3 years of age	4d	Zidovudine (AZT) twice daily	Lamivudine (3TC) twice daily	Efavirenz (EFV)* once nightly	<b>Preferred regimen in children &gt; 3 years and &gt; 10kg</b>	Avoid AZT in children with Hb < 8.0 gm/dl, or no Hb result readily available and clinically appears anaemic Avoid EFV in children < 10kg
	4b	Stavudine (d4T) twice daily	Lamivudine (3TC) twice daily	Efavirenz (EFV)* once nightly	Use d4T in children with Hb < 8.0gm/dl, or no Hb result readily available Use EFV in children > 10kg	Avoid EFV in children < 10kg
	4c	Zidovudine (AZT) twice daily	Lamivudine (3TC) twice daily	Nevirapine (NVP) 2 weeks once daily dosing, then twice daily	<b>Preferred regimen in children &gt; 3 years but &lt; 10kg</b> Use NVP if any risk of pregnancy	Avoid NVP in patients on TB treatment (use EFV-containing regimen)** Avoid AZT in children with Hb < 8.0 gm/dl, or no Hb result readily available and clinically appears anaemic
	4a	Stavudine (d4T)+ twice daily	Lamivudine (3TC)+ twice daily	Nevirapine (NVP)+ 2 weeks once daily dosing, then twice daily	Use d4T in children with Hb < 8.0gm/dl, or no Hb result readily available Use NVP in children < 10kg Use NVP if any risk of pregnancy Preferred regimen in those at risk of poor adherence, if paediatric 3-in-1 fixed-dose combination (FDC) is available	Avoid NVP in patients on TB treatment (use EFV-containing regimen)**

\* Adolescents who are sexually active should receive reliable contraceptive methods free of charge if they are on an EFV-based regimen

+ Fixed dose combinations of these medications should be available and used wherever possible

\*\* For children who are < 3 years of age or < 10kg, on concurrent TB therapy, standard NVP dose should be used, despite known rifampicin and NVP interaction.

Dosing of ARVs in infants and children is based on weight. Refer to ANNEX 11 for dosing recommendations. Paediatric fixed dose combinations (FDCs) containing d4t-3TC-NVP are strongly recommended for use where adherence may be an issue (i.e. elderly caregiver, difficulty with transportation and terrain, living in mountainous regions, orphan status, caregiver other than biological mother). Refer to Annex 11a for dosing of FDCs.

The same preferred regimen applies to all HIV-infected infants. Initiation of infants < 12 months of age *who have failed PMTCT* (at risk for NVP resistance) should be done in consultation with an HIV expert.

**TABLE 5.4 First Line Regimen for Treatment-Naïve Adult Patients**  
(Treatment-Naïve = those who have never taken HAART or triple therapy previously)

Regimen				When to use	When to avoid
1f	Tenofovir (TDF) (300 mg once daily) <sup>+</sup>	Lamivudine (3TC) (300 mg once daily) <sup>+</sup>	Efavirenz (EFV) (600 mg once daily; use 400 mg if < 40 kg)	<b>Preferred first-line regimen in patients with Hepatitis B co-infection</b>	Avoid TDF if renal compromise (baseline calculated Creatinine Clearance is < 50 ml/min). Avoid EFV and TDF in first trimester of pregnancy*
1e	Tenofovir (TDF) (300 mg once daily) <sup>+</sup>	Lamivudine (3TC) (300 mg once daily) <sup>+</sup>	Nevirapine (NVP) (200 mg once daily for the first 2 weeks, then 200 mg twice daily)	NVP should be used in women who expect to become pregnant	Avoid NVP in patients on TB treatment (use EFV-containing regimen) Avoid using TDF if renal compromise (baseline calculated Creatinine Clearance is < 50 ml/min). NVP should be used with caution in those with baseline CD4 between 250-350 due to an increased risk of hepatotoxicity (if used, monitor ALT more frequently)
1d	Zidovudine (AZT/ZDV) (300 mg twice daily) <sup>+</sup>	Lamivudine (3TC) (150 mg twice daily) <sup>+</sup>	Efavirenz (EFV)* (600 mg once daily)		Avoid AZT in patients with Hb < 8.0 gm/dl Avoid EFV in first trimester of pregnancy*
1c	Zidovudine (AZT/ZDV) (300 mg twice daily) <sup>+</sup>	Lamivudine (3TC) (150 mg twice daily) <sup>+</sup>	Nevirapine (NVP) (200 mg once daily for the first 2 weeks, then 200 mg twice daily)	<b>Preferred first-line regimen in adult, (including pregnant women, and those who expect to become pregnant)</b>	Avoid AZT in patients with Hb < 8.0 gm/dl Avoid NVP in patients on TB treatment (use EFV-containing regimen) NVP should be used with caution in those with baseline CD4 between 250-350 due to an increased risk of hepatotoxicity (if used, monitor ALT more frequently)
1b	Stavudine (d4T) (30 mg twice daily) <sup>+#</sup>	Lamivudine (3TC) (150 mg twice daily) <sup>+</sup>	Efavirenz (EFV)* (600 mg once daily; use 400 mg if < 40 kg)	Use d4T in patients with Hb < 8.0gm/dl	Avoid d4T if at risk of hyperlactatemia <sup>#</sup>
1a	Stavudine (d4T) (30 mg twice daily) <sup>+#</sup>	Lamivudine (3TC) (150 mg twice daily) <sup>+</sup>	Nevirapine (NVP) (200 mg once daily for the first 2 weeks, then 200 mg twice daily) <sup>+</sup>	Use d4T in patients with Hb < 8.0gm/dl Preferred regimen in those at risk of poor adherence, if 3-in-1 FDC is available	Avoid d4T if at risk of hyperlactatemia <sup>#</sup> Avoid NVP in patients on TB treatment (use EFV-containing regimen) NVP should be used with caution in those with baseline CD4 between 250-350 due to an increased risk of hepatotoxicity (if used, monitor ALT more frequently)

\* EFV should never be used in the first trimester of pregnancy due to its known teratogenic effects; all women should receive reliable contraceptive methods free of charge if they are on an EFV-based regimen

+ Fixed dose combinations of these medications should be available and used wherever possible

# Those at higher risk of hyperlactatemia when taking Stavudine include:

- Pregnant females
- Females over 70 kg
- Those with a body mass index (BMI) > 28

## SUBSTITUTING INDIVIDUAL ARVS IN FIRST-LINE REGIMENS

Like all medicines, ARVs also have some side effects. These should be explained to the patient and caregiver prior to initiation.

Substitutions of individual ARVs within first -line regimens may be due to:

- co-infection with TB: drug-drug interactions exist between NVP and rifampicin; EFV should be substituted in for NVP (exception: children < 3 years or < 10kg who should remain on standard dose NVP based regimen) (see TB co-infection chapter)
- drug toxicity: see ANNEX 14 for grading and management of ARV toxicity. If *severe or life-threatening toxicity* is related to an identifiable drug, the offending drug can be replaced with another drug from the same class that does not have the same adverse effect.

Drug substitutions should be limited to situations where toxicity is severe or life threatening (Grade 3 or 4 adverse events) (see ANNEX 14)

**Table 5.5: Common early adverse effects of 1<sup>st</sup> line ARV drugs**

ARV drug	Common associated toxicity
AZT	Gastrointestinal intolerance Anaemia, Neutropenia Lactic acidosis
D4T	Peripheral neuropathy Lactic acidosis Pancreatitis Lypoatrophy
EFV	CNS toxicity, Teratogenicity skin reaction (including SJS)
NVP	Hypersensitivity Reaction Hepatitis skin reaction (including SJS)
3TC	Pancreatitis (very rare) Peripheral neuropathy (very rare)
TDF	Renal toxicity Mineral bone toxicity
ABC	Hypersensitivity syndrome

Adapted from Ethiopia guidelines

### Guiding Principles in the management of ARV drug toxicity

1. Determine the seriousness of the toxicity.

2. Evaluate concurrent medications and establish whether the toxicity is attributable to an ARV drug or drugs or to a non-ARV medication taken at the same time.
3. Consider other disease processes (eg. viral hepatitis in an individual on ARV drugs who develops jaundice) because not all problems that arise during treatment are caused by ARV drugs.
4. Manage the adverse event according to severity. In general:
  - Grade 4 (severe life-threatening reactions): immediately discontinue all ARV drugs, manage the medical event (i.e. symptomatic and supportive therapy) and reintroduce ARV drugs using a modified regimen (i.e. with an ARV substitution for the offending drug) when the patient is stabilized.
  - Grade 3 (severe reactions): Substitute the offending drug without stopping ART.
  - Grade 2 (moderate reactions): Consider continuation of ART as long as feasible. If the patient does not improve on symptomatic therapy, consider single-drug substitutions.
  - Grade 1 (mild reactions): Bothersome, but do not require changes in therapy.
5. Stress the maintenance of adherence despite toxicity for mild and moderate reactions.
6. If there is a need to discontinue ART because of life-threatening toxicity, all ARV drugs should be stopped until the patient is stabilized.

When severe or life-threatening (Grade 3 or 4 adverse events) occur due to antiretroviral medications, it must be reported to Pharmaceutical Department (HAHPCO), using the Adverse Events Reporting Form (See Annex 19).

**TABLE 5.6: Severe Toxicities in infants, children, and adults associated with specific 1<sup>st</sup> Antiretroviral Drugs and Potential First Line Drug Substitutions**

First-line ARV drug	Most frequent significant toxicity for the ARV drug*	Suggested first-line ARV drug substitution
TDF#	Renal Toxicity	AZT
AZT	Severe anaemia or neutropaenia	d4T or ABC or TDF#
	Lactic acidosis	TDF#
	Severe gastrointestinal intolerance	d4T or ABC or TDF#
d4T	Lactic acidosis	TDF#
	Peripheral neuropathy	AZT or ABC or TDF#
	Pancreatitis	
	Lipoatrophy	
	High lactate or hyperlactatemia	AZT
	Lactic acidosis (if hyperlactatemia was not recognized early)	TDF#
EFV**	Persistent and severe central nervous system toxicity, psychologic abnormalities	NVP
	Potential teratogenicity **	
NVP***	Acute symptomatic hepatitis	EFV
	Hypersensitivity reaction	TDF# or ABC--(disadvantage:

	Severe or life threatening rash (Stevens-Johnson Syndrome)	triple NRTI is less potent virologically (in patients with high viral load or low CD4) Triple NNRTIs can be used Lop/r-- (disadvantage: premature start of second-line ARV drug)
ABC	Hypersensitivity reaction	AZT
<p>*Definitions for toxicities can be found in Annex 14; substitutions should occur for grade 3 or 4 adverse effects</p> <p>**All women should receive reliable contraceptive methods free of charge if they are on an EFV-based regimen.</p> <p>***All TB patients should be switched from NVP to EFV (except for children &lt; 3 years or &lt; 10kg).</p> <p># TDF should not be used in pregnant woman and children &lt; 16 years of age due to effect on bone mineral density;</p> <p>#if possible, reserve use of TDF (use other NRTIs first)</p> <p># TDF is not recommended in pre-pubertal children; <i>call Specialist Site for advice on complicated paediatric cases</i></p> <p>Source: <i>Antiretroviral therapy of HIV infection in infants and children in resource-limited settings. WHO 2006</i></p>		

Prior to the revision of these guidelines, many adults were initiated on regimens that contained Stavudine (d4T) due to the availability of 3-in-1 fixed drug combinations (FDCs). These patients should not be changed from this regimen unless toxicity develops and substitution of an individual drug is needed, or resistance develops which would require a switch to a second-line regimen.

The latest WHO ART guidelines (2007) concerning Stavudine (d4T) recommend that only the 30 mg dosage be used in adults, regardless of weight. All adults currently receiving the 40 mg dosage of Stavudine should be moved to the 30 mg dosage. All children and adults with evidence of Stavudine-related toxicity should be moved to a non-Stavudine containing regimen (preferably containing AZT, unless contraindicated).

## SWITCHING TO SECOND-LINE REGIMENS

Switching to a second-line regimen may be necessary when treatment failure is suspected or confirmed. The following ARV medications are available for second-line use:

**TABLE 5.8**

Nucleoside Reverse Transcriptase Inhibitors (NRTI)	Protease Inhibitors (PI)
Didanosine (ddl)	Lopinavir/r (LOP/r)
Abacavir (ABC)	Atazanavir/r (ATV/r)

The decision to switch a patient to a second-line regimen must be made with care.

**For children:**

- The decision to switch a child to second-line therapy must be made in consultation with a specialist at tertiary institutions.
- Cases must be reviewed and approved by a Second Line Committee (appointed by the MOHSW) prior to regimen change.

**For adults:**

- Trained clinicians are allowed to switch adults to second-line regimen in consultation with specialists at tertiary institutions.
- Decision to switch to second-line therapy will be reviewed by the Second Line Committee prior to regimen change.

**Treatment Failure in Children**

**Treatment failure** is defined based on clinical and/or immunological criteria for children. Currently, the WHO does not recommend the use of routine viral load monitoring in decision making on treatment failure. However, it is noted that levels of HIV-RNA greater than 100,000 copies in children are associated with greater risk of mortality and indicate a need to switch therapy.

**Table 5.9 Clinical definition of treatment failure in children**

Clinical criteria for treatment failure
<ul style="list-style-type: none"> <li>• Lack of or decline in growth rate in children who show an initial response to treatment (moderate or severe unexplained malnutrition not adequately responding to standard therapy despite adequate nutritional support and without explanation)</li> <li>• Loss of neurodevelopmental milestones or development of HIV encephalopathy,</li> <li>• Occurrence of new and/or recurrent stage 3 or 4 clinical events</li> </ul>
<i>Source: Antiretroviral therapy of HIV infection in infants and children in resource-limited settings. WHO 2006</i>

**Table 5.10 Immunological definition of treatment failure in children**

Immunological criteria for treatment failure**
<ul style="list-style-type: none"> <li>• Development of age-related severe immunodeficiency after initial immune recovery</li> <li>• Development of new age-related severe immunodeficiency, confirmed with at least one subsequent CD4 measurement</li> <li>• Rapid rate of decline to at or below threshold of age-related severe immunodeficiency</li> </ul>
**Preferably at least two CD4 measurements should be available
<i>Source: Antiretroviral therapy of HIV infection in infants and children in resource-limited settings. WHO 2006</i>

Suspect treatment failure if any of the above clinical or immunological criteria are met and

- Child has been receiving the regimen for at least 24 weeks
- Poor adherence has been ruled out
- Immune Reconstitution Inflammatory Syndrome (IRIS) has been excluded
- Poor nutrition has been ruled out
- Pulmonary or extrapulmonary tuberculosis has been excluded
- Potential medication interactions have been excluded

Currently “T-staging” is used for patients on HAART. Clinical staging is preceded by a “T” to indicate that a patient is on treatment. For example, a child with persistent hepatosplenomegaly on HAART would be staged as WHO T2. When a patient moves to a more severe stage while on HAART (i.e., from stage T2 to T4), then this is an indication that possible treatment failure must be addressed.

**Table 5.11 Decision-making on switching to second-line therapy for treatment failure based on availability of CD4 measurement**

Clinical Stage on ART	Availability of CD4 measurement	Management options
New or recurrent T1** or T2 event(s)	No CD4	▪ <b>Do not switch regimen</b>
	CD4	<ul style="list-style-type: none"> <li>▪ Consider switching regimen only if 2 or more values below age-related threshold for severe immunodeficiency* are available</li> <li>▪ Increase clinical and CD4 follow-up if CD4 approaches age-related threshold for severe immunodeficiency</li> </ul>
New or recurrent T3** event(s)	No CD4	<ul style="list-style-type: none"> <li>▪ <b>Consider switching regimen</b></li> <li>▪ If child has pulmonary or lymph node TB or severe recurrent presumed bacterial pneumonia treat condition, the need to switch regimen should be decided based on re-evaluation of the child in question.</li> </ul>
	CD4	▪ Switching regimen is recommended if CD4 is at or below age-related threshold for severe immunodeficiency* and particularly if child initially had good immune response to ART
New or recurrent T4** event(s)	No CD4	▪ <b>Recommend switching regimen</b>
	CD4	▪ Switching is generally recommended but may not be necessary where CD4 is above age-related threshold for severe immunodeficiency*

\*Age-related severe immunodeficiency values as defined in [Table 3.5](#); switching should particularly be considered if values are <15% (12-35 months of age), <10% (36-59 months of age), <100 cells/mm<sup>3</sup> (≥5 years of age); use of %CD4 in children less than 5 years of age and absolute CD4 count after 5 years of age is preferred; if serial CD4 values are available, the rate of decline should be taken into consideration.

\*\*T1, T2, T3, T4 refers to re staging of HIV/AIDS in a patient who is on treatment for 24 or more weeks.

Source: *Antiretroviral therapy of HIV infection in infants and children in resource-limited settings. WHO 2006*

**Note:**

- Pulmonary or lymph node TB, which are clinical stage 3 conditions, may not be an indication of treatment failure and thus may not require consideration of second-line

therapy. The response to tuberculosis therapy should be used to evaluate the need for switching therapy.

- CD4 is best performed once acute phase of presenting illness is resolved

**Table 5.12 Second Line Regimen for Children Failing First Line Therapy**

First-line Regimen	Suggested Second-line Regimen
AZT – 3TC – NVP or EFV	ddl – ABC – LOP/r or ATV/r
d4T – 3TC – NVP or EFV	ddl – ABC – LOP/r or ATV/r

\*EFV and NVP are considered equivalent as resistance to one confers resistance to the class

### Treatment Failure in Adults

**Table 5.13: Definitions of treatment failure in adults and adolescents**

	Definition
<b>Clinical Failure</b> <sup>a</sup>	New or recurrent WHO stage 4 event <sup>b c</sup>
<b>Immunologic Failure</b> <sup>d</sup>	<ul style="list-style-type: none"> <li>• Fall of CD4 count to pre-therapy baseline (or below); or</li> <li>• 50% fall from the on-treatment peak value (if known); or</li> <li>• Persistent CD4 levels below 100 cells/MM<sup>3</sup></li> </ul>
<b>Virological Failure</b>	Plasma viral load above 5,000 copies/ml after 6 months on ART.

<sup>a</sup> Should be differentiated from Immune Reconstitution Inflammatory Syndrome (IRIS).  
<sup>b</sup> Certain WHO clinical conditions (e.g. pulmonary TB, severe bacterial infections), may be an indication of treatment failure and should be investigated.  
<sup>c</sup> Some WHO clinical stage 4 conditions (lymph node TB, uncomplicated TB pleural disease, oesophageal candidiasis, recurrent bacterial pneumonia) may not be indicators of treatment failure and thus do not require consideration of second-line therapy.  
<sup>d</sup> Without concomitant infection to cause transient CD4 cell decrease. If patient is asymptomatic and treatment failure is being defined by decreased CD4 cell criteria alone, consideration should be given to performing a repeat CD4 cell count before establishing the diagnosis of treatment failure.  
*Source: Adaptation of Antiretroviral therapy of HIV infection in adults and adolescents in resource-limited settings. WHO 2006*

#### Note:

- Clinical failure should be confirmed with immunological failure
- Determination of immunological failure should involve two consecutive CD4 counts.
- If available, viral load should be used to confirm failure. Two recorded viral loads > 5000 copies should prompt consideration of switch to second-line.

**TABLE 5.14: Guidelines on switching patients due to failure to 1<sup>st</sup> line regimen**

Treatment Failure Criteria	WHO Stage 1 event	WHO Stage 2 event	WHO Stage 3 event	WHO Stage 4 event
<b>CD4 failure<sup>a</sup></b> <b>(viral load testing not available)</b>	Do not switch regimen. Follow patient for development of clinical signs or symptoms. Repeat CD4 cell count in three months	Do not switch regimen. Follow patient for evidence of further clinical progression. Repeat CD4 cell count in three months	Consider switching <sup>b</sup> to second-line regimen.	Recommend switching <sup>b</sup> to second-line regimen

<b>CD4 failure<sup>a</sup> and viral load failure<sup>c</sup></b>	Consider switching <sup>b</sup> to second-line regimen	Consider switching <sup>b</sup> to second-line regimen	Recommend switching <sup>b</sup> to second-line regimen	Recommend switching <sup>b</sup> to second-line regimen
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<sup>a</sup> CD4 failure is defined as a fall to (or below) the pretreatment baseline or a 50% drop from the on-treatment peak level or persistent levels below 100 cells/mm<sup>3</sup>

<sup>b</sup> Switching from the first-line to second-line regimen for treatment failure should not be done until the first regimen has been given sufficient time to succeed. This should be a minimum of six months. Since only one second-line regimen is available, premature switching should be avoided.

<sup>c</sup> virological failure is provisionally defined as a plasma HIV-1 RNA level above 10,000 copies/ml after a minimum of six months on therapy.

Source: Antiretroviral Therapy for HIV Infection in Adults and Adolescents: Recommendations for a public health approach, 2006 revision

**Table 5.15 Second Line Regimen for Adult Patients Failing First Line Therapy**

First-line Regimen	Suggested Second-line Regimen <sup>#</sup>
(D4T or AZT) + 3TC + (EFV or NVP)*	TDF + 3TC (+/- AZT) + Protease inhibitor** (preferred) ddl + ABC + Protease inhibitor **
TDF + 3TC + (EFV or NVP)*	ddl + 3TC (+/- AZT) + Protease inhibitor** ddl + ABC + Protease inhibitor** AZT + 3TC + Protease inhibitor**

\* EFV and NVP are considered equivalent as resistance to one confers resistance to the class

# ddl and TDF, when administered in the same regimen, should be used with caution (with ddl dose adjustment, always associated with a boosted PI and under close monitoring), for toxicity reasons.

\*\* Protease inhibitor can be either Lopinavir/ritonavir or Atazanavir/ritonavir

## Drug-Drug Interactions

Before initiating ART and while on ART, all medications which a patient is taking, including traditional medicines should be reviewed. Since NVP, EFV, and LOP/r are all metabolised by the liver, drugs that induce or inhibit liver metabolism, may affect drug levels. See Annex 19 for a table of drugs that interact with antiretrovirals. The effects of Sesotho medicines on serum levels of antiretroviral have not been evaluated, and therefore it is recommended that patients do not take Sesotho medicines in conjunction with antiretrovirals.

## Key Points for Antiretroviral Medications

- For children less than 3 years of age, the preferred first-line regimen is AZT—3TC—NVP and for children older than 3 years of age, the preferred first-line regimen is AZT—3TC—EFV.
- For treatment-naïve adult patients, the new preferred first-line regimen is TDF—3TC—EFV.

- Pregnant women should receive NVP instead of EFV in the first trimester and all women of child-bearing age should be offered reliable birth control free of charge.
- Adult patients with a calculated creatinine clearance < 50 ml/min should not receive TDF but rather receive AZT instead.
- Patients already on D4T—3TC—(NVP or EFV) should stay on that regimen unless they are experiencing severe/life threatening toxicity or treatment failure
- For patients experiencing D4T-related toxicity, D4T should be switched to AZT.
- Second-line regimens for adult patients failing a d4T-based first-line regimen should include TDF+ AZT+/-3TC + Protease Inhibitor

## CHAPTER 6: Monitoring

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### Monitoring patients on ART

All children and adults should be monitored.

Before initiation of ART, monitoring will help to:

- decide when to initiate ART
- decide which ART regimen to use

After initiation of ART, monitoring will help to:

- manage any possible side effects early, before they become serious
- assess the efficacy of treatment
- detect problems with adherence and/or identify treatment failure

### ***Clinical Monitoring***

Clinical assessment should be the primary tool for monitoring children and adults both before and after initiation of ART.

Before starting ART, it is of utmost importance to rule out and treat opportunistic infections (OIs), especially active TB.

After starting ART, clinical assessments should take place by a doctor or nurse at 2 weeks, 1 month, 2 months, 3 months, 6 months, and at least every 6 months thereafter (see Monitoring schedule).

A focused history and physical assessment should be performed during routine visits. Important features of regular clinical assessments should include:

- monitoring of
  - weight (done at every visit)
  - height (in children, done every 3 months)
  - head circumference (in children < 3 years of age, measured every 3 months)
  - developmental status in children (Annexes 5, 6, 7)
  - nutritional status in children (Chapter 9)
- diagnosis and management of interim or new illnesses
  - OIs, including tuberculosis, which may suggest immune reconstitution syndrome or treatment failure (see chapter 8)
  - other co-morbidities, including STIs, Hepatitis B & C, substance abuse, psychiatric illness (see chapter 8)
- medication review
  - side effects
  - adherence and dosing
  - other medications, including traditional medicines and other medications that may interact with ARVs

- early diagnosis of pregnancy (see chapter 4)
- changes in social situation that might affect adherence to ART (see chapter 7)

### **Laboratory Monitoring**

Laboratory monitoring should complement the clinical assessments. Baseline laboratory tests will help to determine which regimen a person should be initiated on (see Chapter 5), but note that the absence of the capacity to perform laboratory testing should not preclude a person from starting ART.

### **Baseline Laboratory Investigations**

If possible, the following baseline laboratory investigations should be obtained prior to starting ART:

- CD4 count, or percentage (in children  $\leq 5$  years)
- Full blood count (FBC) (particularly if using AZT)
- ALT
- Serum creatinine when Tenofovir (TDF) is being considered in adults, followed by calculation of the rate of Creatinine Clearance (see bottom of Monitoring Schedule)
- Pregnancy test in all women of child-bearing age (particularly if using EFV or TDF)

### **Routine Laboratory Investigations**

The following laboratory tests should be performed routinely depending on the specific ARVs that are included in the patient's regimen (see Monitoring Schedule in Annex 12):

- If on AZT, Haemoglobin (Hb) should be checked at 1 month, 2 months, 3 months, 6 months, and every 6 months thereafter.
- If on NVP, ALT should be checked at 1 month, 2 months, 6 months, and every 6 months thereafter. If the CD4 count at initiation is between 250-350, there is an increased risk of hepatotoxicity, so additional ALT testing is recommended at 2 weeks and 3 months. (Clinical suspicion of hepatotoxicity should be considered)
- If on Tenofovir (TDF), serum creatinine (and rate of Creatinine Clearance) should be checked 6 months after initiation, and every 6 months thereafter.
- CD4 counts should be checked every 6 months, to help determine efficacy of treatment. In children, CD4 % or absolute counts should be monitored every 3 months for their first year on HAART and then can be changed to q 6 months if their CD4% (in those < 5 years) or CD4 absolute count (in those  $\geq 5$  years) are no longer in the severe immunodeficiency range.

Additional laboratory tests can be requested depending on the results of the clinical assessments, but should only be done if the result will guide management. These include, but are not limited to:

- Lactate measurement, if the patient is on a NRTI (especially D4T or ddI) for > 4 months and losing weight, and/or having other symptoms that suggest hyperlactatemia<sup>2</sup>
- Glucose and lipid measurements, if the patient is taking a Protease Inhibitor, such as Lopinavir/ritonavir or Atazanavir/ritonavir

Point-of-care testing machines should ideally be available in all clinics to measure Haemoglobin (Hb), glucose, and lactate. Not only do such machines allow for immediate results, but they also take some pressure off the district hospital laboratories, which are faced with an ever-increasing number of requests.

### **Measuring Efficacy of Treatment**

The goals of ART include:

- reduction in HIV-related morbidity and mortality
- improvement in quality of life
- restoration and preservation of immune function
- maximal and durable suppression of HIV replication

Efficacy of these goals can be measured in three ways:

1. Clinically, by a reduction in the number and frequency of OIs
2. Immunologically, by a gradual and steady rise in the CD4 count
3. Virologically, by a fall in the viral load to undetectable levels six months after the initiation of ART

Viral load testing is an excellent method to determine efficacy of treatment in the first 6 months. However, it is not recommended for systematic monitoring of patients on ART in resource-limited settings such as Lesotho at the current time. Instead, efficacy should be determined by regular clinical and CD4 count monitoring as described above.

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<sup>2</sup> High lactate (hyperlactatemia) is a potentially serious side effect resulting from mitochondrial toxicity in patients who have been on NRTIs (especially d4T and ddI) for > 4 months. If hyperlactatemia is not recognized early, it will progress to lactic acidosis, which carries a significant risk of mortality. A point-of-care lactate machine should ideally be available in all sites where ART is being made available. Any patient developing symptoms of hyperlactatemia (weight loss, fatigue, nausea, vomiting, abdominal pain, and/or shortness of breath) should have a lactate level checked the same day, and be immediately managed by a trained clinician.

## **CHAPTER 7: Adherence and Disclosure**

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### **Introduction**

Adherence to ART is critical for improving a patient's clinical, immunological, and virological outcome. Maintaining good adherence to the prescribed ARV regimen delays the onset of drug resistance, treatment failure, and the need to switch to second line drugs.

Adherence is the process of taking medications in the correct amount, at the correct time, and in the way they are prescribed (with or without food). Proper storage of medications is another component of successful adherence. The ability to execute treatment adherence implies treatment literacy of the patient/caregiver. This means that the patient/caregiver must understand both the disease process and necessary medications.

Excellent adherence results in the suppression of HIV replication and leads to lower viral loads, higher CD4 counts/percentage, improved clinical outcome, and lower risk for the emergence of resistant virus.

### **Adherence Preparation**

Assuring adherence to the prescribed regimen begins with educating and counselling patients/caregivers on aspects regarding HIV and AIDS care and treatment. In preparation for initiation of HAART, 1-3 adherence sessions should be conducted in group or individual counselling environment to help patients/caregivers understand basic HIV knowledge as well as the importance of excellent adherence. Topics to be covered during sessions include:

- basic HIV knowledge
  - how HIV is transmitted and not transmitted
  - signs and symptoms of HIV
  - the difference between HIV and AIDS
  - significance of CD4 count/percentage
  
- antiretroviral therapy
  - names of ARVs (including brand names)
  - side effects of ARVs, possibility of immune reconstitution syndrome
  - how and when to take ARVs
  - importance of bringing all medications to clinic visits
  - anticipated monitoring schedule on ARV therapy, both clinical and laboratory,
  - importance of adherence, taking >95% of prescribed doses to prevent resistance ( i.e., the patient cannot miss more than 3 doses per month...)
  - lifelong treatment, even when feeling well
  
- other relevant and practical issues
  - demonstration of how to draw up syrups in syringes for caregivers
  - importance of proper nutrition, safe water, immunizations, and primary care

- re-assessment of understanding of basic HIV knowledge and antiretroviral therapy
- Provision of simple/basic medicines for management of simple OIs and DOTS management
- encouragement disclosure to family/other caregivers who can support treatment plan
- referral to a community based care support group

Discussion of the importance of medication adherence should begin as early as possible

### **Barriers to adherence**

Barriers to adherence should be discussed with the patient/caregiver prior to initiation of HAART. Adherence does not depend solely on patient's or caregiver's ability to remember to take medications. Possible barriers include:

- Patient/caregiver medical/mental health illness
- Patient/caregiver depression
- Patient/caregiver with heavy workload
- Lack of transportation or lives far away; lack of access to refills
- No watch or clock
- Poor access to food
- Unable to afford associated medical costs
- Inconsistent caregiver
- Alcohol or other impairing drug use in patient or caregiver
- Domestic violence
- Lives alone, lack of social support of family and friends
- Lack of disclosure of HIV status
- Illiteracy
- Poor understanding of ARV regimen
- Poor understanding of relationship between non-adherence and resistance
- Inadequate understanding about effectiveness of ARVs
- Lack of confidence in ability to adhere

All of the above barriers may affect a patient's/caregiver's ability to maintain acceptable adherence.

### **Strategies to address barriers**

Once potential barriers have been identified, attempts should be made to help patients/caregivers overcome them. Interventions and strategies include

- referral to community health workers, support groups
- identifying supportive family/community members
- referral to WFP
- issuance of transport vouchers if available
- provision of supplemental feeding such as UNIMIX or Ensure
- use of pill boxes or reminder calendars or written schedule
- referral for assistance with substance abuse problems

- repeat adherence sessions to ensure appropriate understanding of key issues
- use of pictorial education materials to assist with understanding
- frequent clinic visits to monitor adherence closely
- referral to social welfare
- identification of treatment buddies or 2<sup>nd</sup> caregivers for backup support
- use of fixed dose combinations pills where possible
- use of tablets or capsules, instead of syrups, where applicable
- incorporating taking of ARVs into patient's lifestyle.
- keeping medications in places where they are easily seen
- keeping medications in households which are frequently visited
- planning ahead if overnight travel is a possibility
- encouraging patient to attend a facility that is geographically closest to his/her home
- disclosure of HIV status to supportive family / community members.

Both group and individual counselling should be provided for caregivers of children. When appropriate children should be included in counselling sessions.

### **Readiness assessment**

The provider team needs to assess a patient's/caregiver's readiness to initiate lifelong HAART. Considerations for readiness to start HAART treatment include:

- General understanding of HIV, AIDS, ARVs, CD4 count/percentage, and their relationship with health status
- Understanding importance of keeping appointments
- Successful adherence to co-trimoxazole
- Successful adherence to TB therapy and INH prophylaxis
- Presence of support network in family/community to assist with treatment adherence and medication reminder
- Understanding roles of different household member in drug administration and relevant household members trained
- Discussion of adherence strategy, including medication schedule and methods for remembering
- Patient's/Caregiver's desire and commitment to taking lifelong therapy
- Household conditions of drug storage met

For children collaboration between the child, caregiver and multidisciplinary team is ideal. The following should be considered during readiness assessment

- Commitment of the caregiver(s)
- Cooperation of the child
- Skills for monitoring and supporting adherence by CHWs
- Provision of linkages

Furthermore, ARV treatment for children is complicated by:

- Developmental stage/age of the child
- Caregiver-child interaction

- Psychosocial issues
- Relatively poor palatability of many paediatric formulations
- use of syrups/inability to swallow pills/tablets
- Caregiver factors

A supporter or treatment buddy is strongly encouraged for adults but is not a pre-requisite for the initiation of treatment. It is the responsibility of the health facility to identify a supporter who should live within walking distance of the patient's home and be older than 12 years.

ART should be started once readiness has been agreed between patient and health care provide

An adherence contract, including consent for home visit for future adherence assessment, should be signed by adult patients and caregivers prior to starting ARV treatment. See Annex 17

“Drugs don't work in patients who don't take them”  
New England Journal of Medicine, 353(5), 2005

Consequences of poor adherence include:

- incomplete viral suppression
- continued destruction of the immune system and decrease of CD4 cell count
- progression of disease
- emergence of resistant viral strains
- limited future therapeutic options and higher costs for individual and programme

Good adherence to the first regimen has the best chance of long term success

Patient's readiness to start ART will be documented prior to initiation of therapy. It is important to thoroughly assess and address the patient's psychosocial and economic situations as part of adherence counselling.

### **Maintaining Adherence**

Adherence is a lifelong process and continued assessment and education should be done at every opportune moment to ensure the success of ART.

At each visit, adherence can be assessed using the following parameters

- ARV pill count or suspension return
- quantitative questioning,
  - “how many doses of ARVs have you missed over the past 3 days”
  - “how many doses of ARVs have you missed over the past month”
- qualitative questioning
  - “what are the names of your medications”
  - “how many tablet/pills/syrup do you take/give for each dose”

- “how often do you take/give the ARVs”
- “what time do you take/give the ARVs”

Remember to use a team approach! Doctor, nurse, counsellor, social worker, lab tech, pharmacist, family, friends, traditional healer, support groups, community or village health workers, caregivers, and the PATIENT need to be involved to maintain adherence.

Help the patient/family with adherence by:

- Providing education at every opportunity
- Discussing the importance of adherence at every visit
- Asking the patient/family to name or describe the specific medications (colour, #, size, or amount given if suspension)
- If any doses have been missed, ascertain the reason...
- Ask the patient/family to update you on living conditions and location
- Expect problems and non-adherence- plan and schedule follow-up

### **Monitoring and Support**

- Pill count
- Emphasize the importance of honest reporting
- Identify barriers to adherence (timing, work, food etc)
- Identify and reinforce effective, successful strategies
- Address psychosocial support
- Adherence aids

### **Poor adherence**

If adherence is questionable (<95%)

- repeat adherence counselling
- increase frequency of monitoring
- identify barriers to adherence and assist with interventions/strategies

If adherence continues below 95%, consider interrupting HAART, while continuing to address adherence barriers. Re-start treatment once barriers have been identified and addressed accordingly.

Adherence considerations for children include:

- **Infants and young children** – family needs
  - Emotional and physical support for caregivers
  - Have at least 2 people knowledgeable about child’s medication and available to administer
  - Help family create a realistic medication schedule
- **School-age children**
  - Teach them how to select / measure medication
  - Help them discover foods that make meds more palatable
  - Involve them in calendar reward programmes

- **Older children and adolescents**
  - Caregiver's control over child's treatment should be more subtle (one to one, not public issue)
  - Individual counselling if needed
  - Identify friends/ peer support groups/ older children willing to help
  - Discreet pill boxes for social situations
  - Use role play for problem solving
  
- Adherence counselling must be:
  - Continuous and repetitive: every visit
  - Personalised: tailored to the needs and situation of each child/family
  - Universal: reinforced by all health professional staff
  - Repetitive
  
- Caregiver illness
- Caregiver travel
- Holiday/vacation
- School
- Extended family visits
- Poor communication within family/between parents regarding caregiver and child status

**Table 7.1 Understanding and monitoring adherence, and tools to improve adherence to HAART**

Reason for non-adherence relating to drugs	Poor palatability and unpleasant flavour
	Amount of pills/solution volume
	Frequency of dosing
	Nausea
	Fear if adverse effects (particularly if prior bad experience)
Reason for non-adherence relating to the family	Lack of disclosure in the family and to the child
	Strangers or visitors in the house
	Parental/caretaker illness, mental health, drug/alcohol abuse
	Lack of belief in the value of the treatment
	Responsibility for giving the medication residing with a specific member of the family
	Poor understanding/knowledge
	Denial
	Lack of food security and funding to return to the clinic
Child refusal	
Tools for the parent	Colour coded bottles and syringes, increase palatability
	Pillboxes
	Diary cards to use as aid memoir
	Encourage use of alarms (i.e. in cellular phones)

	Link medication specific times e.g. meals or television programmes
	Make use of treatment supporters in the community
	Regular visits to therapeutic counsellors
	Early switch to pills
	Treatment buddies
Tools to measure adherence	Calculate adherence by measuring the drugs returned $(\text{drugs dispensed} - \text{drugs returned}) / (\text{prescribed}) \times 100$
	Check for late returns to both the clinic and the pharmacy
	Ask about problems with specific drugs
	Looking at diary cards
The clinic should	Stress adherence at every visit
	Assist with disclosure within the family and to the child
	Help explain to children why they must take these drugs
	Assist with financial and food security through grants and referral to appropriate NGOs
	Support groups, trace for missed appointments

## Disclosure

All patients should be encouraged to disclose their status to family, household members, and community members. Often times, appropriate disclosure can help a patient develop a reliable support network, which can be crucial to successful adherence. Furthermore, disclosure can help fight stigma and encourage others within the family and community to “know their status” and also get tested.

## Paediatric Disclosure

Informing the child should be age appropriate and encouraged for all children. Informing an adolescent >12 years of their positive HIV status prior to initiation of treatment is especially important to ensure adherence. However, lack of disclosure should not be a limiting factor for initiation.

- Child should hear about HIV from caregiver and not from other sources
- Honesty is important in child-caregiver relationship
- Children often know the truth before we expect or think they do
- Children often cope with the truth better than we anticipate
- Secrecy may be associated with increased behavioural problems
- Provide child with a sense of control over their lives
- Child should know why they go to the hospital and have blood taken regularly
- It's their right to know
- Protect others from infection
- Gives child permission to talk openly about HIV with caregivers.

Children informed about their diagnosis had better coping and higher self-esteem than children who were not disclosed to.

Source: Committee on Paediatric AIDS. Disclosure of illness status to children and adolescents with HIV infection. *Paediatrics*. Jan 1999.

Furthermore, children and adolescents who have been disclosed to have better adherence than those who have not been disclosed to.

Disclosure and discussion of the child's illness forms an essential part of regular follow up. An age appropriate disclosure process and plan should be established for all children. It is a process, and not a single event. Disclosure should be done by the caregiver with assistance from the clinical team.

### **Process of Disclosure**

"Disclosure of HIV infection status to children and adolescents should take into consideration their age, psychosocial maturity, the complexity of family dynamics, and the clinical context"

\*Committee on Paediatric AIDS. Disclosure of illness status to children and adolescents with HIV infection. *Paediatrics*. Jan 1999.

Informing the child is a process. What a provider says depends on the following

- Age of child
- Maturity of child
- What patient already knows
- Personality of child
- Illnesses child has had
- Whether patient is on treatment
- Health of others in family
- Recent stressors

How disclosure should be done:

- Private location
- Planned in advance
- Tell child who they can talk to about their status, and who they should not talk to.
- Progressive informing preferable to "all at once."
- Provide follow-up support

### **Informing Guidelines by age**

For young children

- Simple information in language they understand
- Discuss:
  - Nature of illness
  - How they can care for themselves
  - Diagnosis and prognosis not a priority
  - Discuss the near future

For School age children

- Recommended to inform of status
- First determine what they already know, may ask if they know why they are coming to clinic/getting blood drawn
- Discuss and plan disclosure with parents
- Need for correct child assessment
- Information should be more specific
- Moderate amount of information
- Assist in developing coping responses
- Talk about who/what they will tell others

For adolescents

- Should be informed of status
- Discuss all aspects of the disease
  - Basic nature of the HIV virus & disease progression
  - Transmission & Prevention
  - Prognosis & Diagnosis
  - Self-care and self-medication
  - Drug Resistance
  - Living Positively & Normality
  - Sexual health education

Expect the following possible feelings after disclosure:

- Shock
- Anger
- Sadness/Depression
- Fear
- Confusion
- Rejection, Isolation
- Relief
- Acceptance

It is also important to help children cope with their diagnosis, care and treatment. Ways to help children cope include:

- Problem-solve with patient
- Empower
- Help patient take one step at a time
- Reassurance
- Comfort

## CHAPTER 8: Management of OIs and Co-Infection

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### Tuberculosis

#### Introduction

Tuberculosis is the most common opportunistic infection in people with HIV in sub-Saharan Africa and can present at any CD4 count. It is the primary cause of morbidity and mortality in patients with HIV in Lesotho. For this reason, it is crucial that TB be appropriately diagnosed and managed in all persons with HIV. It is important to note that TB is much more difficult to diagnose in patients with HIV. Sputum smears are usually negative in cases of active disease and patients often have atypical clinical and radiographic presentations. Furthermore, HIV infected patients are more likely to present with extra pulmonary disease. Finally, clinical outcomes are often worse in patients with HIV and TB so appropriate therapy for both diseases should be instituted with urgency. The following sections discuss TB in more detail.

#### Isoniazid prophylaxis therapy (IPT)

IPT has been shown to be beneficial in certain settings in preventing morbidity and mortality from TB. However, due to the difficulty of ruling out active TB in HIV patients and the risk of treating TB with a single agent, it is recommended that IPT to be instituted on a national scale if active TB can be excluded.

Once active TB has been ruled out, TB-exposed, HIV-infected children should be given isoniazid, 5-10 mg/kg, daily for 6 months.

All TB-exposed, HIV infected children should receive some form of TB treatment – IPT if they are well and active TB is ruled out, or a full course of TB treatment if active TB cannot be ruled out.

IPT prophylaxis for children < 15 years of age who are HIV-infected and TB-exposed  
Isoniazid: 5-10 mg/kg daily for 6 months  
Pyridoxine: < 3 years: 12.5 mg daily for 6 months  
> 3 years: 25 mg daily for 6 months

May use isoniazid/pyridoxine combined syrup. Dosing is as follows:

**Table 8.1 Dosing for INH prophylaxis for children**

Weight (kg)		Number of mL Isoniazid/pyridoxine syrup 100mg mL /5mg per 5 mL
1.5 kg	7.5 mg	0.4 mL
2.0	10 mg	0.5 mL
2.5	13 mg	0.6 mL
3.0	15 mg	0.8 mL
3.5	18 mg	0.9 mL
4.0	20 mg	1.0 mL
4.5	23 mg	1.1 mL
5.0	25 mg	1.2 mL
5.5	28 mg	1.4 mL
6.0	30 mg	1.5 mL
6.5	33 mg	1.7 mL
7.0	35 mg	1.8 mL
7.5	38 mg	1.9 mL
8.0	40 mg	2.0 mL
8.5	43 mg	2.1 mL
9.0	45 mg	2.2 mL
9.5	48 mg	2.4 mL
10.0	50 mg	2.5 mL

### Screening for TB

Because TB is such a common co-infection and carries with it such a high degree of morbidity and mortality, TB screening should be done at each encounter with a health care provider (i.e. nurse, lay counsellor, TNA). The initial level of screening should consist of questions (i.e. cough > 2 weeks, night sweats, TB contact) and if the patient responds in a positive fashion, he or she should be further evaluated for the presence of TB.

An algorithm for screening of TB is included in Annex 8 (pg 117-118). All patients should undergo a clinical evaluation. Sputum should be sent for smear and culture. Given the low rate of sputum smear positivity even in good laboratories, if there is a strong clinical suspicion of TB, further diagnostic studies, including chest radiograph, should be undertaken. Extrapulmonary TB can be even more difficult to diagnose and thus the judgment of the clinical provider is key in making the decision to initiate antituberculous therapy. Antituberculous therapy can be initiated by all certified practitioners even at the health centre level.

Diagnosis of TB in paediatric patients may be even more challenging for a number of reasons. They may not be able to produce sputum and are more likely to present with

extrapulmonary disease such as meningitis or lymphadenitis. For this reason, a low threshold for treatment should be considered. If a child cannot cough, gastric aspirates can be considered but are likely to be of low yield.

### Approach to diagnosis of active tuberculosis (pulmonary/extrapulmonary) in an HIV-infected child

Key features suggestive of active tuberculosis

- close contact with active case of TB, especially if sputum smear-positive TB
- chronic symptoms suggestive of TB
  - chronic cough—unremitting cough that is not improving and present > 3 weeks
  - fever—temperature > 38 degrees Celsius for > 2 weeks (after common causes such as pneumonia has been excluded)
  - weight loss or failure to thrive
- physical signs highly suggestive of TB
  - pulmonary—no specific features on clinical exam
  - extrapulmonary—
    - non-painful enlarged cervical lymphadenopathy with fistula formation; meningitis not responding to antibiotic treatment
    - distended abdomen with ascitis
    - non-painful enlarged lymph nodes without fistula formation
    - non-painful enlarged joint
    - documented weight loss or failure to gain weight
- positive tuberculin skin test
  - not routinely available in Lesotho
  - $\geq 5$  mm diameter of induration
- CXR suggestive of TB
  - persistent opacification in the lung
  - enlarged hilar or subcarinal lymph nodes
  - persistent opacification in the lung which does not improve after a course of antibiotics
  - miliary pattern
  - large pleural effusions
  - apical infiltrates with cavity formation

Due to diagnostic challenges, a low threshold for initiating full anti-tuberculous treatment in children is used. See Table 'Diagnosing TB in Children' in Chapter 3 (pg 27)

### Treatment

Patients should be initiated on antituberculous therapy as soon as a diagnosis is made. Patients should be given treatment cards and recorded in the TB registers. TB treatment regimens should include four drugs and recommendations for antituberculous therapy are found in the national TB guidelines. Children with TB can be given ethambutol and it is recommended in this setting given likely high rates of drug resistance (i.e. > 3%). Because of high mortality rates even among persons receiving antituberculous therapy

and the risk of development of other OIs, it is recommended that ART be initiated as early as possible after starting antituberculous therapy.

For children, HRZE is given for 2 months during the initiation phase and HR is given for 4 months during the continuation phase. HRZ is given via fixed dose combination and dosing is weight-based. Ethambutol is added as the fourth drug during the initiation phase and is dosed at 20mg/kg/day, within a range of 15-25 mg/kg/day. Ethambutol is currently only available in 400 mg tabs. The ethambutol tabs can be split into quarters (100 mg portions) allowing appropriate dosing for all but the smallest children within the above range. HR for use in the continuation phase can be given as a 2-in-1 fixed dose combination.

Guidelines for timing of initiation of ART in a patient who is already on anti-TB treatment are presented below:

**Table 8.2 Initiating first-line ART in adults/adolescents already on anti-TB treatment**

CD4 Count	When to Initiate ART
< 200	2-8 weeks after starting antituberculous therapy
201-350	After 8 weeks of antituberculous therapy
>350	Re-evaluate at completion of antituberculous therapy

\*All first-line treatment regimens should use 2 NRTIs and Efavirenz. Nevirapine can be used with caution if EFV is not available. TDF and ABC are alternatives when NNRTIs are contraindicated or complex to use. PIs should be avoided due to drug-drug interactions with the rifamycins.

**Table 8.3 Initiating first-line ART in children already on anti-TB treatment**

WHO Clinical Stage	Immunodeficiency	CD4 Available	No CD4
4	Any	2-4weeks	2-4weeks
3	Severe	4-8weeks	4-8weeks
	Mild	8weeks-completion	
	No immunodeficiency	completion	

For concurrent HAART and ATT, the following regimen should be used:

**Children < 3 years of age:**

**AZT or d4T + 3TC + NVP (at standard dose)**

**Children > 3 years of age:**

**AZT or d4T + 3TC + EFV**

Although the use of nevirapine is not ideal due to its interaction with rifampicin, it was chosen due to its clinical efficacy demonstrated thus far as well as current familiarity with its use among health care providers. Abacavir was not chosen due to the known inferior potency of triple NRTI therapy, especially in the setting of a young child diagnosed with TB and HIV, as well as the potential difficulty of diagnosing hypersensitivity reaction in rural setting.

### **Developing tuberculosis while on HAART**

If pulmonary TB is diagnosed after a patient has already been initiated on HAART, then anti-tuberculous treatment must be started.

- Adults and children > 3 years and > 10 kg, who are on Nevirapine based regimens must be switched to Efavirenz.
- Children < 3 years of age and < 10kg, can be maintained on their nevirapine based regimen.

LOP/r and other PI's have significant interactions with rifamycins, and they should not routinely be used together. There may be cases when LOP/r is the only option for patients on concomitant TB treatment. LOP/r should be used in these cases only in consultation with a paediatric HIV expert.

### **Adverse Effects**

There may be some overlapping toxicities between antituberculous therapy and ART and care should be taken to monitor co-infected patients on dual therapy closely (i.e. monthly ALT). Because of the high risk of peripheral neuropathy due to INH, HIV and D4T regimens, it is recommended that patients be placed on pyridoxine (vitamin B6) and close monitoring as a routine part of antituberculous therapy in co-infected patients. Dosing is as follows:

Pyridoxine

Adults and Children > 3 years of age: 25mg po daily

Children < 3 years of age: 12.5mg po daily

### **Directly Observed Therapy**

Due to the difficulties of taking antituberculous therapy and ART as well as the risk of developing drug-resistance, it is recommended that all patients receive directly observed therapy (DOT) during the course of their TB treatment. DOT should be provided by a paid treatment supporter who fills out the DOT card. The importance of patient education

and empowerment around medication taking is a key part in improving adherence as is addressing socioeconomic barriers.

### **Drug-Resistant TB**

Drug-resistant forms of TB (such as MDR-TB and XDR-TB) have been reported to be more common among HIV infected populations in some studies. Thus, any patient not clinically or bacteriologically responding to antituberculous therapy after 2 months who is receiving good DOT should have a culture sent for drug susceptibility testing (DST). For management of patients with suspected or confirmed drug-resistant TB, please refer to the national MDR guidelines.

### **Nutritional Support**

Both TB and HIV are wasting diseases and patients have been shown to have improved outcomes when nutritional support is provided. Thus, every effort should be made to ensure that co-infected patients receive nutritional support whenever possible. Education and counselling is a necessary but insufficient step in assisting with nutritional support in co-infected patients, especially given the levels of malnutrition in Lesotho. Health centres should pair with partner organizations where needed to provide actual food supplements to patients. Refer to Integrated Management for Acute Malnutrition Guidelines for more details.

## **Management of Co-infections, Opportunistic Infections, and Common HIV-associated Illnesses**

### **Introduction**

Persons with HIV and AIDS are at major risk of developing infections and cancers due to their immunocompromised status. The term **co-infection** is used to refer to infections that can interact with HIV and has its natural history altered and/or alters the natural history of HIV e.g. HIV-Malaria and HIV-Leishmaniasis, although many practitioners use the term “co-infection” to solely refer to persons with TB and HIV. The term **opportunistic infection** refers to an infection caused by a pathogen that is typically harmless to a normal host but causes severe disease in patients with HIV disease. The opportunistic infections are often associated with advanced or severe immunodeficiency and usually represent WHO clinical stage 3 or 4. In infants less than 12 months of age, this may not necessarily be the case. Due to an infant’s immature immune system, opportunistic infection may occur despite a high CD4 count or percentage. Hence, HIV-infected children are more susceptible and vulnerable to severe life threatening opportunistic diseases and must be monitored closely and treated aggressively. **Common HIV-associated illnesses** are often presenting clinical manifestations that may lead to the diagnosis of HIV. These usually represent WHO clinical stage 2 disease.

Due to an infant’s immature immune system, opportunistic infection may occur despite a high CD4 count or percentage.

## Co-infections

Although TB is the most common co-infection and is responsible for the highest mortality rate, there are other infections or diseases that should be considered and monitored in patients with HIV. These include:

- **Hepatitis B & C:** Although not much data exists on the prevalence of hepatitis B in sub-Saharan Africa, some anecdotal evidence reports rates as high as 20%. For this reason, a TDF-3TC based regimen is important, as both drugs are also active against hepatitis B. It is recommended that all patients undergo a baseline screening for hepatitis B (HBsAg) and be vaccinated if no infection has been documented. When switching patients with hepatitis B infection to second-line regimens, close monitoring for worsening of hepatitis B status should be done.
- **Syphilis:** Syphilis is a common sexually transmitted disease that occurs in the setting of HIV infection. All HIV patients should have a baseline VDRL done and treated with benzathine penicillin 2.4 MU IM every week for 3 consecutive weeks if the VDRL is positive. Point-of-care tests for syphilis are now available and affordable and thus this can be offered at the health center level.
- **Human papilloma virus:** HPV has been linked to cervical cancer, a major cause of morbidity and mortality among women with HIV. For this reason, all women who are sexually active should undergo yearly PAP smears. Once it becomes more widely available, the HPV vaccine is recommended for all women.
- **Other sexually transmitted infections:** Patients with HIV may be at increased risk for other STIs, and other STIs (especially ulcerative diseases such as HSV) may increase the risk of HIV transmission. For this reason, patients should be asked a series of screening questions at each encounter regarding the presence of genital ulcers and/or discharge and referred to a health care provider for further assessment if they respond positively. Please refer to National Guidelines for Syndromic Management of STIs for further detail.

## Opportunistic Infections (OIs)

Diagnosis and treatment of opportunistic infections in HIV-infected adults and children is an essential component of their package of care. **Annex 10** presents the most common adult and paediatric OIs, their major presenting signs and symptoms, diagnostic investigations, and subsequent management regarding treatment and prophylaxis.

## Immune Reconstitution Inflammatory Syndrome (IRIS)

IRIS is a phenomenon that occurs when the patient on ART begins to have immune recovery in the setting of an untreated or not fully treated OI. This may lead to a paradoxical transient worsening of symptoms or clinical status, despite favourable recovery of immunological status (CD4 count/percentage). Usually IRIS occurs within the

first 2-9 months of initiating HAART. Under these circumstances, all efforts must be made to find, diagnose and treat the OI. In general, it is not necessary to stop ART but rather the condition can be managed with proper OI treatment and NSAIDs. Corticosteroids may be required in severe cases. Cessation of ART should be used as a last resort.

**Immune Reconstitution Inflammatory Syndrome (IRIS)** is defined as the paradoxical, transient worsening of symptoms or clinical status, despite favourable recovery of immunological status (CD4 count/percentage).

As described in the Adherence Section, the possibility of IRIS must be explained to patients prior to initiation of HAART (i.e. the patient may become worse before becoming better). Forewarning a patient of this possibility will assist with future adherence and help the patient return early for care and management if symptoms do occur.

### **Common HIV-Associated Illnesses**

Diagnosis and treatment of common HIV-associated illnesses is often the first step in providing care for an HIV-infected individual. **Annex 10** delineates appropriate care and management of OIs that occur commonly.

The impact of co-trimoxazole prophylaxis in reducing morbidity and mortality is vital, and all patients who have a CD4 count below 350 should be on co-trimoxazole prophylaxis.

The most common OIs are presented in the table below:

OI	Major presenting symptoms	Prophylaxis	Diagnosis	Management	Comments
Oral candidiasis (thrush)	White spots or plaques in mouth		Clinical	Nystatin troches, fluconazole 200-400 mg x 1	Nystatin troches maybe used but can be less effective than a single dose of fluconazole
Vaginal candidiasis	Vaginal itching, white creamy discharge		Clinical	Nystatin ovules, fluconazole 200-400mg x 1	Nystatin ovules used but can be less effective than a single dose of fluconazole
Oesophageal candidiasis	Difficulty swallowing		Clinical	Fluconazole 200-400mg daily for 14 days	
Pneumocystis <i>jirovecci</i> pneumonia (PJP)	Subacute shortness of breath, dry cough	Co-trimoxazole 960mg once daily	Clinical, chest radiograph	Co-trimoxazole 2 960 mg tablets 3 times a day for 21 days + folic acid	If dyspnea severe and patient clinical status tenuous, add prednisone 0.5-1.0 mg/kg/day
Bacterial pneumonia	Cough, fever less than two weeks duration, acute in onset	Co-trimoxazole 960mg once daily	Clinical, sputum, chest radiograph	Doxycycline 100mg twice daily for 10-14 days OR amoxicillin 500mg 3 thrice daily for 10-14 days OR Erythromycin 500mg four times per day	Should be treated with an antibiotic that is not active against TB (i.e. DO NOT USE FLUOROQUINOLONES)

## **Summary and Key Recommendations**

In summary, co-infections and opportunistic infections are the major cause of morbidity and mortality among people with HIV and AIDS. For this reason, close attention should be paid to these diseases, especially TB.

- TB screening should be included at every visit
- IPT is recommended only for pilot sites with capability to thoroughly rule out active disease
- The threshold for initiating ART in TB co-infected patients has now been lowered so that ART can be started sooner
- Efavirenz-based regimens should be preferentially used for TB patients
- Drug resistance should be suspected in patients who do not improve on adherent antituberculous therapy
- Infection control measure must be a high priority, including the provision of HIV counselling, testing and treatment at TB treatment centres
- Nutritional support is a cornerstone in the management of patients with TB and HIV
- All patients should be screened for hepatitis B, hepatitis C, syphilis, and with a PAP smear
- Patients should be vaccinated for hepatitis B and HPV when clinically indicated

## **CHAPTER 9: Nutrition**

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### **Nutrition and antiretroviral treatment (ART)**

#### **Introduction**

The link between HIV and AIDS and nutrition is often described as a vicious cycle; malnutrition and HIV and AIDS both weaken the immune system. HIV infection increases nutrient requirements and at the same time impairs nutrient intake and absorption. HIV and AIDS increase the risk of malnutrition through altered food intake and/or its nutrition absorption and utilization. Poor nutrition increases the risk of opportunistic infections and accelerates the progression of HIV and AIDS.

Increased nutrient intake or supplementary feeding as an essential addition to ART will enhance rehabilitation, immunity and adherence to ART. Therefore people living with HIV and AIDS will benefit from access to food treatments programmes.

#### **Macronutrients**

The major cause of HIV related weight loss and wasting is the combination of low energy intake and the increased energy demands as a result of HIV infection and related infections. Energy requirements increase by 10% to maintain body weight and physical activity in asymptomatic HIV infected adults and growth in asymptomatic children. HIV infected adults who are symptomatic have to increase the energy requirements by 20 to 30%. Children who are experiencing weight loss need an additional 50% to 100% energy intake on top of their normal requirements. There is insufficient evidence to support the need for increased fat or protein intake because of HIV infection.

#### **Micronutrients**

People living with HIV and AIDS should consume diets that ensure micronutrient intake meets the RDA level (recommended daily allowance). However the inadequate intake or absorption of food will make it difficult to meet the RDA levels to be able to correct the nutritional deficiencies. Therefore multi vitamin and mineral supplementation with RDA levels within the range could be considered for those with or those at risk and vulnerable for a vitamin or mineral deficiency. Several studies raise concerns about adverse effects caused by micronutrient supplements that consist of vitamin A, zinc and iron and therefore it is advised not to exceed the RDA for these micronutrients.

#### **Adults**

Nutrition assessment and management is a central component to care of persons living with HIV and AIDS. Numerous studies have shown the evidence between indices of nutritional states such as body mass index and mortality. Body mass index is the main indicator for malnutrition in adults, defined as the body weight in kilogram divided by the height in meters squared:  $\text{weight (kg)} / \text{height (m)}^2$ . BMI  $\geq 18.5 - 25$  is normal, BMI 17.0 – 18.49 is mild underweight, BMI 16.0- 16.99 moderate underweight and BMI  $<16.0$  severe underweight. When a BMI below 18.5 is diagnosed, therapeutic food supplementation as part of the treatment is recommended.

## **Pregnant and lactating women and infant feeding**

Nutritional recommendations for HIV infected pregnant women are the same as for HIV infected adults. Besides the extra requirements due to HIV infection, it is recommended that HIV infected women who are pregnant receive the same micronutrient supplementation during ANC as non infected women, for iron, folate and vitamin A. Because of possible side effects with ART medication, the RDA levels should not be exceeded.

## **Infant feeding**

Infant feeding options should be thoroughly discussed during the ANC sessions. Pregnant mothers have the option to choose between breastfeeding and replacement feeding like infant formula or cow's milk. The options for feeding should be discussed using the AFASS method to see which feeding option is the best option for the mother. This method investigates whether replacement feeding is affordable, feasible, acceptable, sustainable and safe. A mother should be supported in her choice of feeding option. Follow up sessions on feeding counselling are very important to help the mother practice her feeding method. Emphasis of the counselling sessions should be on exclusive feeding methods, whether this is breastfeeding or replacement feeding. Current evidence proves that mixed feeding, the normal practice in Lesotho, increases the risk of mother to child transmission of HIV. If the mother chooses breastfeeding, she should be supported in weaning the child rapidly as soon as replacement feeding is AFASS. Refer to Infant and Young Child Feeding National Guidelines for more details.

## **Children**

Several Anthropometric indices are used to measure malnutrition in children; weight for age (underweight), weight for height (wasting) and height for age (stunting). All indicators are compared against a reference population of healthy children. To define malnutrition in a clinical setting, wasting is the common used indicator. It is defined by weight (kg) for height (cm) in standard deviations from the median or percentage of the median. A child below the standard deviation -2 (moderate or severe malnutrition) should be enrolled into a therapeutic feeding programme and prescribed ready-to-use-therapeutic food (RUTF). See ANNEX 22 for dosing of RUTF in children. Those with complicated severe malnutrition should be admitted to an inpatient hospital facility for proper management. Refer to the Integrated Management of Acute Malnutrition National Guidelines for more details.

## **References:**

- Nutritional Assessment of HIV – infected Patients  
Colleen Hadigan, Rebecca Andersen, et al
- Nutrient requirements for people living with HIV/AIDS, WHO, report of a technical consultation May 2003  
Measuring and interpreting malnutrition and mortality, CDC and WFP, July 2005

## CHAPTER 10: WELLNESS PROGRAMME

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### A 'WELLNESS' PROGRAMME

#### A 'Wellness' Programme

Many people living with HIV and AIDS need counselling and support in order to learn how to care for themselves, and lead healthy, positive lives. A healthy lifestyle can help to slow the progression of the disease, and promote safer sexual practices, which in turn will reduce transmission of the virus to others. Some aspects of a 'Wellness' Programme include:

#### 12.1 Healthy diet

- ⌘ PLWHA should eat healthy foods
- ⌘ Eat a balanced diet, which includes many fresh fruit and vegetables

#### 12.2 Consider nutritional supplements

- ⌘ The use of nutritional supplements can be of value. Certain vitamins and micronutrients have been shown to increase the CD4 count but they do not have a direct effect on the virus. They are especially useful if the patient is unable to eat a balanced diet.
- ⌘ Vitamin A supplementation may have some benefit in reducing mother to child transmission; however this is as yet still uncertain.
- ⌘ Antioxidants such as Sutherlandia plant extract and Selenium may be of value, but there is no hard evidence that they have a significant impact on the disease progression.

#### 12.3 Avoid smoking

- ⌘ Tobacco smoke (first or second-hand) harms the immunity of a person's lungs
- ⌘ Since respiratory infections account for a large proportion of opportunistic infections, a healthy respiratory system is important.
- ⌘ Patients should try to stop smoking or at least reduce the number of cigarettes they smoke per day.

#### 12.4 Avoid Alcohol intoxication

- ⌘ Too much alcohol too often is harmful to one's health
- ⌘ Since many drugs used in HIV disease are potentially toxic to the liver, a healthy liver is important.
- ⌘ Advise patients to avoid alcohol intoxication, which among other things, will have a negative effect on adherence to ARVs and other important medications.

#### 12.5 Keep fit and well exercised

- ⌘ Exercise helps to keep the body in good physical shape and will help patients to feel well and strong.
- ⌘ However, advise patients not to over-stress the body, especially when symptoms of disease are present (diarrhoea, cough, fever, etc).

## **12.6 Avoid taking unnecessary drugs**

- ⌘ Any drug has potential side effects.
- ⌘ The potential risk of medication must always be weighed against the potential benefit.
- ⌘ Patients should only take medication which has been prescribed by a trained health care provider.

## **12.7 Get lots of rest and sleep**

- ⌘ Rest regularly and get enough sleep.
- ⌘ If at all possible, patients should avoid too much stress.

## **12.8 Have a positive mental attitude**

- ⌘ A positive mental attitude promotes well-being, and helps to keep patients well for longer.

## **12.9 Alternative therapies**

- ⌘ Alternative therapies such as acupuncture, massage, homeopathy, aluverdic medicine and traditional healing etc. may be of some benefit, but their value has yet to be proven in HIV/AIDS care.
- ⌘ They can be considered as supportive therapy and should not be discouraged in patients with strong beliefs in such therapy.
- ⌘ Further research will help to understand the relative benefit of each of these therapies.
- ⌘ Research has been carried out on the following:
  - The African Potato (Hypoxis) has been claimed to boost the immune system. But a study on the efficacy and safety of Hypoxis was stopped at eight weeks as a result of the development of serious bone-marrow suppression in the majority of patients.
  - Garlic powder, claimed to have antiviral properties, was shown to damage gastric mucosa. Garlic supplements, given for over 2 months, may lengthen bleeding time and interact with ARVs.
  - Onion and olive oil also failed to show 'immune-boosting' properties. Large doses of onions may cause chronic diarrhoea and intestinal distension. Taken together, they are likely to be harmful, and may in fact hasten the progression to full-blown AIDS.

## **12.10 Seek treatment early for medical problems**

- ⌘ It is important to seek treatment for medical problems as soon as symptoms appear.
- ⌘ Many HIV-related conditions can be effectively treated if they are diagnosed early enough.
- ⌘ Encourage patients to come for assessment as soon as they notice any problems.

## **12.11 Safer sexual practices**

- ⌘ It is important for patients to prevent spreading their HIV infection to others.
- ⌘ It is also considered harmful to get repeated HIV infection from others.

### **12.12 Give advice about the following:**

#### **Protection**

- ⌘ If the patient is having vaginal or anal sex, he/she must protect himself/herself and the partner by using a condom.

#### **Alternative sexual methods**

- ⌘ Try to have enjoyable sex and sexual pleasure without penetration.
- ⌘ It is also safe to be caressed and to caress one's partner.
- ⌘ If a man wants oral sex it is safest if a condom is used.

#### **Anal sex**

- ⌘ Try to avoid having anal sex if possible, or use double-strength condoms.

### **12.13 Alcohol and dagga (ganja, zoll or marijuana)**

- ⌘ These should be discouraged as they can have a negative impact on adherence, and influence people to have unsafe sex.

### **12.14 Advice on vaccines**

- ⌘ All HIV-positive people are advised to have an annual Influenza vaccine before winter.
- ⌘ Hepatitis B immunisation may be given if the person has not already been infected with Hepatitis B.
- ⌘ Live vaccines should be avoided in those with weakened immune systems (particularly if CD4 < 200). The effectiveness of vaccines are in general higher when CD4 cell count is > 200/mm<sup>3</sup> in HIV+ patients.

## CHAPTER 11: Post Exposure Prophylaxis (PEP)

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### Introduction

Persons who are exposed to HIV and other pathogens via sexual assault or occupational exposure merit close following. These experiences can be psychologically devastating. In addition, there is risk of disease transmission. For these reasons, avoidance of occupational exposure and proper management of patients exposed via sexual assault should be a top priority.

### Occupational Exposure

Although persons often express great concern about contracting HIV in the workplace, there are other fluid-borne and air-borne pathogens that should also be considered and which are actually transmitted at a higher rate than HIV (such as hepatitis C and hepatitis B). In occupational settings, **prevention** of transmission should be the focus.

UNIVERSAL PRECAUTIONS (i.e. the use of disposable latex gloves when handling bodily fluids, single use equipment, and proper management of sharp and contaminated materials) should be observed by all levels of health care workers.

All personnel should have undergone the hepatitis B vaccination series prior to handling potentially infectious materials. TB is another pathogen that can be transmitted occupationally (see infection control section for further information on protection from TB for health care workers and other issues of infection control). Although universal precautions maintain that all bodily fluids are a potential, transmission risk, some procedures and settings are considered to be a higher risk than others.

For PMTCT, high-risk MCH areas include:

- Obstetric procedures
- Labour and delivery
- Immediate care of the infant

Transmission of infectious agents in the MCH setting can be prevented by using infection control measures, including adherence to universal precautions, safe environmental practices, and ongoing education of employees in infection prevention

For other settings, high risk areas include:

- Use of hollow-bore needles to perform arterial or venous procedures
- Surgical procedures in which there is limited vision in the field
- Settings of poor lighting
- Emergency procedures and situations involving blood

Factors that increase the risk of seroconversion include:

- Deep injury
- Exposure to a relatively large quantity of blood from the source person as indicated by a device that is visibly contaminated with blood from the source.
- Penetration with a needle which has been placed directly into a vein or artery of the patient
- Penetration with hollow-bore needle and a solid suture needle
- Exposure to blood from a source with terminal AIDS also increases the risk.

It is vital that all occupational settings have a protocol and personnel for managing occupational exposures in a confidential fashion. All health facilities and personnel should have copies of the national PEP policy and health worker safety policy. Employees should feel safe and comfortable reporting exposures at all times and know that their confidentiality will be maintained and their jobs not at risk.

### **Exposure Management**

Health care workers and their supervisors must be familiar with the recommendations for the treatment of the exposed site.

Wounds and skin sites that have been in contact with blood and body fluid should be washed with soap and water; mucous membranes should be flushed with water. There is no evidence that the use of antiseptics for wound care or expressing fluid by squeezing the wound further reduce the risk for HIV transmission. However, the use of antiseptics is not contraindicated. The application of caustic agents (e.g. bleach) or the injection of antiseptics or disinfectants into the wound is not recommended.

### **PEP prophylaxis**

Compliance with infection control recommendations in handling sharps and wearing protective eyewear are the mainstay in the prevention of occupational HIV infection. Additional prevention strategies include post-exposure prophylaxis with antiretroviral therapy. The HIV source, the exposed person, and the circumstances of exposure must be evaluated to determine the risk of infection. Once risk of infection is determined, the appropriate PEP regimen can be initiated. The HIV status of the injured party should be known prior to initiating HIV prophylaxis. If the injured party is found to be HIV positive at time of exposure, then he/she must be referred for proper care and treatment. Giving a 2-drug PEP regimen would jeopardize future treatment options since dual therapy would lead to resistance.

**Table 11.1: Recommendations for post exposure prophylaxis (PEP) after occupational exposure to infectious material (includes blood, CSF, semen, vaginal secretions & synovial/pleural/ pericardial/ peritoneal/amniotic fluid)**

Exposure	HIV status of source patient		
	Unknown	Positive	High risk*
Intact skin	No PEP	No PEP	No PEP
Mucosal splash/ Non-intact skin	Consider 2-drug regimen	Recommend 2-drug regimen	Recommend 2-drug regimen
Percutaneous (sharps)	Recommend 2-drug regimen	Recommend 2-drug regimen	Recommend 3-drug regimen
Percutaneous (needle in vessel or deep injury)	Recommend 2-drug regimen	Recommend 3-drug regimen	Recommend 3-drug regimen

\* See text for definition of high-risk exposures

**Table 11.2 Recommended PEP drug regimen**

Regimen	Drug	Dose	Frequency	Duration
2-drug	Zidovudine (AZT) Lamivudine (3TC)	300mg 150mg	q 12 hours	28 days
3-drug	Zidovudine (AZT) Lamivudine (3TC) Lopinavir/r	300mg 150mg 133/33 (3 caps) 200/50 (2 tabs)	q 12 hours	28 days

PEP should commence within 72 hours and continued for 28 days. Every attempt should be made to initiate PEP as soon as possible.

In situations where there is a high suspicion that the injured party may be in the window period, consider HIV DNA PCR testing while providing starter pack prophylaxis.

For further information, consult the national guidelines on Management of Occupational exposure to HIV.

### **Monitoring after occupational exposure**

Prophylaxis is to be given for 28 days.

Following HIV exposure there is a need for psychosocial support. Laboratory monitoring is done to exclude acquisition of HIV infection and, for those given PEP, to monitor toxicity. Health care workers should be tested for HIV infection and Hepatitis B (HepBsAg) at the time of the exposure & again at 6 weeks, 3 months & 6 months post-exposure.

The form, which has been designed to register all exposure incidents, has provision for the details of the incident to be recorded. It is therefore important that the following information is noted on the form:

- Details of the exposure including the type of fluid or material and the severity of the exposure (e.g. for Percutaneous exposure, depth of injury and whether fluid was infected; or for a skin or mucous-membrane exposure, the estimated volume of material and duration of contact and the condition of the skin (e.g. chapped, abraded, or intact)
- If the source has an HIV-related illness, the stage of the disease should be noted, as well as history of antiretroviral therapy, viral load (if known) and details about counselling, post exposure management, and follow-up

### **Settings of Sexual Assault**

HIV and other sexually transmitted diseases can be passed to the victims of a sexual assault. In female victims, there is also the risk of unintended pregnancy. Persons experiencing sexual assault merit special concern given the psychological consequences of such trauma, and children who are assaulted as quite vulnerable. Thus, victims of sexual assault should be cared for by a multi-disciplinary team consisting of trained medical personnel, social workers, law enforcement specialists, counsellors and other support persons. A thorough history and physical examination should be performed using standard legal and medical procedures, and all evidence should be collected, documented and reported to the police. Injuries to the vaginal and anal mucosa should be noted as well as other bodily injuries. All victims of sexual assault should be considered at high risk of HIV exposure and managed according to the table below (see high risk exposure regimen). Furthermore, victims should be empirically treated for Chlamydia, gonorrhoea and syphilis as well as other injuries sustained during the assault. Female victims of childbearing age should be offered emergency contraception (i.e. levonorgestrel 0.75mg STAT then once again 12 hours later). Close follow-up and psychological counselling should be done for all those who experience sexual assault.

### **Prevention of the transmission of the HIV in men and women who have been raped/sexually assaulted**

1. All women and men, aged 14 years and older, presenting to a health facility after being raped should be counselled by the examining health care worker about the potential risks of HIV transmission post rape.
2. Younger children need to be managed at specialized sites where there is the expertise in dealing with traumatized children and the prescription of ARVs.
3. The following points should be covered in the counselling:
  - a) The risk of transmission is not known, but it exists

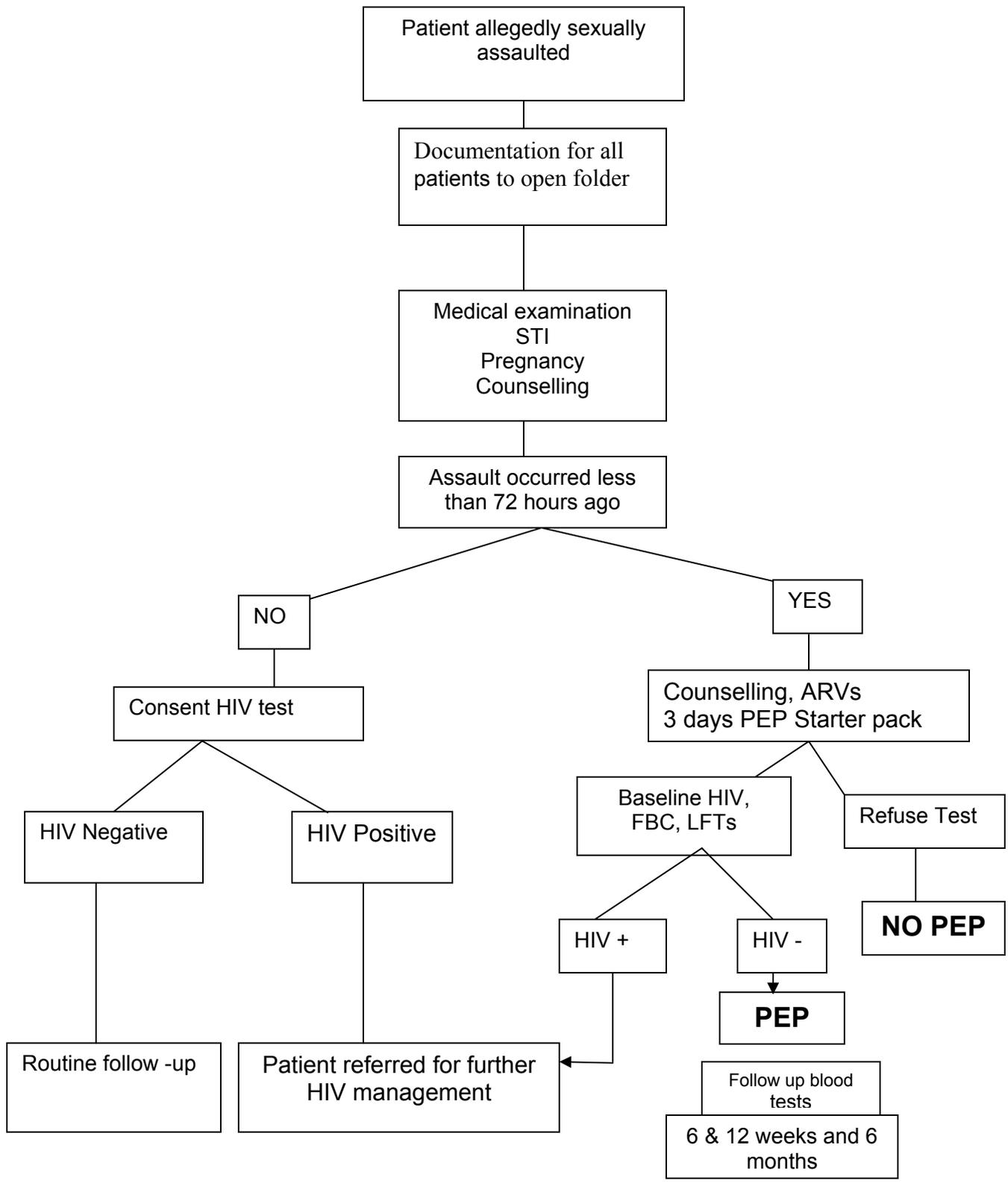
- b) It is important to know the victim's HIV status prior to using any antiretroviral treatment, as using AZT and 3TC in an HIV positive patient is not adequate therapy and may lead to viral resistance.
  - c) It is the patient's choice to have immediate HIV testing or, if she/he prefers, this could be delayed until 72 hours post examination visit (management guidelines on sexual assault provides for a 3-day starter pack for those who prefer not to test immediately, or those that are not ready to receive results immediately). Getting patients back after three days might present with logistical problems, especially if they have to return at week 1 for other results or to revisit VCT.
  - d) Patients presenting after 72 hours should be counselled about the possible risk of infection and the possibility of them transmitting infection during seroconversion and be advised to return at 6 weeks and 3 months post rape for voluntary confidential counselling and HIV testing. For patients who request prophylaxis at this stage should be advised that there is not enough scientific evidence that the use of AZT (and 3TC) delayed this long after the rape will have any impact on preventing HIV transmission.
  - e) The patient should be made aware that the efficacy of AZT prophylaxis is still under study and that the drug itself is not yet licensed for use in post-rape prophylaxis.
4. All women and men aged 14 years and older, presenting to a health facility within 72 hours of being raped should be offered AZT and 3TC to prevent HIV transmission.
  5. A third drug, Lopinavir/ritonavir 400/100mg 12 hourly, added to the above is recommended in severe cases:
    - a) Where there have been multiple perpetrators
    - b) Anal penetration
    - c) Obvious trauma to the genital areas
    - d) Or known HIV positivity of one of the perpetrators. Not enough scientific evidence exists to support the three drug regimen but it is considered best practice in these circumstances.
  6. The treatment is AZT 300 mg bi-daily for a period of 28 days plus 150mg 3TC bi-daily for the same time period.
  7. Patients should be given a week supply of AZT and 3TC and a date to return within a week for reassessment, review of test results (except the rapid HIV or to obtain the confirmatory ELISA where positive) and ongoing counselling.
    - a) For those patients who cannot return for their one-week assessment due to logistical or economic reasons, then a month treatment supply with an appointment date should be given (this may be particularly relevant outside of the metropolitan areas).
    - b) Ideally all patients should be seen one-week post rape to obtain results of all blood tests and to evaluate her/his condition. The remainder of the drugs should be given at this visit (that is a 3 week supply).

- c) The next visit should be at 6 weeks and then 3 months and 6 months after the rape. HIV testing should be performed at each visit.
8. Patients who are either known to be HIV positive or found to be HIV positive should *not* be offered prophylaxis but be referred to an appropriate health care clinic for long-term management of their HIV infection.
  9. The prophylaxis regimen against HIV transmission recommended by the National Department of Health will be reviewed periodically in light of any new information on HIV transmission and appropriate prophylaxis.
  10. Routine testing with a full blood count and liver enzymes for patients on AZT and 3TC is not recommended for such a short duration of therapy and any blood tests should be performed according to patient's condition.
  11. Relative contra-indications to the use of AZT include significant renal or liver impairment and severe anaemia (Hb < 8g). Where in doubt about the use of AZT in individual patients, contact your local physician or hospital for advice.
  12. It is strongly suggested that AZT and 3TC be administered only in the context of using the comprehensive rape protocol.
  13. It is strongly suggested that the implementation of AZT and 3TC for post-rape prophylaxis should be carefully monitored and evaluated

### **Hepatitis prophylaxis in exposure settings**

HIV is not the only agent transmitted in occupational settings and settings of sexual assault. Both groups are at risk for hepatitis B and should undergo baseline testing and vaccination if the baseline test is negative. If the exposure to Hepatitis B comes from a KNOWN source patient or aggressor, consideration of administration of hepatitis B immunoglobulin should be considered. There is no prophylaxis for Hepatitis C transmission, and the prevention of exposure is key.

**Figure 11.1: PEP after Sexual Assault**



## **CHAPTER 12: Infection Control**

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An effective infection control programme includes several components that work to prevent healthcare personnel and patients from suffering needle stick and other sharps-related injuries.

Persons who are exposed to HIV via sexual assault or occupational exposure merit close following. These experiences can be psychologically devastating. In addition, there is risk of disease transmission. For these reasons, avoidance of occupational exposure should be a top priority. This includes the use of gloves (i.e. “Universal precautions”) in all settings and the use of proper disposal containers for sharps and contaminated materials

For PMTCT High-risk MCH settings are:

- Obstetric procedures
- Labour and delivery
- Immediate care of the infant

Transmission of infectious agents in the MCH setting can be prevented by using infection control measures, including adherence to universal precautions, safe environmental practices, and ongoing education of employees in infection prevention.

A model of quality improvement for a prevention programme and operational processes which form which creates a culture of safety, reporting injuries and accessing care and treatment. The magnitude of the occupational healthcare exposures is unclear due to lack of reporting mechanisms at the national level. Surveys of healthcare personnel indicate that 50% or more do not report their occupational Percutaneous injuries.

Universal Precautions are designed to prevent transmission of human immunodeficiency virus (HIV), hepatitis B virus (HBV), and other blood borne pathogens when providing health care. Under universal precautions, blood and certain body fluids of all patients are considered potentially infectious for HIV, HBV and other blood borne pathogens.

Universal precautions involve the use of protective barriers such as gloves, gowns, aprons, masks, or protective eyewear, which can reduce the risk of exposure of the health care worker’s skin or mucous membranes to potentially infective materials.

Apply universal precautions; healthcare worker to patient, patient to healthcare worker:

- Hand-washing before and after patient contact.
- Decontaminate equipment and devices

- Use and dispose of needles and sharps safety (avoid recapping, especially two-handed)
- Wear protective items
- Promptly clean up blood and body fluid spills
- Use safe disposal systems for waste collection and disposal

All healthcare workers should routinely use appropriate barrier precautions to prevent skin and mucous membrane exposure during contact with any patient's blood or body fluids that require universal precautions.

Hand-washing is the single most important measure to reduce the risks of transmitting microorganisms from one person to another. Washing hands as promptly and thoroughly as possible between patient contacts and after contact with blood, body fluids, secretions, excretions, and equipment or articles contaminated by them is an important component of infection control and isolation precautions. In addition to hand-washing, gloves play an important role in reducing transmission of microorganisms.

## **Hand Hygiene**

Recommended practice

- Soap and water hand washing using friction under running water for at least 15 seconds.
- Using alcohol-based hand rubs (or antimicrobial soap) and water for routine decontamination

## **Basic personal protective equipment**

- Gloves-correct size
- Aprons-as a waterproof barrier
- Eyewear-to avoid accidental splash
- Footwear-rubber boots or clean leather shoes

Gloves should be worn:

- For touching blood and body fluids, mucous membranes or non-intact skin of all patients, and
- For handling items or surfaces soiled with blood or body fluids to which universal precautions apply.

Gloves should be changed after contact with each patient. Hands and other skin surfaces should be washed immediately or as soon as patient safety permits if contaminated with blood or body fluids requiring universal precautions. Hands should be washed immediately after gloves are removed. Gloves should reduce the incidence of blood

contamination of hands during phlebotomy, but they cannot prevent penetrating injuries caused by needles or other sharp instruments. Gloves should always be available to health care workers who wish to use them for phlebotomy. Gloves should never be washed for reuse.

Use gloves when the health care worker has cuts, scratches, or other breaks in his/her skin. Use gloves when performing finger and/or heel sticks on infants and children.

### **Airborne precautions**

Airborne precautions are designed to reduce the risk of airborne transmission of infectious agents. It occurs by dissemination of either airborne droplet nuclei of evaporated droplets that may remain suspended in the air for long periods of time. The N95 (N category at 95% efficiency)

TB infection control has 3 components (listed in order of importance):

#### 1. Administrative controls

(these are the most effective and least expensive)

- prompt identification of infectious TB cases
- physical separation of patients known, or suspected, to have TB isolated, if possible, from other inpatients
- coughing patients should be separated from other outpatients in waiting areas
- physical separation of TB suspects from HIV-infected people (patients and staff) is especially important
- reduce the length of admission if possible, to prevent nosocomial infection

#### 2. Environmental (or engineering) controls

(important in triage rooms in OPD, and rooms where TB patients, suspected or confirmed, have been admitted)

- natural ventilation (as simple as opening windows)
- mechanical ventilation (such as extraction fans)
- ultraviolet irradiation
- air filtration

#### 3. Personal respiratory protection

- N95 (or other) respirator masks
- these must be properly fitted in order to protect against TB
- note that surgical masks do not protect against TB!



## Handling and disposal of Sharps

- Use syringe and needle once only.
- Do not recap the needle post use.
- Do not bend or break needles.
- Use puncture-proof container for disposal.
- Clearly label container: "SHARPS".
- Never overfill or reuse sharps containers.
- Dispose of sharps according to hospital guidelines.



- Use a puncture-proof container for storage and/or disposal.
- Do not recap a needle before disposal nor use the one-hand technique it is high risk behaviour. Use needle removers which remove the needle from the syringe by cutting the hub of the syringe and/or the needle.
- USE auto-disable syringes or automatically retractable syringes: the advantage is that they cannot be re-used and they save time for healthcare workers from the burden of sterilization.



**Preventing patients** from the transmission of infectious diseases and from conditions attributable to the care they receive is important to having an infection prevention and control programme.

### **Sterilization and disinfection of medical devices**

In general, medical devices or equipment for patient use that enters sterile tissue or the vascular system or through which blood flows should be sterilized before each use.

Sterilization means the use of a physical or chemical procedure to destroy all microbial life, including highly resistant bacterial endospores.

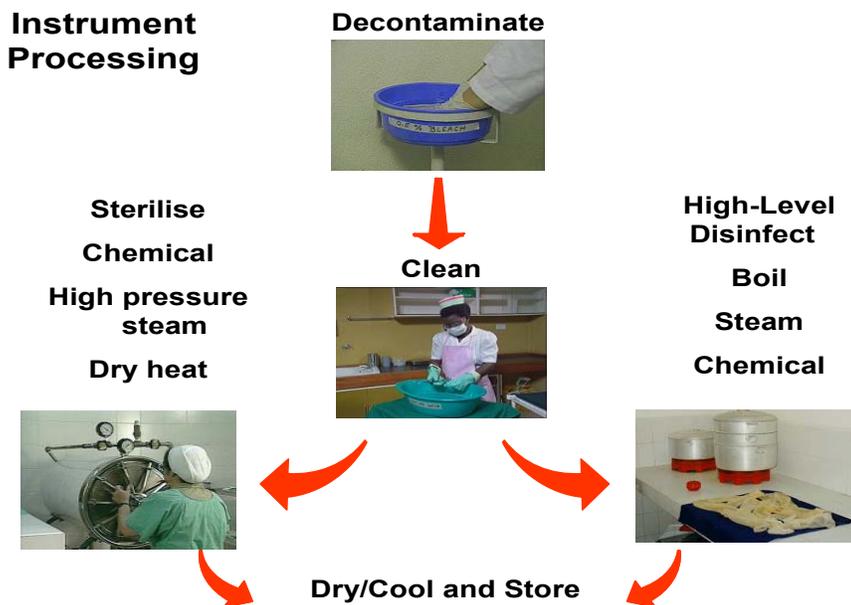
Disinfection means the use of a chemical procedure that eliminates virtually all recognized pathogenic microorganisms but not necessarily all microbial forms (ie. bacterial endospores) on inanimate objects.

There are three levels of disinfection: high, intermediate and low. High-level kills all organisms, except high levels of bacterial spores, and is effected with a chemical germicide clearing for marketing as a sterilant. Intermediate kills mycobacterium, most viruses, and bacteria with a chemical germicide (Sidx). Low-level disinfection kills some viruses and bacteria with chemical germicide registered as a hospital disinfectant.

### **Gloves should always be worn during the sterilization process.**

Apply risk reduction strategies

- Assess condition of protective equipment
- Safely dispose waste materials
- Make available appropriate cleaning and disinfecting agents
- Decontaminate instruments and equipments
- Monitor skin integrity



**On going Education of employees in infection prevention is essential to make all staff aware of established infection control policies.**

### Management of Occupational Exposure

1. Provide immediate care to the exposure site
2. Evaluate the exposure
3. Give post exposure prophylaxis (PEP) for exposures posing risk of infection transmission.
4. Perform follow up testing and counselling

\*Please refer to Chapter 11 Post Exposure Prophylaxis for PEP protocol

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### Glossary:

**Blood borne pathogens:** Pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV), hepatitis C virus (HCV) and human immunodeficiency virus (HIV).

**Exposure:** means an eye, mouth, or other mucous membrane, non-intact skin or parenteral contact with blood or other potentially infectious materials those results from the performance of an employee's duties.

**Occupational Exposure:** means reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

**Percutaneous:** effected or performed through the skin

**Phlebotomy:** the letting of blood for transfusion, pheresis, diagnostic testing, or experimental procedures.

**Recapping:** The act of replacing a protective sheath on a needle.

**Seroconversion:** The development of antibodies in the blood of an individual who previously did not have detectable antibodies, following exposure to an infectious agent.

**Sharps Injury:** An exposure even occurring when any sharps penetrates the skin.

**Standard Precautions:** An approach to infection control recommended by the centres for disease Control and Prevention since 1996. Standard precautions synthesize the major features of universal precautions and apply to blood and all moist body substances, not just those associated with blood borne virus transmission. Standard precautions are designed to prevent transmission of infectious agents in the health care setting to patient and healthcare personnel.

**Universal Precautions:** are designed to prevent transmission of human immunodeficiency virus (HIV), hepatitis B virus (HBV), and other blood borne pathogens when providing health care. Under universal precautions, blood and certain body fluids of all patients are considered potentially infectious for HIV, HBV and other blood borne pathogens. ([www.cdc.gov](http://www.cdc.gov))

(Note universal precautions do not apply to faeces, nasal secretions, sputum, sweat, tears, urine, saliva and vomitus unless they contain visible blood.

### What is Patient Monitoring?

**Routine** collection, compilation, analysis and use of individual patient data on a **group (or cohort) of patients** for decision making. Data is collected over time and across service delivery points. The information can be paper based or electronic. This is also called "**patient tracking**" and it provides important information for **patient management**.

### What is Patient Management?

Based on the relationship between providers on a clinical team and the **individual patient**, this is generating, planning, organizing, and administering medical and nursing care services for patients, assisted by written records. It is also called "**clinical management**" or "**clinical monitoring**".

### What is Programme Monitoring?

Ongoing collection of priority information about a programme to determine if it is operating according to plan. It provides ongoing information on program implementation and functioning. It is done at facility, district and national levels.

### Purpose of patient monitoring

Patient monitoring is an important part of high quality patient care. Monitoring involves documenting all patient encounters by keeping regular and accurate records of key aspects of the care and treatment that is offered. This makes it possible to capture the history of a patient or of a group of patients over time and across different clinical sites and to collect data for reporting on and evaluating patient care at regular intervals.

In the context of facility-based HIV and AIDS care, monitoring offers three major benefits:

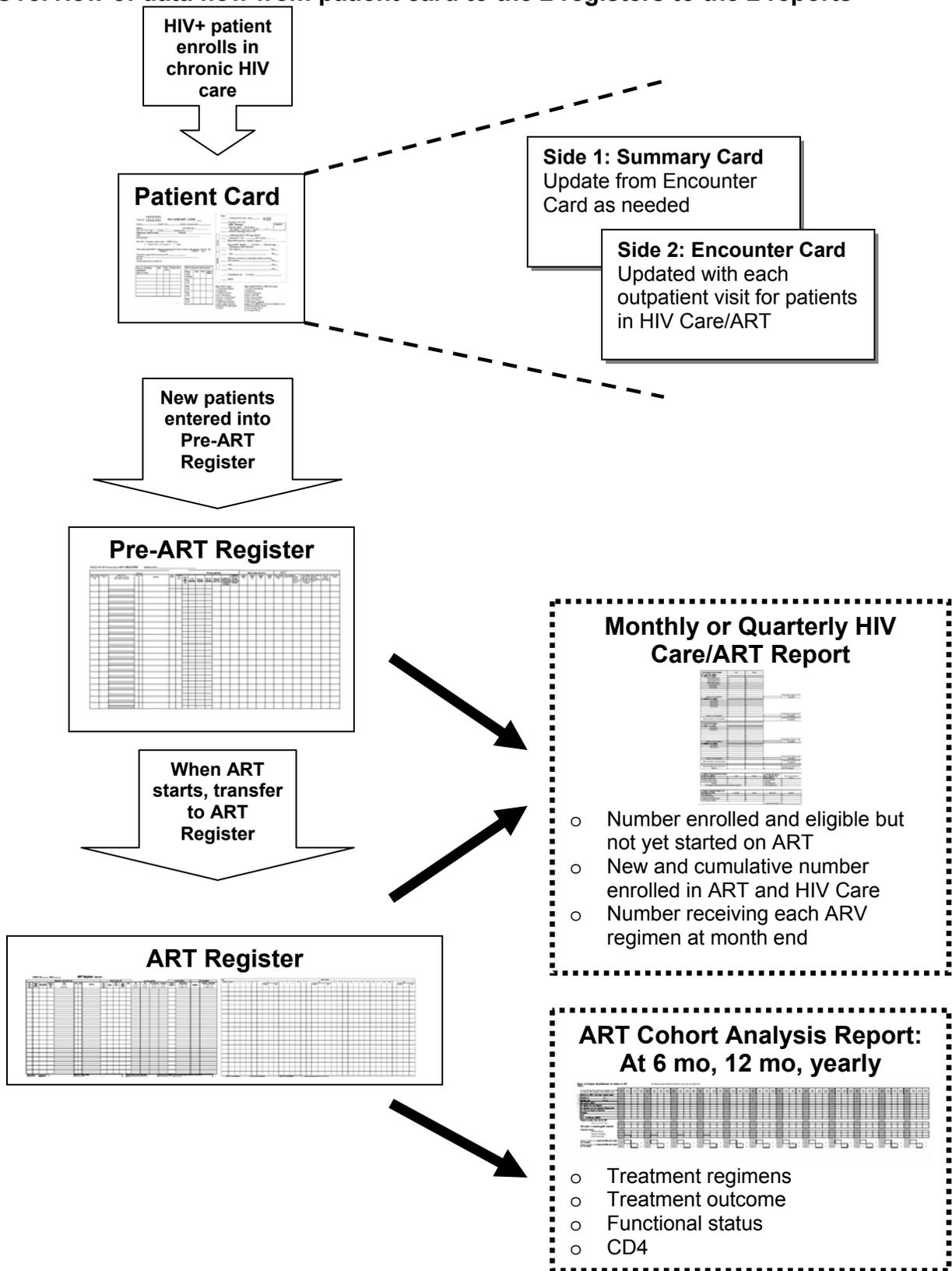
- It provides essential information for individual case management.
- It provides key information for managing the health facility (e.g., for ordering drugs and supplies or for making quality improvements).
- It provides information for operating and improving an HIV/AIDS programme at the district, national, and international levels.

### Overview of the patient monitoring system

The paper patient monitoring system includes seven paper items:

- 1) A short patient-held card (Bukana);
- 2) HIV Care/ART card (which is kept at the facility);
- 3) HIV Care Pre-ART Register;
- 4) ART register;
- 5) Quarterly (or monthly) report; and
- 6) Cohort analysis report.
- 7) Appointment book

**Overview of data flow from patient card to the 2 registers to the 2 reports**



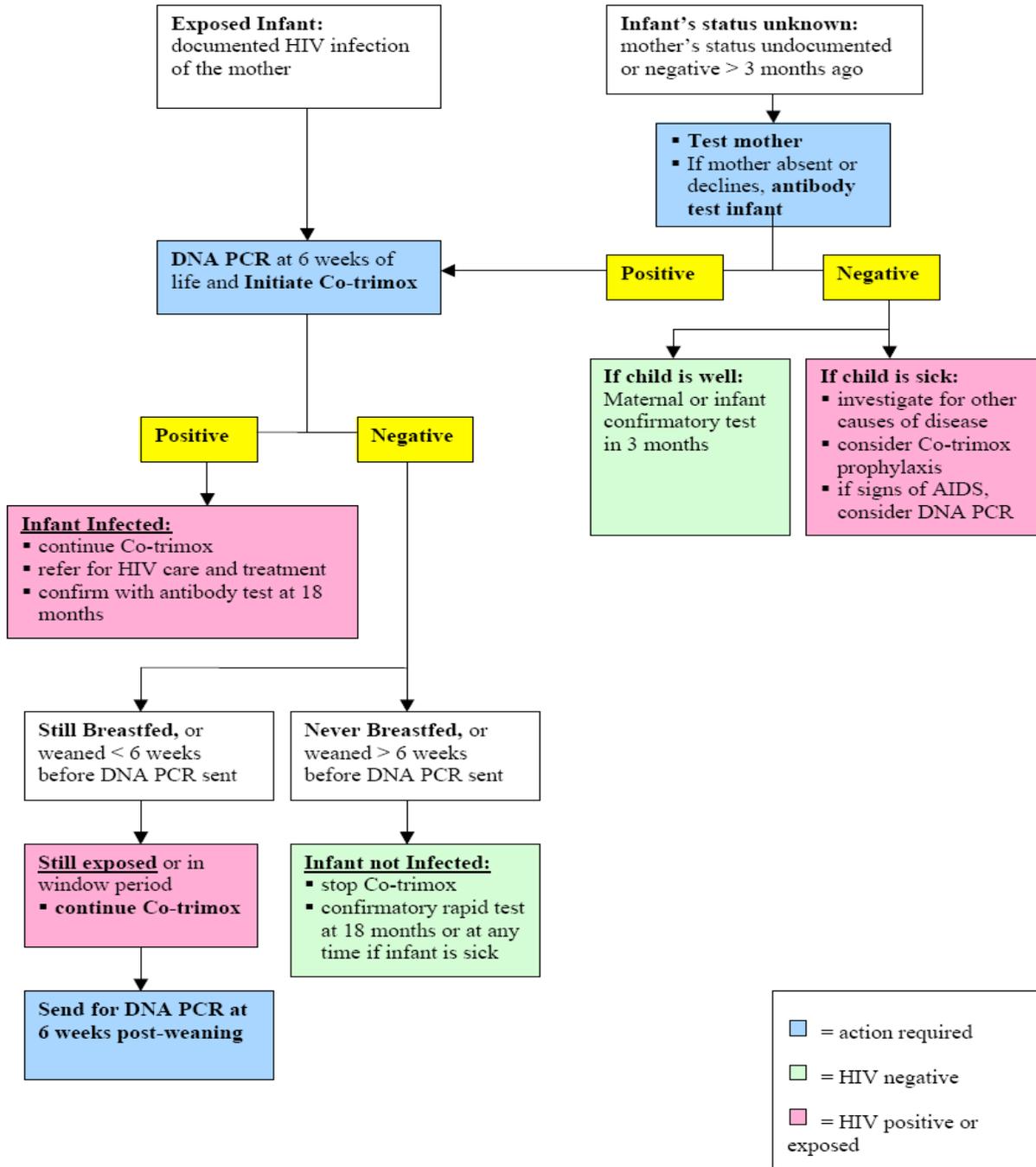
## National ARV programme indicators

Level	Area	Indicator	Recommended method	Frequency
Input	National policy & guidelines	<b>Core 1:</b> Existence of national policies, strategy, and guidelines for ART programmes	Key informant survey	Every 2 years
Process	Programme coverage (initial scale-up)	<b>Core 2:</b> Percentage of districts or local health administration units with at least one health facility providing ART services in-line with national standards	Record or programme reviews, or health facility survey	Annual during scale-up, every 2 years thereafter
	Drug supply	<b>Core 3:</b> Percentage of ARV storage and delivery points experiencing stock-outs in the previous 6 months  <b>Additional Indicator 3.1:</b> Percentage of ARV storage and delivery points meeting the minimum quality criteria (in addition to having no stock-outs).	Drug tracking system, programme reports	Annual during scale-up, every 2 years thereafter
	Human resources	<b>Core 4:</b> Number of health workers trained on ART delivery in accordance with national or international standards	Programme records, or health facility surveys	Annual during scale-up, every 2 years thereafter
Output	ART programme coverage	<b>Core 5:</b> Percentage of health facilities with systems and items to provide ART services	Health facility survey with observation component	Annual during scale-up, every 2-4 years thereafter
	Comprehensive care coverage, including prevention	<b>Core 6:</b> Percentage of health facilities with ART services that also provide comprehensive care, including prevention services, for HIV positive clients	Health facility surveys	Annual during scale-up, every 2-4 years thereafter
Outcome	People on treatment	<b>Core 7:</b> Percentage of people with advanced HIV infection receiving ARV combination therapy	Review of programme monitoring data	Six-monthly during scale-up, annually thereafter
	Continuation of first-line regimens	<b>Core 8:</b> Continuation of first-line regimens at 6, 12 and 24 months after initiation	Review of patient registers	Continuous data collection, aggregated on yearly basis
Impact	Survival	<b>Core 9:</b> Survival at 6, 12, 24, 36, etc. months after initiation of treatment	Review of patient registers	Continuous data collection, aggregated on yearly basis

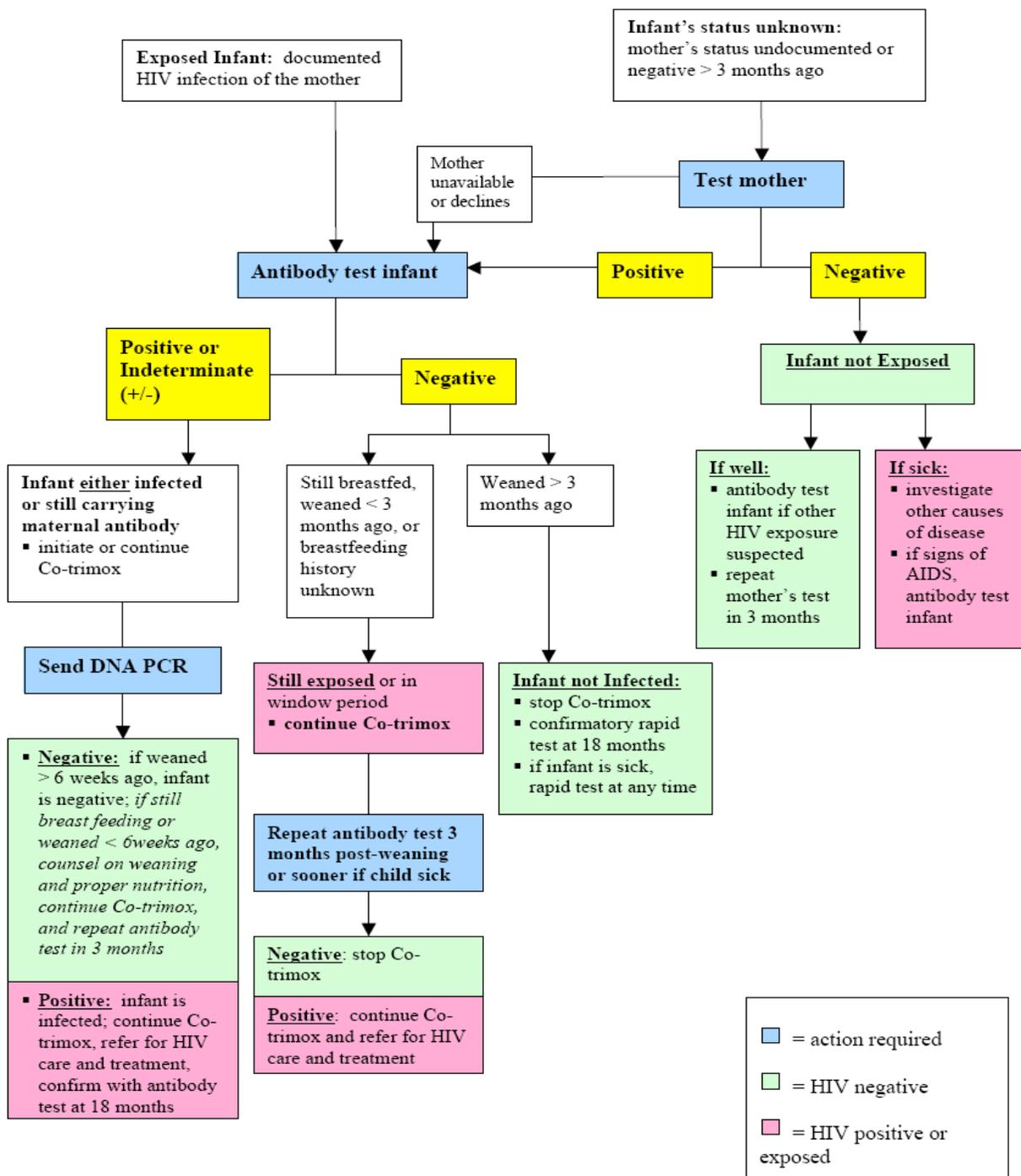
**ANNEXES\_Annex 1**

**Diagnosis of HIV in Children when DNA PCR is available**

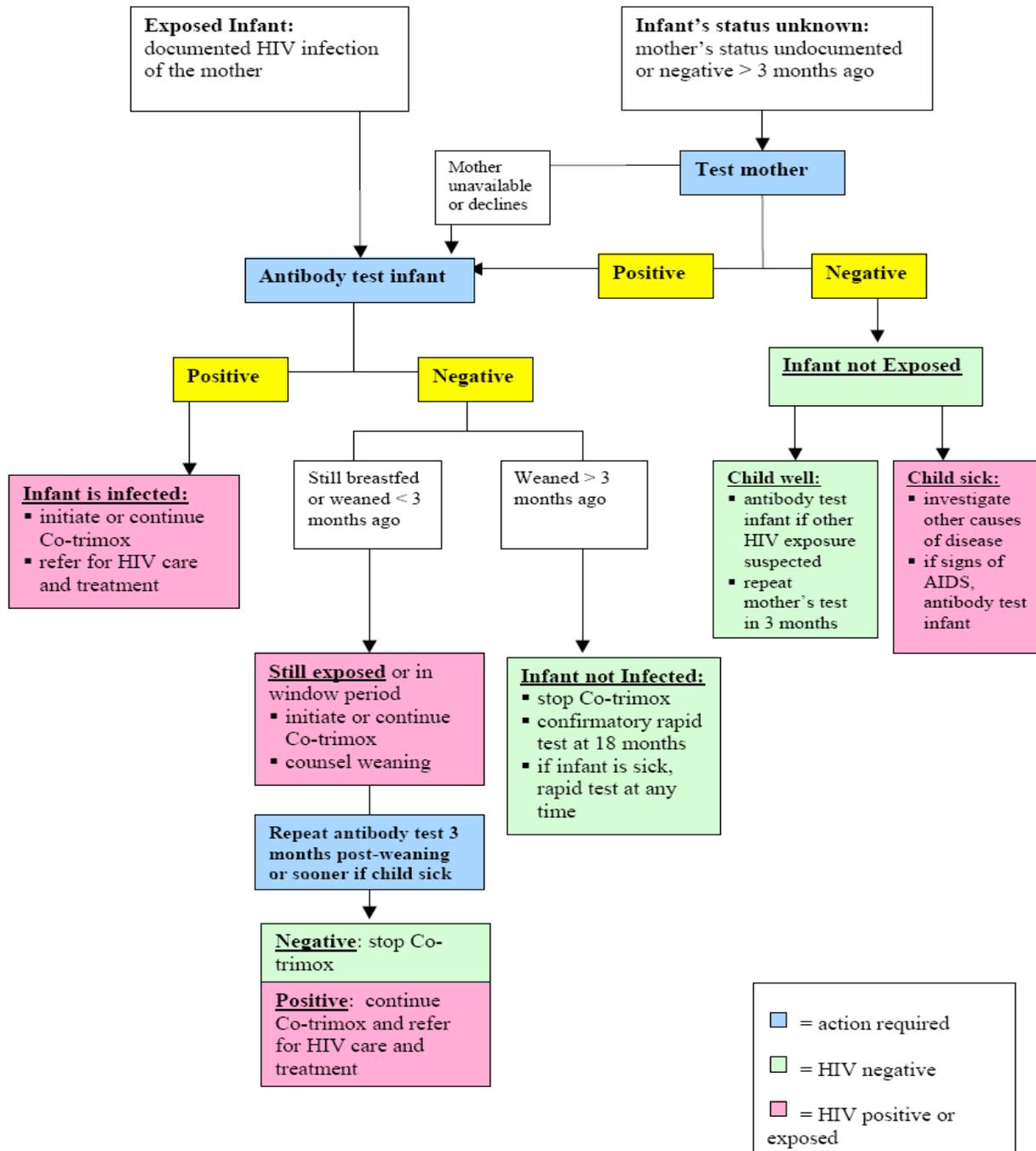
**Infant 0-9 Months**



## Infant 10-18 Months

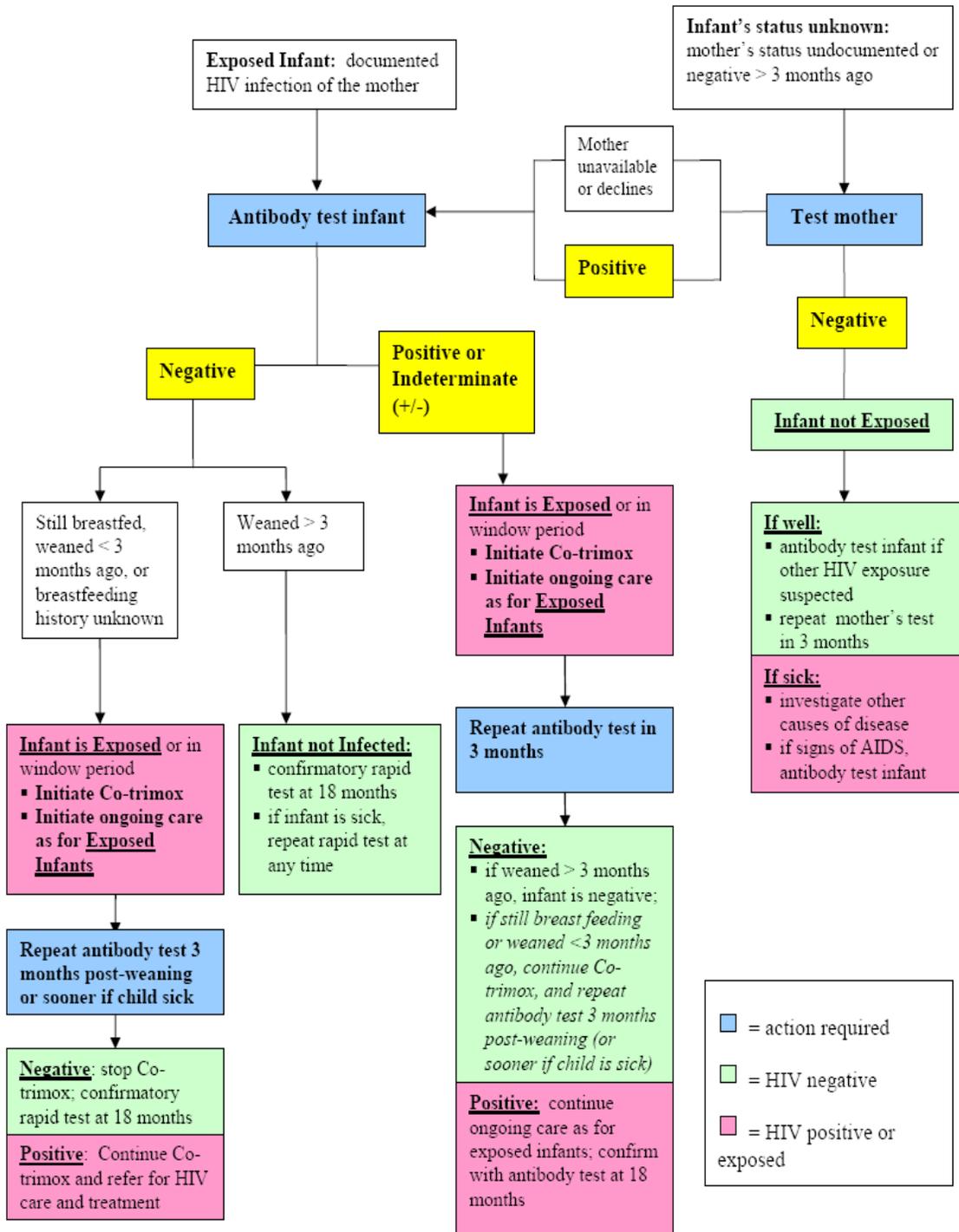


## Infant 18 Months and Older



## Annex 2

### Infant 0-18 Months: DNA PCR Not Available



Infant's status (positive or negative) should **always** be confirmed with a rapid test at age  $\geq 18$  months

### **Annex 3: WHO CLINICAL STAGING of HIV for INFANTS AND CHILDREN (2006)**

*(For use in those under 15 years of age with established HIV infection)*

#### **CLINICAL STAGE 1**

Asymptomatic  
Persistent generalized lymphadenopathy (PGL)

#### **CLINICAL STAGE 2**

Unexplained persistent hepatosplenomegaly  
Papular pruritic eruptions  
Extensive wart virus infection (facial, >5% of body area or disfiguring)  
Extensive molluscum contagiosum (facial, >5% of body area or disfiguring)  
Recurrent oral ulcerations (2 or more episodes in 6 months)  
Unexplained persistent parotid enlargement  
Lineal gingival erythema (LGE)  
Herpes zoster  
Recurrent or chronic upper RTIs (otitis media, otorrhoea, sinusitis, tonsillitis)  
Fungal nail infections

#### **CLINICAL STAGE 3**

Unexplained moderate malnutrition not adequately responding to standard therapy  
Unexplained persistent diarrhoea (14 days or more)  
Unexplained persistent fever (> 37.5°C, intermittent or constant, for longer than 1 month)  
Persistent oral candidiasis (after the first 6 weeks of life)  
Oral hairy leukoplakia  
Acute necrotizing ulcerative gingivitis/periodontitis  
Lymph node TB  
Pulmonary TB  
Severe recurrent bacterial pneumonia  
Symptomatic lymphoid interstitial pneumonitis (LIP)  
Chronic HIV-associated lung disease including bronchiectasis  
Unexplained anaemia (< 8.0 gm/dl), neutropenia (< 0.5 x 10<sup>9</sup>/L<sup>3</sup>) or chronic thrombocytopenia (< 50 x 10<sup>9</sup>/L<sup>3</sup>)

#### **CLINICAL STAGE 4**

Unexplained severe wasting, stunting, or severe malnutrition not responding to standard therapy  
Pneumocystis pneumonia  
Recurrent severe bacterial infections (eg. empyema, pyomyositis, bone or joint infection, meningitis excluding pneumonia)  
Chronic Herpes Simplex infection; (orolabial or cutaneous > 1 month's duration, or visceral at any site)  
Extrapulmonary TB  
Kaposi sarcoma  
Oesophageal candidiasis (or candida of trachea, bronchi, or lungs)  
CNS toxoplasmosis (after the neonatal period)  
HIV encephalopathy  
CMV infection (retinitis or affecting another organ, with onset at age > one month)  
Extrapulmonary Cryptococcosis (including meningitis)  
Disseminated endemic mycosis (extrapulmonary Histoplasmosis, Coccidiomycosis)

Chronic Cryptosporidiosis (with diarrhoea)  
Chronic Isosporiasis  
Disseminated non-tuberculous mycobacteria infection  
Cerebral or B cell non-Hodgkin lymphoma  
Progressive multifocal leukoencephalopathy (PML)  
HIV-associated cardiomyopathy or nephropathy  
HIV-associated rectovaginal fistula

## Annex 4: WHO Clinical Staging of HIV Disease in Adults and Adolescents

Clinical Stage 1
<ul style="list-style-type: none"> <li>- Asymptomatic</li> <li>- Persistent generalized lymphadenopathy</li> </ul>
Clinical Stage 2
<ul style="list-style-type: none"> <li>- Moderate unexplained weight loss (under 10% of presumed or measured body weight)</li> <li>- Recurrent respiratory tract infections (sinusitis, tonsillitis, otitis media, pharyngitis)</li> <li>- Herpes Zoster</li> <li>- Angular cheilitis</li> <li>- Recurrent oral ulceration</li> <li>- Papular pruritic eruptions</li> <li>- Seborrhoeic dermatitis</li> <li>- Fungal nail infections</li> </ul>
Clinical Stage 3
<ul style="list-style-type: none"> <li>- Unexplained severe weight loss (over 10% of presumed or measured body weight)</li> <li>- Unexplained chronic diarrhoea for longer than 1 month</li> <li>- Unexplained persistent fever (intermittent or constant for longer than 1 month)</li> <li>- Persistent oral candidiasis</li> <li>- Oral hairy leukoplakia</li> <li>- Pulmonary tuberculosis (TB)</li> <li>- Severe bacterial infections (e.g. pneumonia, empyema, pyomyositis, bone or joint infection, meningitis, bacteraemia)</li> <li>- Acute necrotizing ulcerative stomatitis, gingivitis or periodontitis</li> <li>- Unexplained anaemia (<math>&lt; 8</math> g/dl), neutropenia (<math>&lt; 0.5 \times 10^9/l</math>) and/or chronic thrombocytopenia (<math>&lt; 50 \times 10^9</math>)</li> </ul>
Clinical Stage 4
<ul style="list-style-type: none"> <li>- HIV wasting syndrome</li> <li>- <i>Pneumocystis</i> pneumonia</li> <li>- Recurrent severe bacterial pneumonia</li> <li>- Chronic herpes simplex infection (orolabial, genital or anorectal of more than one month's duration, or vi at any site)</li> <li>- Oesophageal candidiasis (or candidiasis of trachea, bronchi or lungs)</li> <li>- Extrapulmonary TB</li> <li>- Kaposi sarcoma</li> <li>- Cytomegalovirus infection (retinitis or infection of other organs)</li> <li>- Central nervous system (CNS) toxoplasmosis / HIV encephalopathy</li> <li>- Extrapulmonary cryptococcosis including meningitis</li> <li>- Disseminated non-tuberculous mycobacteria infection</li> <li>- Progressive multifocal leukoencephalopathy (PML)</li> <li>- Chronic cryptosporidiosis</li> <li>- Chronic isosporiasis</li> <li>- Disseminated mycosis (extrapulmonary histoplasmosis, coccidiomycosis)</li> <li>- Recurrent septicaemia (including non-typhoidal <i>Salmonella</i>)</li> <li>- Lymphoma (cerebral or B cell non-Hodgkin)</li> <li>- Invasive cervical carcinoma</li> <li>- Atypical disseminated leishmaniasis</li> <li>- Symptomatic HIV-associated nephropathy or HIV-associated cardiomyopathy</li> </ul>

## Annex 5: Developmental Milestones

Age	Psychosocial	Gross Motor	Fine Motor/Visual	Communication/ Hearing
<b>1 month</b>	- follows faces to the midline	- moves all extremities equally - lifts head when lying on stomach	- opens hands spontaneously	- startled by loud sounds - cries - quiets when fed and comforted
<b>2 months</b>	- follows faces past midline - smiles responsively	- lifts head up 45 degrees when on stomach	- looks at own hand	- makes baby sounds (cooing, squealing, gurgling)
<b>3 months</b>	- recognizes mother - smiles responsively	- supports head for a few seconds when held upright	- opens hands frequently	- responds to voices - laughs
<b>4 months</b>	- follows an object with eyes for 180 degrees - regards own hand - anticipates food on sight	- bears weight on legs - good neck control when pulled to sitting - lifts chest and supports self on elbows when pulled to sit	- brings hands together in midline (clasps hands) - grabs and object (such as a rattle) - reaches for objects	- turns head to sound
<b>6 months</b>	- reaches for familiar people	- rolls from stomach to back or back to stomach - sits with anterior support	- plays with hands by touching them together - sees small objects such as crumbs	- responds to name - babbles
<b>9 months</b>	- indicates wants - waves bye-bye - stranger anxiety	- can sit without support - creeps or crawls on hands and knees	- looks for a toy when it falls from his/her hand - takes a toy in each hand - transfers a toy from one hand to the other	- responds to soft sounds such as whispers
<b>12 months</b>	- has separation anxiety - social interactions intentional and goal-directed	- pulls self up to standing position - walks with support	- points at objects with index finger	- says at least one word - makes “ma-ma” or “da-da” sounds - locates sounds by turning head
<b>15 months</b>	- imitates activities - finds a nearby hidden object	- can take steps by himself - can get to a sitting position from a lying position	- can stack one cube on top of another	- able to say mama and dada to respective parents
<b>18 months</b>	- initiates interactions by calling to adult	- walks without help	- takes off own shoes - feeds self	- says at least 3 words
<b>2 years</b>	- does things to please others - parallel (imitative) play	- runs without falling	- looks at pictures in a book - imitates drawing a vertical line	- combines two different words

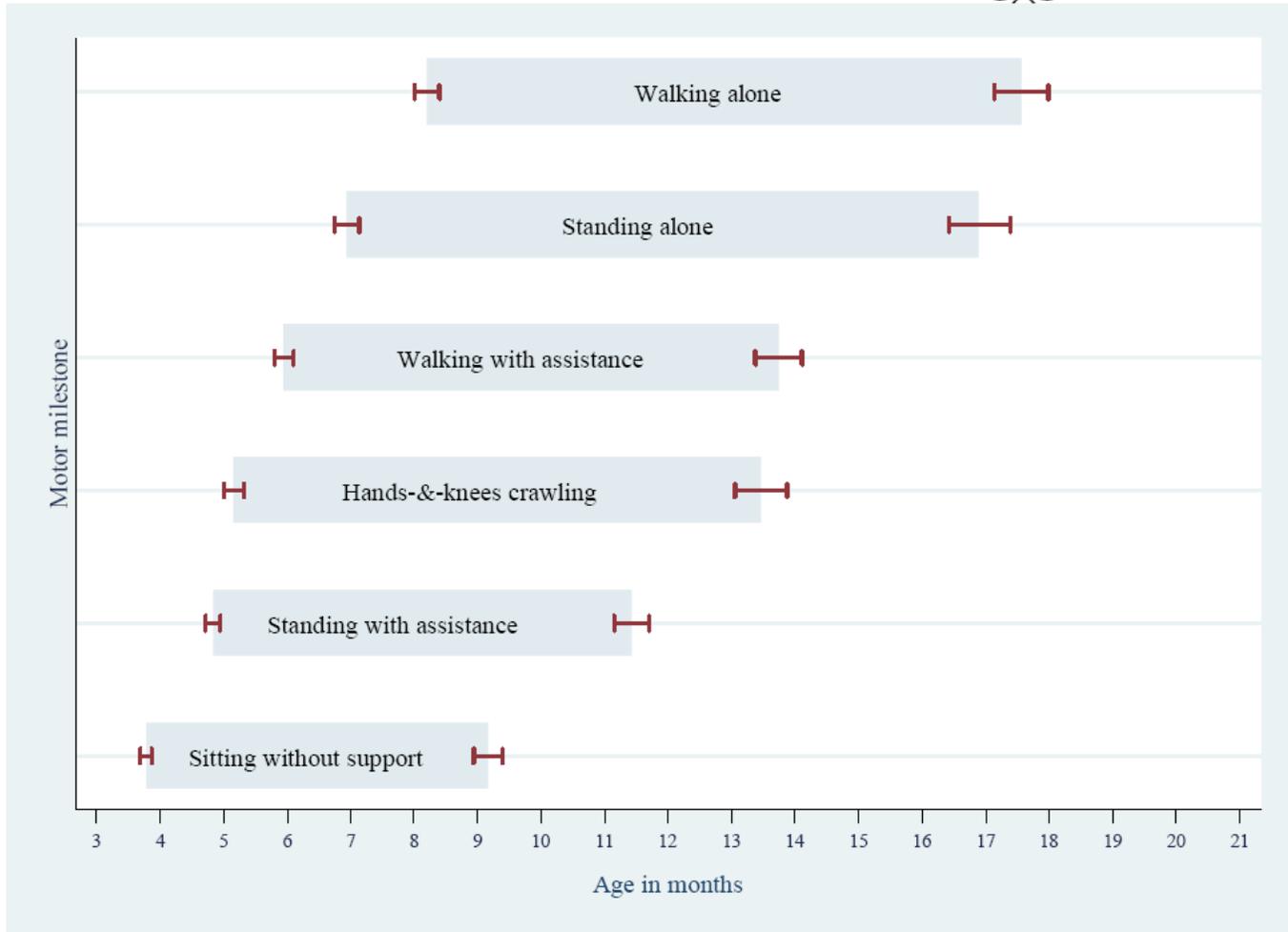
## **Annex 6: Developmental Red Flags**

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<b>Birth to 3 months</b>	<ul style="list-style-type: none"><li>- failure to alert to environmental stimuli</li><li>- rolling over before 2 months (hypertonia)</li><li>- persistent fisting at 3 months</li></ul>
<b>4-6 months</b>	<ul style="list-style-type: none"><li>- poor head control</li><li>- failure to smile</li><li>- failure to reach for objects by 5 months</li></ul>
<b>6-12 months</b>	<ul style="list-style-type: none"><li>- no baby sounds or babbling</li><li>- inability to localize sounds by 10 months</li></ul>
<b>12-24 months</b>	<ul style="list-style-type: none"><li>- lack of consonant production</li><li>- hand dominance prior to 18 months (contralateral weakness)</li><li>- no imitation of speech and activities by 16 months</li></ul>
<b>Any age</b>	<ul style="list-style-type: none"><li>- loss of previously attained milestones</li></ul>

Annex 7:

Windows of achievement for six gross motor milestones



Reference: WHO Multicentre Growth Reference Study Group. WHO Motor Development Study: Windows of achievement for six gross motor development milestones. Acta Paediatrica Supplement 2006;450:86-95.

## Annex 8: TB Screening Tool

Figure 1: Algorithm for the diagnosis of tuberculosis in HIV negative patients

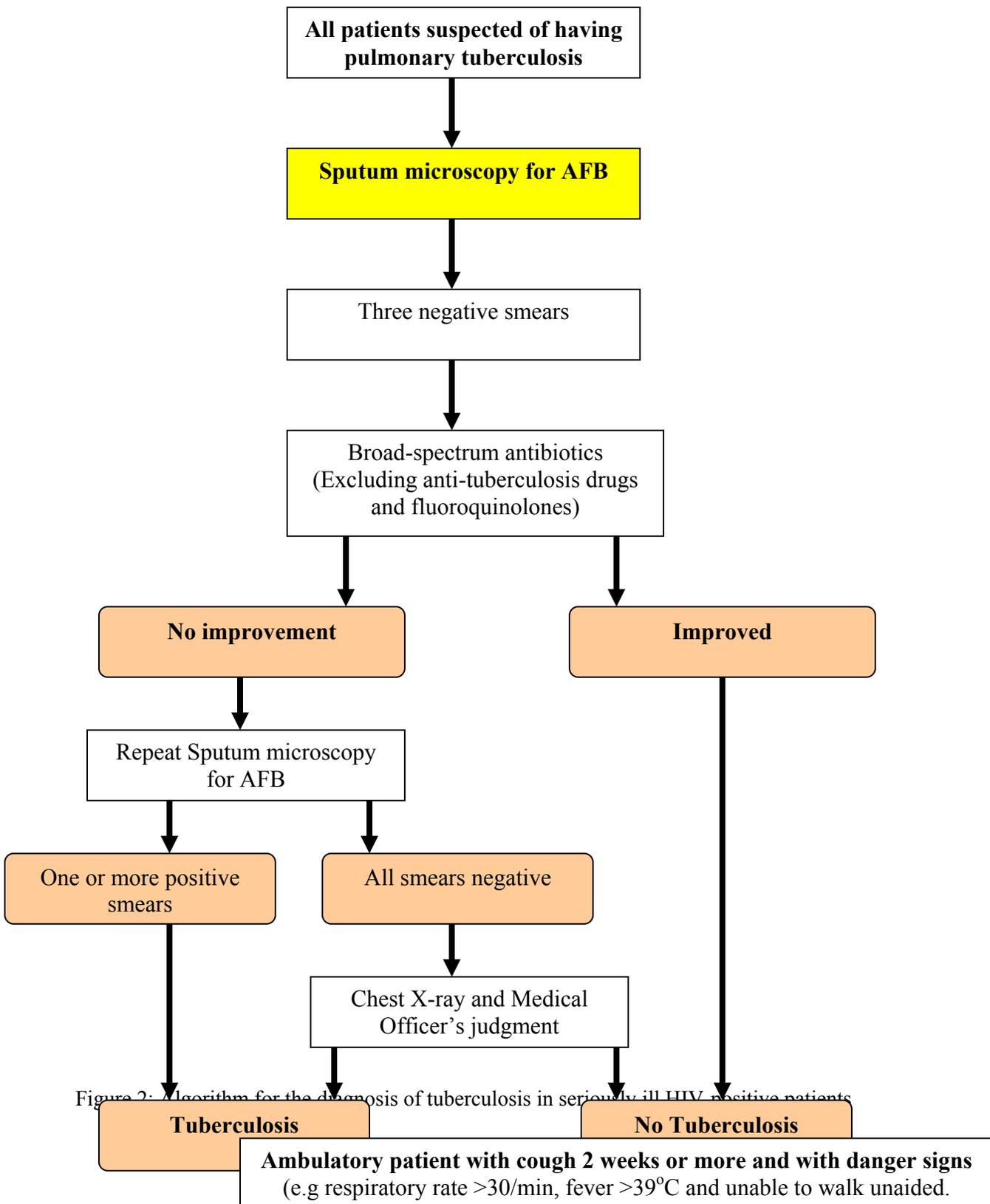
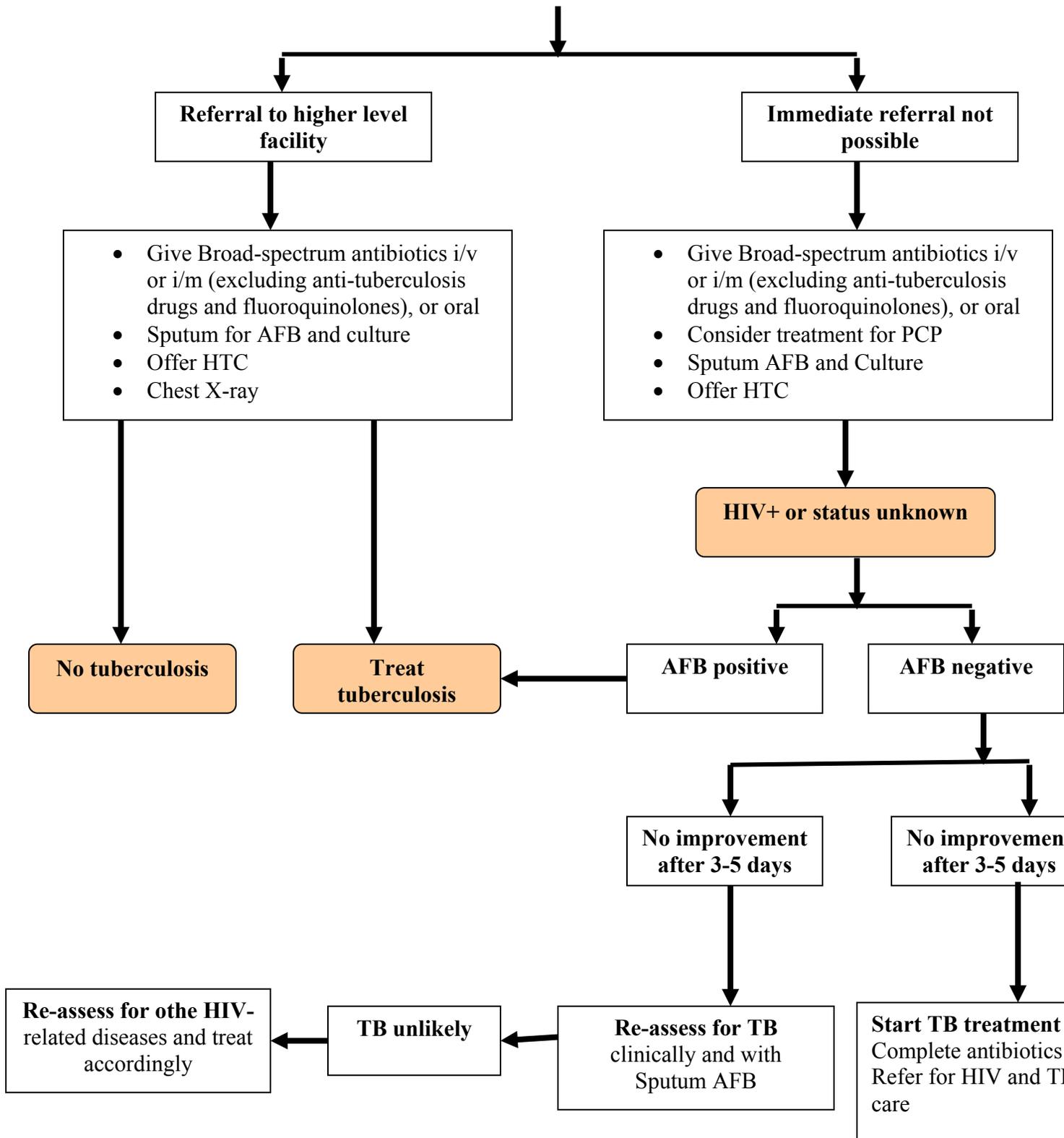


Figure 2: Algorithm for the diagnosis of tuberculosis in seriously ill HIV positive patients

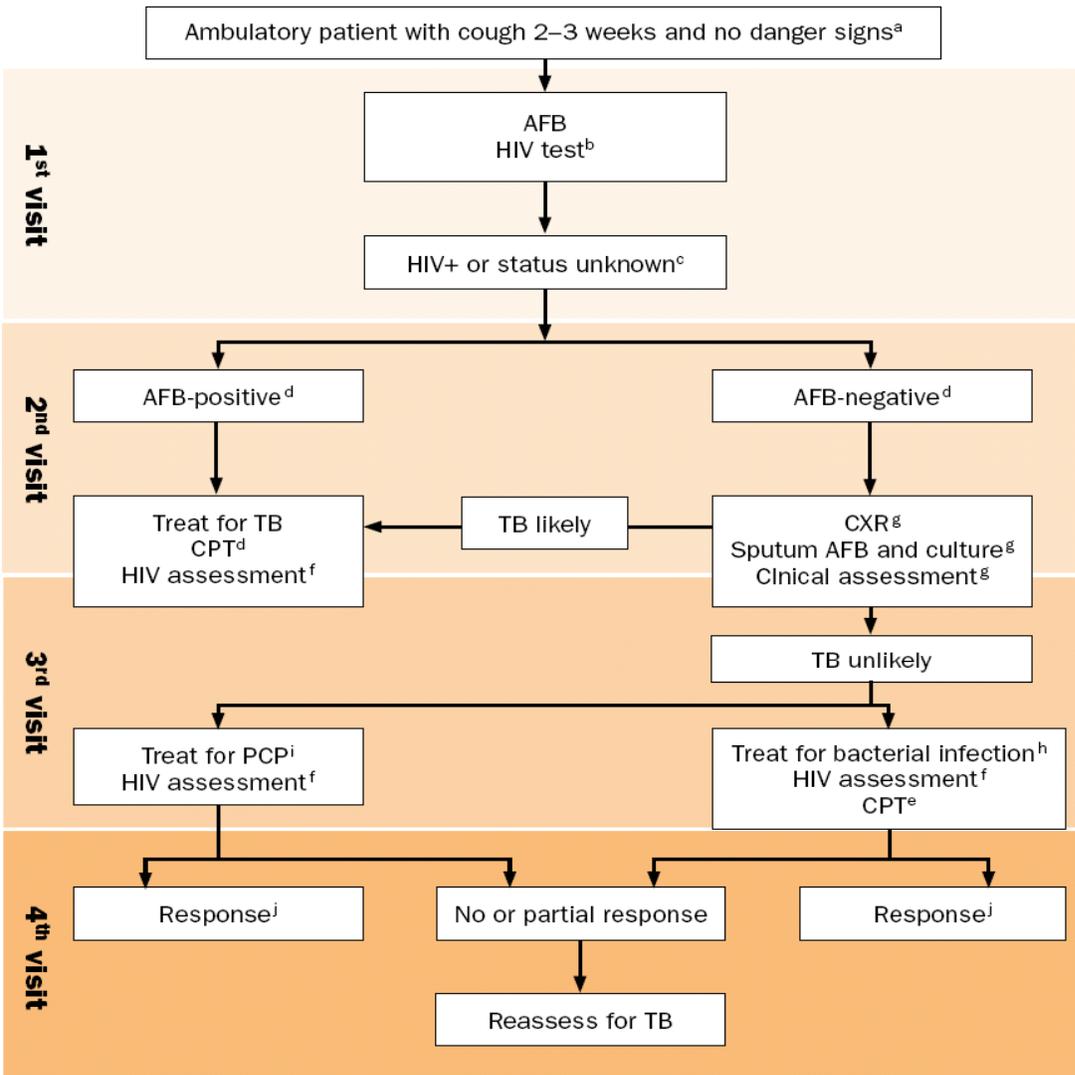


## Annex 9: Smear-negative algorithm to diagnosis TB earlier

(Taken from “Improving the diagnosis and treatment of smear-negative pulmonary and extrapulmonary tuberculosis among adults and adolescents,” WHO 2006, p.9) **See picture below**

FIGURE 1

### Algorithm for the diagnosis of tuberculosis in ambulatory HIV-positive patient



<sup>a</sup> The danger signs include any one of: respiratory rate > 30/minute, fever > 39 °C, pulse rate > 120/min and unable to walk unaided.

<sup>b</sup> For countries with adult HIV prevalence rate  $\geq$  1% or prevalence rate of HIV among tuberculosis patients  $\geq$  5%.

<sup>c</sup> In the absence of HIV testing, classifying HIV status unknown as HIV-positive depends on clinical assessment or national and/or local policy.

<sup>d</sup> AFB-positive is defined as at least one positive and AFB-negative as two or more negative smears.

<sup>e</sup> CPT = Co-trimoxazole preventive therapy.

<sup>f</sup> HIV assessment includes HIV clinical staging, determination of CD<sub>4</sub> count if available and referral for HIV care.

<sup>g</sup> The investigations within the box should be done at the same time wherever possible in order to decrease the number of visits and speed up the diagnosis.

<sup>h</sup> Antibiotics (except fluoroquinolones) to cover both typical and atypical bacteria should be considered.

<sup>i</sup> PCP: *Pneumocystis carinii* pneumonia, also known as *Pneumocystis jirovecii* pneumonia.

<sup>j</sup> Advise to return for reassessment if symptoms recur.

### Annex 10a: Common Opportunistic Infections, Diagnosis, Prophylaxis and Treatment in Adults

OI (and associate WHO stage)	Signs/symptoms	Investigations	Prevention/ Prophylaxis	Management	Follow-up/ Comments
<b>Pulmonary</b>					
<b>PJP (III)</b>	Shortness of breath, dry cough, subacute	<ul style="list-style-type: none"> <li>▪ Clinical</li> <li>▪ CXR</li> </ul>	<ul style="list-style-type: none"> <li>▪ Co-trimoxazole 960mg PO OD</li> </ul>	<ul style="list-style-type: none"> <li>▪ Co-trimoxazole 960mg two tablets PO TID x 21 days</li> <li>▪ Folic acid 5 mg daily while on high-dose Co-trimoxazole</li> </ul>	<ul style="list-style-type: none"> <li>▪ Prednisone if severely distressed</li> <li>▪ E.g. Prednisolone 40mg PO BD x 5 days then Prednisolone 40 mg PO OD x 5 days then 20mg PO OD x 11 days</li> </ul>
<b>Bacterial PNA (II)</b>	Cough, sputum, difficulty breathing, acute (<2 weeks)	<ul style="list-style-type: none"> <li>▪ Clinical</li> <li>▪ CXR</li> </ul>	<ul style="list-style-type: none"> <li>▪ Co-trimoxazole 960mg PO OD</li> </ul>	<ul style="list-style-type: none"> <li>▪ Doxycycline 100mg PO BD x 10-14 days (if not pregnant)</li> <li style="text-align: center;">OR</li> <li>▪ Amoxicillin 500mg PO TDS x 10-14 days</li> <li style="text-align: center;">OR</li> <li>▪ Erythromycin 500mg PO QID x 10-14 days</li> </ul>	<ul style="list-style-type: none"> <li>▪ Use antibacterial agent that is not active against TB (i.e. do NOT use fluoroquinolones such as Ciprofloxacin)</li> </ul>
<b>TB (III if pulm; IV if extrapulmonary)</b>	Cough, sputum, haemoptysis, fever, night sweats, weight loss (all for > 2 weeks)	<ul style="list-style-type: none"> <li>▪ Sputum smear and culture</li> <li>▪ Clinical</li> <li>▪ CXR</li> </ul>	<ul style="list-style-type: none"> <li>▪ Isoniazid 300mg PO OD x 6-9 months ONLY IN QUALIFIED PILOT CENTERS</li> </ul>	<ul style="list-style-type: none"> <li>▪ INH/RIF/EMB/PZA</li> <li>▪ Vitamin B6</li> </ul>	<ul style="list-style-type: none"> <li>▪ See TB section</li> </ul>
<b>MAC/MOTT (IV if disseminated)</b>	Symptoms may vary; cough, malaise, abdominal pain	<ul style="list-style-type: none"> <li>▪ Culture</li> </ul>	<ul style="list-style-type: none"> <li>▪ Azithromycin 1200mg once weekly if avail</li> </ul>	<ul style="list-style-type: none"> <li>▪ Clarithromycin/EMB/Rifabutin</li> </ul>	<ul style="list-style-type: none"> <li>▪ Usually associated with very low CD4</li> </ul>

<b>CNS</b>					
<b>Toxoplasmosis (IV)</b>	Headache, fever, seizure, focal neurological finding (e.g. facial droop, hemiparesis)	<ul style="list-style-type: none"> <li>▪ Clinical</li> <li>▪ Head CT: ring-enhancing lesions with oedema</li> </ul>	<ul style="list-style-type: none"> <li>▪ Co-trimoxazole 960mg once daily</li> </ul>	<ul style="list-style-type: none"> <li>▪ Pyrimethamine 200mg loading dose then 75 mg/day x 3 days PO PLUS</li> <li>▪ Sulfadiazine 1.5-2g PO QID PLUS</li> <li>▪ Folinic acid 10mg PO OD</li> </ul> <p>All of above for 6 wks min OR</p> <ul style="list-style-type: none"> <li>▪ Co-trimoxazole (TMP 10mg/kg/day) PO for at least 6 weeks</li> </ul>	<ul style="list-style-type: none"> <li>▪ Consider steroids to decrease oedema if not improving in first few days</li> <li>▪ Need life-long secondary prophylaxis</li> </ul>
<b>Cryptococcal meningitis (IV)</b>	Headache, fever, change of mental status	<ul style="list-style-type: none"> <li>▪ Clinical</li> <li>▪ LP high opening pressure</li> <li>▪ CSF positive India ink stain</li> </ul>		<ul style="list-style-type: none"> <li>▪ Amphotericin B 0.7mg/kg/day IV PLUS</li> <li>▪ Flucytosine 25mg/kg/day PO x 14 days if available OR</li> <li>▪ Fluconazole 400mg/day PO or IV x 4-6 weeks THEN</li> <li>▪ Fluconazole 400mg/day PO x 8-10 weeks</li> </ul>	<ul style="list-style-type: none"> <li>▪ Needs life-long secondary prophylaxis with Fluconazole 200mg per day</li> </ul>
<b>GI</b>					
<b>Isospora</b>	Diarrhoea	<ul style="list-style-type: none"> <li>▪ Stool iodine stain</li> </ul>	<ul style="list-style-type: none"> <li>▪ Co-trimoxazole 960mg PO OD</li> </ul>	<ul style="list-style-type: none"> <li>▪ ART</li> </ul>	
<b>Giardia</b>	Diarrhoea, bulky,	<ul style="list-style-type: none"> <li>▪ Stool iodine</li> </ul>	<ul style="list-style-type: none"> <li>▪ Co-trimoxazole</li> </ul>	<ul style="list-style-type: none"> <li>▪ Metronidazole 400mg</li> </ul>	

	foul-smelling stool, flatulence	stain	960mg PO OD	PO TDS x 7-10 days	
<b>Cryptosporidium</b>	Diarrhoea	<ul style="list-style-type: none"> <li>Stool iodine stain</li> </ul>	<ul style="list-style-type: none"> <li>Co-trimoxazole 960mg PO OD</li> </ul>	<ul style="list-style-type: none"> <li>ART</li> </ul>	
<b>Microsporidium</b>	Diarrhoea	<ul style="list-style-type: none"> <li>Stool iodine stain</li> </ul>	<ul style="list-style-type: none"> <li>Co-trimoxazole 960mg PO OD</li> </ul>	<ul style="list-style-type: none"> <li>ART</li> </ul>	
<b>Typhoid (Salmonella)</b>	Bloody diarrhoea	<ul style="list-style-type: none"> <li>Serum titres</li> </ul>		<ul style="list-style-type: none"> <li>Ciprofloxacin 500mg PO BD x 10 days</li> </ul>	
<b>Oesophageal candidiasis</b>	Difficulty swallowing, oral thrush	<ul style="list-style-type: none"> <li>Clinical</li> </ul>		<ul style="list-style-type: none"> <li>Fluconazole 200 mg PO OD x 14-21 days</li> </ul>	

#### HEAD/NECK

<b>Oral Thrush</b>	White plaques in mouth	<ul style="list-style-type: none"> <li>Clinical</li> </ul>		<ul style="list-style-type: none"> <li>Miconazole gel PO TDS to mouth</li> <li>OR</li> <li>Nystatin troches PO 4-5 times a day</li> </ul>	<ul style="list-style-type: none"> <li>If Miconazole or Nystatin are not working use Fluconazole 200mg PO x stat</li> </ul>
<b>Orolabial HSV (IV if chronic &gt; 1 mo)</b>	Painful oral or pharyngeal ulcers	<ul style="list-style-type: none"> <li>Clinical</li> </ul>		<ul style="list-style-type: none"> <li>Acyclovir 400mg PO TDS x 7-10 days</li> </ul>	
<b>Parotitis</b>	Swelling of parotid gland; pain with mouth movement	<ul style="list-style-type: none"> <li>Clinical</li> </ul>		<ul style="list-style-type: none"> <li>Amoxicillin 500mg PO TDS x 14 days</li> <li>Pain medication as needed</li> </ul>	

#### SKIN

<b>Scabies</b>	Itchy rash	<ul style="list-style-type: none"> <li>Papular rash</li> <li>Burrows and papules may be in webs of fingers, ankles, wrists</li> </ul>		<ul style="list-style-type: none"> <li>Benzyl benzoate applied from the neck down overnight then repeated in 1 week OR</li> <li>Ivermectin 6gm PO x 1 if available</li> </ul>	<ul style="list-style-type: none"> <li>All clothing and bedclothes must be boiled; family may need treatment</li> </ul>
<b>Kaposi Sarcoma (IV)</b>	Reddish-purple or hyperpigmented	<ul style="list-style-type: none"> <li>Clinical</li> </ul>		<ul style="list-style-type: none"> <li>ART</li> <li>Chemotherapy (e.g.</li> </ul>	<ul style="list-style-type: none"> <li>If mucous membrane or visceral</li> </ul>

	dark flat or raised lesions on the skin or mucous membranes			Bleomycin, Thalidomide, Vincristine, etc)	involvement, consider referral to oncology specialists
<b>Herpes Zoster (II)</b>	Vesicles; can be in band-like distribution over dermatome	<ul style="list-style-type: none"> <li>▪ Clinical</li> <li>▪ Tzank prep</li> </ul>		<ul style="list-style-type: none"> <li>▪ Acyclovir 800mg PO five times per day x 7-10 days</li> </ul>	<ul style="list-style-type: none"> <li>▪ Should follow-up for development of post-herpetic neuralgia</li> </ul>
<b>Molluscum</b>	Umbilicated lesions	<ul style="list-style-type: none"> <li>▪ Clinical</li> </ul>		<ul style="list-style-type: none"> <li>▪ ART</li> </ul>	
<b>STIs</b>					
<b>Syphilis</b>	Painless genital lesions, rash	<ul style="list-style-type: none"> <li>▪ VDRL</li> <li>▪ Clinical</li> </ul>		<ul style="list-style-type: none"> <li>▪ Benzathine PCN 2.4 million units IM weekly x 3 weeks</li> </ul>	<ul style="list-style-type: none"> <li>▪ If not responding, give injections weekly x 3 weeks</li> <li>▪ If neurosyphilis suspected will need aqueous PCN G 13-4 million units Q4 hours IV for 2 weeks</li> </ul>
<b>Purulent urethral discharge (Gonorrhoea/ Chlamydia)</b>	Burning urethral discharge	<ul style="list-style-type: none"> <li>▪ Clinical</li> </ul>		<ul style="list-style-type: none"> <li>▪ Ceftriaxone 250mg IM x stat dose</li> <li style="text-align: center;">OR</li> <li>▪ Ciprofloxacin 500mg PO x stat</li> <li style="text-align: center;">PLUS</li> <li>▪ Doxycycline 100mg PO BD x 7 days (not if pregnant)</li> <li style="text-align: center;">OR</li> <li>▪ Erythromycin 500mg PO QID x 7 days</li> </ul>	<ul style="list-style-type: none"> <li>▪ Should treat all sexual partners as well</li> </ul>
<b>Cervical cancer (IV)</b>	Vaginal bleeding	<ul style="list-style-type: none"> <li>▪ PAP smear</li> </ul>	<ul style="list-style-type: none"> <li>▪ HPV vaccine</li> </ul>	<ul style="list-style-type: none"> <li>▪ Colposcopy</li> </ul>	

		<ul style="list-style-type: none"> <li>▪ Biopsy</li> </ul>		<ul style="list-style-type: none"> <li>▪ Hysterectomy</li> </ul>	
<b>Genital HSV (IV if chronic &gt; 1 month)</b>	Painful anal or genital ulcers, may be extensive	<ul style="list-style-type: none"> <li>▪ Clinical</li> </ul>		<ul style="list-style-type: none"> <li>▪ Acyclovir 400mg PO 5 times per day x 10 days</li> <li>▪ May add topical Acyclovir cream to lesions as well</li> </ul>	
<b>HPV/genital warts</b>	Painless, raised fleshy lesions	<ul style="list-style-type: none"> <li>▪ Clinical</li> <li>▪ PAP smear</li> </ul>	<ul style="list-style-type: none"> <li>▪ HPV vaccine</li> </ul>	<ul style="list-style-type: none"> <li>▪ Podophyllin 0.5% twice a day to lesions on 3 consecutive days weekly x 4 weeks</li> </ul>	<ul style="list-style-type: none"> <li>▪ Surgical excision or curettage may be needed for extensive disease</li> </ul>
<b>Disseminated/ Systemic</b>					
<b>CMV (IV)</b>	General malaise, bloody diarrhoea	<ul style="list-style-type: none"> <li>▪ Clinical</li> </ul>		<ul style="list-style-type: none"> <li>▪ ART</li> <li>▪ Ganciclovir or Valganciclovir</li> </ul>	
<b>Lymphoma (IV)</b>	General malaise, swollen lymph nodes, itching	<ul style="list-style-type: none"> <li>▪ Clinical</li> <li>▪ Biopsy</li> </ul>		<ul style="list-style-type: none"> <li>▪ Combination chemotherapy</li> </ul>	

## Annex 10b: Common Opportunistic Infections, Diagnosis, Prophylaxis and Treatment in Children

OI and associated WHO Stage	Symptoms	Investigations	Management	Follow-up
<b>PULMONARY</b>				
<b>PJP (WHO Stage IV)</b>	Cough, fever, tachypnoea, cyanosis	<ul style="list-style-type: none"> <li>▪ Clinical – esp. suspect in infants and pts with low CD4</li> <li>▪ CXR if avail, variable, classically bilateral alveolar perihilar infiltrates</li> </ul>	<ul style="list-style-type: none"> <li>▪ Co-trimoxazole 5mg/kg PO QID x 21 days</li> <li>▪ If severe respiratory distress, Prednisone 2mg/kg/day x 7 days and admit for Ampicillin / Gentamycin and oxygen therapy in addition to Co-trimoxazole/Prednisone</li> </ul>	<ul style="list-style-type: none"> <li>▪ Re-assess in 1-3 days depending on severity of respiratory distress</li> <li>▪ Needs lifetime secondary co-trimoxazole prophylaxis</li> <li>▪ Document suspected diagnosis on last page of Bukana</li> <li>▪ If severe respiratory distress, admit (see management)</li> </ul>
<b>Bacterial pneumonia (III if recurrent)</b>	Cough, fever, tachypnoea, chest in-drawing, cyanosis	<ul style="list-style-type: none"> <li>▪ CXR if available, usually focal consolidation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Amoxicillin 25 mg/kg PO TDS x 10 days OR</li> <li>▪ If suspect atypical pneumonia, use Erythromycin or Doxycycline OR</li> <li>▪ If severe respiratory distress, admit for Ampicillin / Gentamycin and oxygen therapy</li> </ul>	<ul style="list-style-type: none"> <li>▪ Re-assess in 1-3 days depending on severity of respiratory distress</li> <li>▪ If severe respiratory distress, consider adding prednisone and admitting for IV antibiotics (see management)</li> </ul>
<b>Pulmonary TB (III)</b>	Chronic cough and fever (> 2 weeks), lymphadenopathy, night sweats,	<ul style="list-style-type: none"> <li>▪ CXR if available, variable but classically, hilar</li> </ul>	<ul style="list-style-type: none"> <li>▪ 2HRZE / 4HR (see table for dosing)</li> <li>▪ INH 5-10mg/kg for prophylaxis due to</li> </ul>	<ul style="list-style-type: none"> <li>▪ DOT for Initiation phase</li> </ul>

	weight loss	adenopathy, cavitary lesions, effusion ▪ See TB section ▪ Sputum if able to produce	asymptomatic TB exposure only in centres that can exclude active TB	
<b>Miliary TB (IV)</b>	Chronic cough and fever (> 2 weeks), lymphadenopathy, night sweats, weight loss	▪ CXR pattern: miliary pattern (diffuse millet seed pattern)	▪ 2HRZE / 4HR (see table for dosing)	▪ DOT for Initiation phase
<b>LIP, Chronic lung disease</b>	Chronic cough (> 3 weeks), lymphadenopathy, finger clubbing (LIP), parotid enlargement	CXR pattern: ▪ LIP—variable classically, reticulonodular pattern ▪ CLD—variable classically, bronchiectasis, cystic changes, persistent densities	▪ If febrile or acutely symptomatic (worse cough, wheeze, difficulty breathing), give Amoxicillin x 14 days OR ▪ Erythromycin x 14 days PLUS ▪ Salbutamol for acute exacerbations: 3-4 puffs every 3-4 hours for respiratory difficulty ▪ Consider inhaled steroids (Beclomethasone)	▪ If remains symptomatic after multiple courses of antibiotics, rule out TB, then, consider prolonged course of oral steroids (1-2 mg/kg/day) x 2-6 weeks with taper
<b>HEAD / NECK</b>				
<b>Acute pharyngo- tonsillitis</b>	Fever, refuses to eat, drooling, red and swollen tonsils and pharynx, may have stridor	▪ Clinical	▪ Amoxicillin 25 mg/kg PO TDS x 10-14 days	▪ If suspect epiglottitis should admit for IV antibiotics
<b>Acute otitis media</b>	Fever, painful ear,	▪ Clinical	▪ Amoxicillin 25 mg/kg PO	

	purulent ear drainage, red or perforated tympanic membrane		TDS x 10-14 days	
<b>Chronic suppurative otitis media</b>	Ear drainage > 14 days	<ul style="list-style-type: none"> <li>▪ Clinical</li> </ul>	<ul style="list-style-type: none"> <li>▪ Wicking</li> <li>▪ Chloramphenicol drops to ear x 7 days</li> <li>▪ Refer to ENT specialist</li> </ul>	<ul style="list-style-type: none"> <li>▪ Evaluate for hearing loss</li> </ul>
<b>Parotitis</b>	Swelling of parotid gland; pain with mouth movement	<ul style="list-style-type: none"> <li>▪ Clinical</li> </ul>	<ul style="list-style-type: none"> <li>▪ Amoxicillin 25 mg/kg PO TDS x 14 days</li> </ul>	
<b>ORAL</b>				
<b>Oral Candidiasis</b>	White plaques in mouth that do not scrape off Can have erythematous firm with raised red changes on palate and tongue Can have angular cheilitis	<ul style="list-style-type: none"> <li>▪ Clinical</li> </ul>	<ul style="list-style-type: none"> <li>▪ Miconazole gel PO TDS x 4 weeks</li> </ul>	<ul style="list-style-type: none"> <li>▪ If breastfeeding, put Clotrimazole on Mother's breast</li> </ul>
<b>Orolabial Herpes Simplex</b>	Painful shallow oral or pharyngeal ulcers, may be extensive	<ul style="list-style-type: none"> <li>▪ Clinical</li> </ul>	<ul style="list-style-type: none"> <li>▪ Acyclovir 25 mg/kg PO TDS x 5-10 days</li> </ul>	<ul style="list-style-type: none"> <li>▪ Recurrent episodes (&gt;6x/year) may be prevented with Acyclovir 10 mg/kg twice a day</li> </ul>
<b>Gingivitis</b>	Red swollen gums, may be associated with dental caries and purulent drainage from tooth	<ul style="list-style-type: none"> <li>▪ Clinical</li> </ul>	<ul style="list-style-type: none"> <li>▪ Amoxicillin 15 mg/kg PO TDS x 7 days</li> </ul>	<ul style="list-style-type: none"> <li>▪ Refer to Dental clinic</li> </ul>
<b>Acute Necrotizing</b>	Ulcerative gingivitis	<ul style="list-style-type: none"> <li>▪ Clinical</li> </ul>	<ul style="list-style-type: none"> <li>▪ Admit to hospital and give</li> </ul>	<ul style="list-style-type: none"> <li>▪ Dental should be involved for</li> </ul>

<b>Ulcerative Gingivitis</b>	with soft tissue loss of cheek and gums and loss of teeth		<p>Ampicillin 25 mg/kg IV QID PLUS</p> <ul style="list-style-type: none"> <li>▪ Gentamicin 7.5 mg/kg IV once a day PLUS</li> <li>▪ Flagyl 10 mg/kg IV/PO three times a day PLUS</li> <li>▪ Mouth wash</li> </ul>	debridement and reconstruction
<b>SKIN</b>				
<b>Herpes Zoster (II)</b>	Painful vesicles; can be in band-like distribution over dermatome	<ul style="list-style-type: none"> <li>▪ Clinical</li> <li>▪ Tzank prep</li> </ul>	<ul style="list-style-type: none"> <li>▪ Acyclovir 20 mg/kg PO QID x 7-10 days OR</li> <li>▪ If severe, give Acyclovir 10 mg/kg IV TDS until all lesions crusted then switch to PO</li> </ul>	<ul style="list-style-type: none"> <li>▪ Should follow-up for development of post-herpetic neuralgia</li> </ul>
<b>Varicella (Chickenpox)</b>	Itchy umbilicated papular rash in crops starting on trunk and spreading to arms/legs, fever	<ul style="list-style-type: none"> <li>▪ Clinical</li> </ul>	<ul style="list-style-type: none"> <li>▪ Acyclovir 20mg/kg PO QID OR</li> <li>▪ If severe, Acyclovir 10mg/kg IV Q8 x 7days</li> <li>▪ Paracetamol</li> <li>▪ If suspect bacterial superinfection (e.g. skin folliculitis or pneumonia) give antibiotics accordingly</li> </ul>	<ul style="list-style-type: none"> <li>▪ Make sure to isolate patient away from other immunosuppressed children</li> </ul>
<b>Impetigo</b>	Skin pustules with golden crust		<ul style="list-style-type: none"> <li>▪ Cloxacillin 10 mg/kg PO QID x 7-10 days</li> </ul>	<ul style="list-style-type: none"> <li>▪ Keep lesions clean with soap and water</li> </ul>
<b>Tinea corporis (ringworm body)</b>	Round scaly itchy lesions with raised edges on body, may be hypo- or	<ul style="list-style-type: none"> <li>▪ Clinical</li> <li>▪ KOH skin scraping</li> </ul>	<ul style="list-style-type: none"> <li>▪ Clotrimazole cream twice a day for 4-6 weeks</li> </ul>	<ul style="list-style-type: none"> <li>▪ If unresponsive to topical treatment and severe, may need oral Ketoconazole or Fluconazole</li> </ul>

	hyperpigmented			
<b>Tinea capitis (ringworm scalp)</b>	Round scaly lesions on scalp associated with hair loss	<ul style="list-style-type: none"> <li>▪ Clinical</li> <li>▪ KOH skin scraping showing hyphae</li> </ul>	<ul style="list-style-type: none"> <li>▪ Griseofulvin 20 mg/kg PO OD x 6 weeks if available OR</li> <li>▪ Whitfield's Ointment BD x 4 weeks</li> </ul>	<ul style="list-style-type: none"> <li>▪ Longer treatment may be necessary</li> <li>▪ Monitor LFTs if on concomitant ART and ATT</li> <li>▪ May need to give Cloxacillin (as per Impetigo) if lesions superinfected</li> </ul>
<b>Seborrhoea</b>	Greasy scaly rash over scalp, cheeks, arm folds	<ul style="list-style-type: none"> <li>▪ Clinical</li> </ul>	<ul style="list-style-type: none"> <li>▪ Selenium Sulfide shampoo OR</li> <li>▪ Hydrocortisone 1% cream twice a day</li> </ul>	
<b>Scabies</b>	Intensely itchy popular lesions over wrists, ankles, groin, webs of fingers	<ul style="list-style-type: none"> <li>▪ Clinical</li> <li>▪ KOH prep skin scraping may show burrow, egg, or mite</li> </ul>	<ul style="list-style-type: none"> <li>▪ Benzyl benzoate applied from the neck down overnight then repeated in 1 week OR</li> <li>▪ Ivermectin 6gm PO x stat if available</li> </ul>	<ul style="list-style-type: none"> <li>▪ All clothing and bedclothes must be boiled; family may need treatment</li> </ul>
<b>Molluscum</b>	Umbilicated lesions	<ul style="list-style-type: none"> <li>▪ Clinical</li> </ul>	<ul style="list-style-type: none"> <li>▪ Supportive care</li> <li>▪ ART if qualifies</li> </ul>	
<b>GU</b>				
<b>HPV/genital warts</b>	Painless, raised fleshy lesions	<ul style="list-style-type: none"> <li>▪ Clinical</li> <li>▪ PAP smear</li> </ul>	<ul style="list-style-type: none"> <li>▪ Podophyllin 0.5% BD to lesions on 3 consecutive days weekly x 4 weeks</li> </ul>	<ul style="list-style-type: none"> <li>▪ Surgical excision or curettage may be needed for extensive disease</li> </ul>
<b>Genital HSV</b>	Painful anal or genital ulcers, may be extensive	<ul style="list-style-type: none"> <li>▪ Clinical</li> </ul>	<ul style="list-style-type: none"> <li>▪ Acyclovir 25 mg/kg PO TDS x 7 days</li> </ul>	
<b>Vaginal discharge (suspected Gonorrhoea/ Chlamydia)</b>	Purulent urethral discharge	<ul style="list-style-type: none"> <li>▪ Wet mount showing pus cells and bacteria</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ceftriaxone 125mg IM x stat OR</li> <li>▪ Ciprofloxacin 500mg PO x stat PLUS</li> </ul>	<ul style="list-style-type: none"> <li>▪ Should suspect abuse if not sexually active</li> </ul>

			<ul style="list-style-type: none"> <li>▪ Doxycycline 100mg PO BD x 14 days</li> </ul>	
<b>Candidal dermatitis</b>	Red rash in groin areas with satellite lesions	<ul style="list-style-type: none"> <li>▪ Clinical</li> <li>▪ KOH scraping showing hyphae</li> </ul>	<ul style="list-style-type: none"> <li>▪ Clotrimazole cream BD OR</li> <li>▪ Nystatin cream QID a day to rash x 2-4 weeks</li> </ul>	<ul style="list-style-type: none"> <li>▪ Remind caregiver to change nappy frequently and keep skin dry, look for associated oral thrush and treat accordingly</li> </ul>
<b>GI</b>				
<b>Oesophageal Candidiasis</b>	Oral thrush and painful or difficult swallowing	<ul style="list-style-type: none"> <li>▪ Clinical</li> </ul>	<ul style="list-style-type: none"> <li>▪ Fluconazole 6 mg/kg PO on first day, then 3-6 mg/kg OD x 14-21 days</li> </ul>	<ul style="list-style-type: none"> <li>▪ Monitor LFTs if on other hepatotoxic drugs</li> </ul>
<b>Acute watery diarrhoea</b>	Watery frequent stools without blood	<ul style="list-style-type: none"> <li>▪ Clinical</li> </ul>	<ul style="list-style-type: none"> <li>▪ ORS hydration</li> </ul>	<ul style="list-style-type: none"> <li>▪ If persistent consider antibiotic or antihelminth treatment</li> </ul>
<b>Dysentery</b>	Bloody frequent stools, abdominal pain, fever, vomiting	<ul style="list-style-type: none"> <li>▪ Clinical</li> <li>▪ Stool culture if available</li> </ul>	<ul style="list-style-type: none"> <li>▪ Co-trimoxazole 5 mg/kg BD</li> <li>PLUS</li> <li>▪ Flagyl 10 mg/kg TDS x 7 days</li> <li>PLUS</li> <li>▪ Zinc administration: &gt;6mo of age: 20mg/day x14 days &lt; 6mo of age: 10mg/day x 14 days</li> <li>CONSIDER</li> <li>▪ Mebendazole 100 mg BD x 3 days for worms</li> </ul>	<ul style="list-style-type: none"> <li>▪ Monitor closely for hydration and if severe dehydration admit</li> <li>▪ If not improving consider Ciprofloxacin instead of Co-trimoxazole</li> </ul>
<b>Persistent diarrhoea</b>	Chronic diarrhoea (>3 loose stools/day for 2 weeks)	<ul style="list-style-type: none"> <li>▪ Stool culture if available</li> <li>▪ If acute diarrhoea, assess hydration status</li> </ul>	<ul style="list-style-type: none"> <li>▪ Management as per "Dysentery" box</li> <li>▪ If not improving then consider HIV enteropathy (start ART) or malabsorption</li> </ul>	<ul style="list-style-type: none"> <li>▪ Admit if becoming dehydrated</li> </ul>

		per IMCI guidelines		
<b>CNS</b>				
<b>Cryptococcal meningitis</b>	Headache, fever, malaise, vomiting CN palsy	<ul style="list-style-type: none"> <li>Clinical</li> <li>LP: India Ink, Cryptococcal antigen</li> </ul>	<ul style="list-style-type: none"> <li>Fluconazole 12 mg/kg IV/PO on the first day then 6-12 mg/kg/d divided twice a day PO x 8-10 weeks</li> </ul>	<ul style="list-style-type: none"> <li>Needs lifelong prophylaxis with Fluconazole 3-6 mg/kg/day after completing treatment</li> <li>Consider repeat LP before switching to prophylaxis to document clearing of CSF</li> </ul>
<b>Bacterial meningitis</b>	Fever, vomiting, headache, stiff neck, bulging fontanelle	<ul style="list-style-type: none"> <li>LP: gram stain and culture</li> <li>Consider head CT if has any focal neurologic findings (CN palsy, seizure)</li> </ul>	<ul style="list-style-type: none"> <li>Cefotaxime 100 mg/kg IV BD</li> <li>OR</li> <li>Ceftriaxone 100 mg/kg IV OD</li> <li>OR</li> <li>Chloramphenicol 25 mg/kg IV/PO QID</li> <li>In newborns, Ampicillin 25 mg/kg IV/IM QID</li> <li>PLUS</li> <li>Gentamicin 7.5mg/kg IV OD</li> <li>Consider steroids, Prednisone 1-2 mg/kg OD</li> </ul>	<ul style="list-style-type: none"> <li>Consider repeat LP after 1 week treatment to document clearing of CSF</li> <li>Consider head CT if no improvement or continued fevers</li> </ul>
<b>CNS Toxoplasmosis</b>	Headache, seizure, focal neurological finding (e.g. facial droop, hemiparesis)	<ul style="list-style-type: none"> <li>Clinical</li> <li>Head CT may show ring-enhancing lesions with oedema</li> </ul>	<ul style="list-style-type: none"> <li>Pyrimethamine 1 mg/kg BD (max 50mg) x 3 days then 1 mg/kg/day (max 25mg)</li> <li>PLUS</li> <li>Sulfadiazine 50mg/kg BD</li> </ul>	<ul style="list-style-type: none"> <li>Need life-long secondary prophylaxis</li> <li>Folinic acid necessary to prevent hepatotoxicity</li> </ul>

			<p style="text-align: center;">PLUS</p> <ul style="list-style-type: none"><li>▪ Folinic acid 10mg three times per week</li><li>▪ All of above for at least six weeks</li></ul> <p style="text-align: center;">OR</p> <ul style="list-style-type: none"><li>▪ Co-trimoxazole (dosing based on TMP component) 10mg/kg/day for at least 6 weeks</li></ul>	
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**Annex 11a: Paediatric Fixed Dose Combination Dosing (d4t-3tc-nvp)**

<b>Weight range (in kg)</b>	<b>FDC-6 (Triomune Baby)</b>	<b>FDC-12 (Triomune Junior)</b>	<b>Stavudine + Lamivudine + Nevirapine (Triomune 30)</b>
	Dose shown TWICE daily	Dose shown TWICE daily	Dose shown TWICE daily
	6 mg d4T/ 30 mg 3TC/ 50 mg NVP	12 mg d4T/ 60 mg 3TC/ 100 mg NVP	30 mg d4T/ 150 mg 3TC/ 200 mg NVP
<b>3-3.9</b>	1 tab	0.5 tab	
<b>4-4.9</b>	1 tab	0.5 tab	
<b>5-5.9</b>	1 tab	0.5 tab	
<b>6-6.9</b>	1.5 tab	1 tab in AM, ½ tab in PM	
<b>7-7.9</b>	1.5 tab	1 tab in AM, ½ tab in PM	
<b>8-8.9</b>	1.5 tab	1 tab in AM, ½ tab in PM	
<b>9-9.9</b>	1.5 tab	1 tab in AM, ½ tab in PM	
<b>10-10.9</b>	2 tabs	1 tab	0.5 tab
<b>11-11.9</b>	2 tabs	1 tab	0.5 tab
<b>12-13.9</b>	2 tabs	1 tab	0.5 tab
<b>14-16.9</b>	2.5 tabs	1.5 tab in AM, 1 tab in PM	1 tab in AM, ½ tab in PM
<b>17-19.9</b>	2.5 tabs	1.5 tab in AM, 1 tab in PM	1 tab in AM, ½ tab in PM
<b>20-24.9</b>	3 tabs	1.5 tabs	1 tab in AM, ½ tab in PM
<b>25-29.9</b>	4 tabs	2 tabs	1 tab

\*FDC's should NOT be used in patents on concomitant TB treatment

+Separate ARV formulations should be used in the first 2 weeks of treatment, so that a NVP once daily lead in dose can be given and then patients can be switched to the FDC at the 2 week visit if appropriate

**Annex 11: Weight-based Paediatric ARV Dosing Chart**

Weight	Nevirapine (NVP)		Efavirenz*	Paediatric Zidovudine /Lamivudine (AZT/3TC) - 60/30mg tabs		Paediatric Zidovudine /Lamivudine /Nevirapine (AZT/3TC/NVP) - 60/30/50mg tabs		Paediatric Stavudine/Lamivudine (d4T/3TC) - 6/30mg tabs (Lamivir-S Baby)		Paediatric Stavudine /Lamivudine /Nevirapine (d4T/3TC/NVP) - 6/30/50mg tabs (Triomune Baby or FDC-6)		Adult Zidovudine /Lamivudine (AZT/3TC) - 300/150mg tabs (Combivir)		Adult Zidovudine /Lamivudine /Nevirapine (AZT/3TC/NVP) - 300/150mg tabs (Triomune Baby or FDC-6)
	10mg/ml syrup	200mg tabs		AM Dose	PM Dose	AM Dose	PM Dose	AM Dose	PM Dose	AM Dose	PM Dose	AM Dose	PM Dose	AM Dose
			50, 200mg capsules, 600mg tablets <b>Once Daily</b>											
3-3.9	5ml			1	1	1	1	1	1	1	1			
4-4.9	5ml			1	1	1	1	1	1	1	1			
5 - 5.9	5ml			1	1	1	1	1	1	1	1			
6 - 6.9	8ml			1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5			
7 - 7.9	8ml			1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5			
8 - 8.9	8ml			1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5			
9 - 9.9	8ml	0.5		1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5			
10 -	10ml	0.5	200mg	2	2	2	2	2	2	2	2			

10.9														
11 - 11.9	10ml	0.5	200mg	2	2	2	2	2	2	2	2			
12 - 13.9	10ml	0.5	200mg	2	2	2	2	2	2	2	2			
14 - 16.9		1 AM, 0.5 PM	200 + 50mg	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	0.5	0.5	
17 - 19.9		1 AM, 0.5 PM	200 + 50mg	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	0.5	0.5	
20 - 24.9		1 AM, 0.5 PM	300mg	3	3	3	3	3	3	3	3	1	0.5	
25 - 29.9		1	300 + 50mg	use adult tabs	1	1	1							
>30		1	400mg	use adult tabs	1	1	1							

**\* ONLY IF > 3YRS  
AND > 10 KG**

**Annex 12: Monitoring Schedule for Children and Adults on Antiretroviral Therapy (ART)**

ARV Regimen	Before ARVs are started (Baseline)	Day of Initiation	Wk 2	Mo 1	Mo 2	Mo 3	Month 6	Mo 9	Month 12	Every 6 months thereafter
All Regimens	Rule out active TB (AFB and CXR if coughing)									
	Treatment Assistant	X					X	If adherence problems		
	Ask about symptoms of possible side effects			X	X	X	X	X	X	X
	Clinical exam (including weight)	X X	X	X	X	X	X	X	X	Every 3 months in children
Tenofovir/3TC/EFV	CD4, ALT, FBC, Creatinine, pregnancy test***						CD4, Creatinine		Creatinine	CD4, Creatinine
Tenofovir/3TC/NVP	CD4, ALT, FBC, Creatinine		ALT <sup>+</sup>	ALT	ALT	ALT <sup>+</sup>	CD4, ALT, Creatinine	CD4	ALT, Creatinine	CD4, ALT, Creatinine
AZT/3TC/EFV	CD4, ALT, FBC, pregnancy test***			Hb	Hb	Hb, CD4 %*	Hb, CD4	Hb, CD4 %*	Hb, CD4	Hb, CD4
AZT/3TC/NVP	CD4, ALT, FBC		ALT <sup>+</sup>	Hb, ALT	Hb, ALT	Hb, ALT <sup>+</sup> , CD4 %*	Hb, ALT, CD4	Hb, ALT, CD4	Hb, ALT, CD4	Hb, ALT, CD4
D4T/3TC/EFV	CD4, ALT, FBC, pregnancy test***			Hb* *		CD4 %*	CD4	CD4	CD4	CD4
D4T/3TC/NVP	CD4, ALT, FBC		ALT <sup>+</sup>	ALT Hb* *	ALT	CD4 %*, ALT <sup>+</sup>	ALT, CD4	ALT, CD4	ALT, CD4	ALT, CD4
All Pregnant women	In addition to above, pregnant women should receive monthly clinical exams, and extra Hb testing (at 2 weeks, and monthly thereafter)									
Any regimen containing NRTIs (esp D4T or ddI)	Check lactate level when symptoms or signs suggest high lactate (or lactic acidosis)									
Any regimen containing PI	Glucose and lipids (both done fasting) should be checked when clinically indicated									

\* Children should have an extra CD4 count (%) taken at 3 months. Otherwise, the CD4 should be monitored every 6 months, as in adults. If CD4% is not available, test the absolute CD4 count, and use Table XX to interpret result according to age.

\*\* Children should have an extra Haemoglobin (Hb) taken at 1 month.

\*\*\* All females of child-bearing age should have a pregnancy test done before being initiated on Efavirenz, since there is a risk of teratogenicity if Efavirenz is used early in pregnancy.

+ All adults with CD4 between 250-350 are at increased risk of NVP-related hepatotoxicity, and should have ALT monitoring more frequently (extra ALT tests at 2 weeks and 3 months).

Also:

- Baseline full blood count (FBC), including differential count, should be performed on all patients before initiation of ARVs. After that, Hb can be checked in the clinic using a point-of-care machine. If the Hb result is < 8.0 g/dl, send a purple-top tube to the laboratory for FBC (and differential).
- If routine ALT result is elevated, consider sending another red top tube for full liver function tests (LFTs).
- The serum Creatinine result can be used to measure Creatinine clearance using the Cockcroft-Gault formula:

$$\text{Creatinine clearance (in mL/min)} = \frac{(140 - \text{age}) \times \text{weight (in kg)} \times 1.23}{\text{serum creatinine (in } \mu\text{mol/L)}} \quad (\text{and multiply by } 0.85 \text{ if female})$$

**Annex 13:  
TALKING ABOUT HIV TO HIV-INFECTED CHILDREN**

<b>&lt;6 YEARS</b>
(Most children will not understand HIV or be able to keep it private)
<b>Suggestions for explaining HIV</b>
You have a germ in your blood
The germ hurts the healthy parts of your blood
When the health parts are hurt, you get sick with coughing or diarrhoea or other things that make you feel bad
The medicine will kill the germs so that your blood can become healthy again
If you take your medicine every day you can stay healthy and stop the germ from making you sick
You can always talk to your family (indicate which members) and to your doctors and nurses about being sick
<b>Some questions that may come up with answers</b>
<b>Q</b> How did I get this germ?
<b>A</b> You were born with it, you have had it since you were a baby
<b>Q</b> Can you get rid of this germ?
<b>A</b> The medicine can get rid of most of it so you can stay healthy, but we can not get rid of all of it.
<b>Q</b> When can I stop taking my medicine?
<b>A</b> You have to take your medicine everyday so that you can stay healthy, maybe one day doctors will be able to get rid of all the germs, but for now you have to take your medicine everyday.

<b>7-11YEARS</b>
Not all children seek the same amount for information. Take your lead from the child as to how much information to provide,. You can and should explain infection, immune depletion and the reason for taking drugs - without mentioning HIV in children where the child or the family is not ready for full disclosure. Keep information simple.
<b>Suggestions for explaining HIV</b>
You have come to the doctor because you have an illness-you may get sick some times
You have a germ (virus) that lives in your blood – Ask what the child knows about germs and illness and correct misinformation
Viruses make you sick and the doctors visits and medicines are needed to help you stay healthy
The virus (HIV) kills the cells in your blood that helps you stay healthy
The name of these cells are T- cells – the virus (HIV) kills T cells
Without T-cells your body struggles to stay well and you get sick with coughing or other things that make you feel bad
The medicine kill the virus (HIV) so that your T-cells can grow back and they can help you stay healthy
If you stop taking your medicine the virus (HIV) will get stronger again and kill your T-cells then you will get sick again.

We take blood so that we can measure the T-cells and as well as how much virus is in your blood.
When you are doing well, we see lots of T-cells and very little virus
<b>Explaining transmission</b>
You got this virus when you were born. Your mother has the same virus. You got this virus from your mother
You can not get this virus by being friends or hugging or touching. It is ok to play and go to school. If you hurt yourself, you must not let other people touch your blood
<b>Regarding privacy.</b>
We are explaining all this to you so that you can take better care of yourself
This is private information. Indicate the persons the child can discuss this with.
Some questions that may come up with answers:
<b>Q</b> Can you get rid of this virus?
<b>A</b> The medicine can get rid of most of it, so you can stay healthy, but cannot get rid of all of it. Currently there is no cure.
<b>Q</b> When can I stop taking medicine?
<b>A</b> You have to take your medicine everyday so that you can stay healthy. Maybe one day doctors will be able to cure HIV, but for now you have to take your medicine everyday
<b>Q</b> Am I going to die?
<b>A</b> If you take medicines everyday, you can stay healthy for a long time.
<b>Q</b> How did my mom get HIV? – ALWAYS DEFER TO THE MOTHER

**Annex14:**

GRADING of possible SIDE EFFECTS to ARVs				
Symptom (and diagnoses to consider, plus likely ARV responsible)	Grade 1	Grade 2	Grade 3	Grade 4
<b>Painful feet</b>	<b>Mild, does not worry patient</b>	<b>Moderate, bothers patient</b>	<b>Symptoms day and night</b>	<b>Functional impairment (difficult walking, etc)</b>
d4T-related peripheral neuropathy (also occurs with ddI)	- No treatment is needed	- Start Pyridoxine 25 mg at night - Add Paracetamol 500 mg as needed, if necessary - If no relief, give Amitriptyline 25 mg nocte - Check lactate level to rule out hyperlactatemia	- If Amitriptyline partially relieves symptoms, dose can be increased to 100 mg - Continue with ARVs, but switch to AZT ( <i>don't forget to check baseline Hb, and monitor Hb monthly thereafter for 3 months, then every 6 months</i> ) - Check lactate level to rule out hyperlactatemia (high lactate)	- Check lactate level to rule out hyperlactatemia (high lactate) - Switch d4T to AZT (if baseline Hb is normal) - Check Hb monthly thereafter for 3 months, then every 6 months - Continue Pyridoxine +/- Paracetamol +/- Amitriptyline if needed
<b>Abdominal pain +/- nausea</b>	<b>Mild and transient (&lt; 24 hr)</b>	<b>Food intake decreased (24 - 48 hrs)</b>	<b>Minimal food intake (&gt; 48 hrs)</b>	<b>Patient too sick for outpatient treatment</b>
d4T-related pancreatitis (short-term) or high lactate (long-term) NVP-related hepatitis	- No treatment needed, but have patient return early if pain worsens	- Encourage frequent small meals - Give Metoclopramide 10 mg every 12 hours prn - Take blood for ALT and Lipase (or Amylase) and reassess in 2-3 days	- Consider stopping all ARVs* if lipase or amylase > 4 times normal, or ALT > 400 - Also, check lactate level if patient has been on d4T for more than 4 months, to rule out high lactate as the cause	- Stop all ARVs and refer to hospital*
<b>Vomiting</b>	<b>Once per day and/or lasting &lt; 3 days</b>	<b>&lt; 4 episodes per day and not dehydrated</b>	<b>Vomits &gt; 3 times per day, and dehydrated</b>	<b>Dehydrated and too sick for outpatient treatment</b>
d4T-related pancreatitis (short-term) or high lactate (long-term) NVP-related hepatitis	- Reassure patient, but have patient return early if worsens - Consider giving Metoclopramide 10 mg every 12 hours prn	- Give ORT - Encourage frequent small meals - Give Metoclopramide 10 mg every 12 hours prn - Take blood for ALT and Lipase (or Amylase) and reassess in 2-3 days	- Give ORT - Give Metoclopramide 10 mg every 12 hours prn - Consider stopping all ARVs* until blood results (Lipase and ALT) are available - Check lactate level if patient has been on d4T for more than 4 months, to rule out high lactate as the cause	- Stop all ARVs and refer to hospital* - Rehydrate with intravenous normal saline - Check lactate level if patient has been on d4T > 4 months, to rule out high lactate as the cause

<b>Psychological</b>	<b>Dizziness</b>	<b>Vivid dreams</b>	<b>Mood changes or persistent disturbing dreams</b>	<b>Acute psychosis, hallucinations, confused behaviour</b>
EFV	-	- Reassure patient - Symptom will go away after few weeks	- Give Chlorpromazine 50 mg at night as needed	- Stop all ARVs and refer to hospital* - Perform Lumbar Puncture to rule out meningitis - Only restart ARVs when symptoms have fully resolved (switch to NVP instead of EFV)
<b>Skin rash</b>	<b>Red, itchy</b>	<b>Maculo-papular rash or dry scales</b>	<b>Blisters or <u>moist</u> loss of skin</b>	<b>Rash involves mucous membranes or eyes +/- sloughing of skin</b>
NVP (more commonly) EFV (but also consider TB meds or Co-trimoxazole as possible causes)	- Reassure, but have patient return early if worsens - Consider giving Chlorpheniramine 4 mg every 8 hours prn, if itch is significant	- Give Aqueous cream +/- 0.1% Betamethasone - Consider giving Chlorpheniramine 4 mg every 8 hours prn - Check ALT, and reassess in 2-3 days - Patient to return early if rash worse, or abdominal pain	- Stop all ARVs*, check ALT, and refer to doctor - Give Chlorpheniramine 4 mg every 8 hours as needed - When symptoms have resolved, restart ARVs using EFV (if rash was due to NVP)	- Stop all ARVs and refer to hospital - ARVs can be restarted once patient is stable but avoid NVP - EFV in the future (instead, use Kaletra in the first-line regimen)
<b>Elevated ALT (in U/L)</b>	<b>50 - 100</b>	<b>100 - 200</b>	<b>200 - 400</b>	<b>&gt; 400</b>
NVP (more commonly) EFV	Continue ARVs, but recheck ALT in 1 month	- Continue ARVs if no other problem - Recheck ALT again after 2 weeks	- Switch NVP to EFV (unless patient is in the first trimester of pregnancy) - Monitor ALT weekly to ensure a fall in ALT	- Stop all ARVs and refer to hospital* - Check ALT frequently to ensure it returns to normal - Restart ARVs with EFV (unless in the first trimester of pregnancy)
<b>Elevated Lipase (or Amylase)</b>	<b>1 - 1,5 times upper limit of normal (ULN)</b>	<b>1,5 - 2 times ULN</b>	<b>2 - 5 times ULN</b>	<b>&gt; 5 times ULN</b>
d4T ddI	- Examine the patient's abdomen - Continue ARVs if no tenderness and no other symptoms, but monitor	- Examine the patient's abdomen - Continue ARVs if no tenderness or other symptoms - Recheck Lipase (or Amylase) in 14 days		- Stop all ARVs and refer to hospital - When pancreatitis has resolved, restart ARVs with AZT (or TDF) in place of d4T
<b>Anaemia (low Haemoglobin, in gm/dl)</b>	<b>8 - 9,4</b>	<b>7 - 7,9</b>	<b>6,5 - 6,9</b>	<b>&lt; 6,5</b>

AZT	<ul style="list-style-type: none"> <li>- Examine patient to rule out bleeding, or serious problem (including active TB)</li> <li>- If no problem, continue ARVs</li> <li>- Recheck Hb in 2 weeks</li> </ul>	<ul style="list-style-type: none"> <li>- Examine patient to rule out bleeding, or other serious problem (including disseminated TB)</li> <li>- If no problem, continue ARVs</li> <li>- Recheck Hb in 7 days</li> </ul>	<ul style="list-style-type: none"> <li>- Examine patient to rule out bleeding, and refer to doctor for assessment</li> <li>- If no problem, switch AZT to d4T (or TDF, if contraindication to d4T)</li> <li>- Recheck Hb weekly, to ensure rise in Hb</li> <li>- Consider sending blood to lab for FBC (to rule out coexistent Neutropenia)</li> </ul>	<ul style="list-style-type: none"> <li>- Examine patient to rule out bleeding, and refer to hospital</li> <li>- Consider blood transfusion</li> <li>- Switch AZT to d4T (or TDF, if contraindication to d4T)</li> <li>- consider stopping all ARVs*</li> </ul>
Neutropenia (low absolute neutrophil count)	$1 - 1,5 \times 10^6$	$0,75 - 1,0 \times 10^6$	$0,5 - 0,75 \times 10^6$	$<0,5 \times 10^6$
AZT	<ul style="list-style-type: none"> <li>- Continue ARVs</li> <li>- Recheck FBC (+ differential) in 2 weeks</li> </ul>	<ul style="list-style-type: none"> <li>- Examine patient for any signs of infection</li> <li>- Continue ARVs</li> <li>- Recheck FBC (+ diff) in 2 weeks</li> </ul>	<ul style="list-style-type: none"> <li>- Examine patient for any signs of infection</li> <li>- If no serious infection, switch AZT to d4T (or TDF, if d4T contraindicated)</li> <li>- Recheck FBC (+ diff) weekly to ensure rise in absolute neutrophil count</li> </ul>	<ul style="list-style-type: none"> <li>- Examine patient for any signs of infection</li> <li>- If serious infection, refer to doctor for assessment</li> <li>- Switch AZT to d4T (or TDF, if contraindicated)</li> <li>- consider stopping all ARVs*</li> </ul>
Lipodystrophy	No symptoms	Fat distribution <i>acceptable</i> to patient	Fat distribution <i>unacceptable</i> to patient	
d4T	<ul style="list-style-type: none"> <li>- Continue ARVs</li> </ul>	<ul style="list-style-type: none"> <li>- Continue ARVs</li> <li>- Ensure that dose of d4T is 30 mg (not higher)</li> <li>- Can consider switching d4T to AZT (if no anaemia)</li> </ul>	<ul style="list-style-type: none"> <li>- Switch d4T to AZT (if no anaemia)</li> <li>- Check Hb monthly thereafter for 3 months, then every 6 months</li> </ul>	
Hyperlactatemia = High Lactate (which will progress to <u>lactic acidosis</u> if not identified early, or managed appropriately!)	Asymptomatic and/or Lactate < 2.5	<p>Symptomatic hyperlactatemia (<i>weight loss, fatigue, peripheral neuropathy, nausea, etc</i>)</p> <p>Lactate between 2.5 - 3.5</p>	<p>Symptomatic hyperlactatemia with risk of progression to lactic acidosis (<i>Think of lactic acidosis if symptoms of hyperlactatemia, plus abdominal pain, vomiting, shortness of breath, and ketones on urine dipstick.</i>)</p> <p>Lactate between 3.6 - 4.9</p>	<p>Lactic acidosis (note that this condition can be fatal, if not managed appropriately and immediately!)</p> <p>Lactate 5.0 or greater, or &gt; 20 (even if lactate level is 5.0)</p>

<p>d4T ddI AZT (less commonly)</p>	<ul style="list-style-type: none"> <li>- Continue ARVs</li> <li>- Consider switching d4T to AZT (if not anaemic), especially if female, high BMI, or pregnant</li> </ul>	<p>-</p>	<ul style="list-style-type: none"> <li>- Examine patient to rule out new infection and/or acidosis</li> <li>- Check urine for ketones (using dipstick) to rule out acidosis</li> <li>- If stable and no acidosis, switch d4T to AZT (<i>don't forget to monitor Hb</i>)</li> <li>- Monitor lactate level weekly until lactate normalizes</li> <li>- <u>If lactate does not improve</u>, stop all ARVs (and consider giving Kaletra 4 tabs BD for one week to prevent resistance to NNRTI)</li> <li>- When lactate level is normal, use TDF (avoid d4T and AZT)</li> </ul>	<ul style="list-style-type: none"> <li>- Admit to hospital</li> <li>- Rehydrate with intravenous (+/- bicarbonate)</li> <li>- Investigate for new infection (pneumonia, sepsis, TB, etc)</li> <li>- Consider giving i.v. Ceftriaxone for 3 days</li> <li>- Monitor lactate level frequently until lactate normalizes</li> <li>- When lactate level is normal, restart ARVs with Tenofovir (TDF)</li> <li>- Avoid d4T, ddI, and all other NNRTIs in the future</li> </ul>
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\* Whenever possible, use 'tail protection' to prevent the development of resistance to NVP or EFV. This means stopping NVP or EFV first, and continuing 2 NRTIs (TDF/3TC, AZT/3TC or d4T/3TC, as appropriate) for one week

This Algorithm is similar to Figure called 'Adult and Child HIV Management' earlier in the document (approx page 24), so it can be removed if it has no added value.

**Annex 16: ART Transfer Letter**

HTC CENTRE REFERRAL FORM

**HTC SITE CODE:**

**CLIENT CODE NO:**

Site Name: \_\_\_\_\_

Date referral made: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Referral made by: \_\_\_\_\_

Referred to: \_\_\_\_\_

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Dear Colleague,

Kindly attend to this client who has received service at this VCT/HTC Centre. We are referring him/her for the following reasons:

1. Medical Unspecified
2. STI Screening and/or Treatment
3. Home Based Care
4. Financial support
5. Pyschosocial support / Support Groups
6. Family Planning Services
7. Legal Services/ Advice
8. TB Screening and or / (IPT Therapy)
9. TB Screening and / or DOTS Therapy
10. PMTCT
11. Nutritional Counselling or Support
12. Hospice
-

13. Drug/Alcohol Counselling

14. Other (please specify)

Date: \_\_\_\_\_ Supervisor's signature: \_\_\_\_\_

## Annex 17: Infant Feeding Assessment Tool (AFASS)

**Acceptable:** The mother perceives no significant barrier(s) to choosing a feeding option for cultural or social reasons or for fear of stigma and discrimination.

**Feasible:** The mother (or other family member) has adequate time, knowledge, skills, and other resources to prepare feeds and to feed the infant as well as the support to cope with family, community, and social pressures.

**Affordable:** The mother and family, with available community and/or health system support, can pay the costs of the replacement feeds- including all the ingredients, fuel and clean water-without compromising the family's health and nutrition spending.

**Sustainable:** The mother has access to a continuous and uninterrupted supply of all the ingredients and products needed to implement the feeding option safely for as long as the infant needs it.

**Safe:** Replacements foods are correctly and hygienically stored, prepared, and fed in nutritionally adequate quantities; infants are fed with clean hands using clean utensils, preferably by cups

## Annex 18: Drug-Drug Interaction

I patient is taking:	Do not co-administer with these drugs. (call for advice for alternative treatment)	Other cautions:
Neverapine (NVP)	<ul style="list-style-type: none"> <li>❖ Rifampicin</li> <li>❖ ketaconazole</li> </ul>	Do not rely on oestrogen-based oral contraceptives-switch or use additional protection. If on methadone, will need to increase dose. Monitor for withdrawal signs.
Lamivudine (3TC)	No major drug interactions	
Stavudine (d4T)	Do not give with ZDV (sidovudine, AZT)	Higher risk of d4T neuropathy when also taking INH
Zidovudine (AZT, ZDV)	Do not give with d4T or	Higher risk of anaemia

	gaciclovir	when also taking acyclovir or sulpha drugs
Efavirenz (EFV)	<ul style="list-style-type: none"> <li>❖ Diazepam (but can be used for convulsions in emergency)</li> <li>❖ Other benzodiazepines other than lorazepam</li> <li>❖ Phenobarbitol</li> <li>❖ Phenytoin</li> <li>❖ Protease inhibitor ARVs</li> </ul>	<p>Do not take with high-fat meal</p> <p>If on methadone, will need to increase dose.</p> <p>Monitor for withdrawal signs.</p>

**If patient is taking other ARV drugs or other traditional medicines consult with clinician.**

## ANNEX 19: HOW TO ANALYSE INDICATORS AND IDENTIFY PROBLEMS

Calculating and analysing the indicators listed in the chart below will help to monitor chronic HIV care and ART in your district.

### Indicators related to ART at the district level

Indicator	Time frame for cohort	Which number or formula for calculating (numerator / denominator) <sup>a</sup>	Sources of data
<b>1. Indicators related to patients accessing HIV care and ART</b>			
1a. Number enrolled in HIV care	Last quarter	- New in last month - Cumulative number of persons enrolled in HIV care	Quarterly report form— Table 1
1b. Number started on ART	Last quarter	- New in last month - Cumulative number of persons ever started on ART at this facility	Quarterly report form— Table 2
1b. Number currently on ART	Cross-sectional—at end of last quarter	Total and disaggregated by sex, adult /child	Quarterly report form— Table 4
1c. Number of persons who are enrolled and eligible for ART but have not been started on ART	Cross-sectional—at end of last quarter	Total number enrolled and eligible but not on ART (S1 + S2)	Quarterly report form— Table 1
1d. Proportion of those eligible for ART in clinic who have been started on ART	Cross-sectional—at end of last quarter	Cumulative number of persons ever started on ART at this facility ----- Total number enrolled and eligible but not on ART (S1 + S2) plus cumulative number of persons ever started on ART at this facility	Quarterly report form
1e. Proportion of people with advanced HIV infection receiving ARV combination therapy (UNGASS core indicator)	Cross-sectional	Number currently on ART ----- Denominator is an estimate based on HIV prevalence and expected proportion with AIDS (not from register data)	Quarterly report form ----- Estimate, HIV prevalence data

<b>2. Indicators related to success of ART</b>			
2a. Core indicator 9 Survival at 6, 12, 24, 36 months etc after initiation of ART	6 months on ART, 12 months on ART, 24 months, 36 months etc on ART	$H + I + J$ ----- N	Cohort analysis form ----- Cohort analysis form
2b. Core indicator 8 Continuation of first-line ARV regimen at 6, 12 and 24 months after initiating treatment	6 months on ART, 12 months on ART, 24 months on ART	6 months on ART, 12 months on ART, 24 months, 36 months etc on ART ----- Persons who started 1st-line ART for the first time during the time period under consideration.	Cohort analysis form ----- Cohort analysis form

2c. Proportion of people on ART at 6, 12 and 24 months whose functional status is working	6 months on ART, 12 months on ART, 24 months, 36 months etc on ART	Working ----- Working + Ambulatory + Bedridden	Cohort analysis form
2d. Median CD4 and increase at 6 and at 12 months on ART compared to baseline.			Cohort analysis form

Indicator	Time frame for cohort	Which number or formula for calculating (numerator / denominator) <sup>a</sup>	Sources of data
<b>3. HIV drug resistance early warning indicators</b>			
3a. Proportion of patients who started ART 6 or 12 months ago who picked up ARV medications 6/6 or 12/12 months.	Cross-sectional—at end of last quarter	Persons who started ART 6 or 12 months ago who picked up ARV medications 6/6 or 12/12 months. ----- Persons who started ART 6 or 12 months ago and are still prescribed ART at the end of the time period.	Cohort analysis form
3b. Proportion of patients with (good) adherence to ART			Patient encounter form

## Other indicators for facility-level programme monitoring

Indicator	Rationale
<b>a. Number on cotrimoxazole, fluconazole, INH prophylaxis at end of month</b>	Drug supply orders
<b>b. Distribution of entry points of patients enrolled in HIV care</b>	Identifies linkages between programmes and activities
<b>c. Distribution of reasons for regimen substitution, switching, termination, interruption, and poor adherence</b>	Helps clinical team to identify and respond to poor adherence; assists with quality assurance related to regimen substitutions, switches and interruptions.
<b>d. Distribution of patients not yet on ART by clinical stage</b>	May help estimate resources to care for patients, drug supply for OI prophylaxis and treatment.
<b>e. Percentage of patients referred</b>	Monitoring referral rates may enable facilities to manage referral systems more efficiently
<b>f. Side effects, OIs, other problems</b>	Facilitates individual patient management and allows review of side effects and new OIs

## Calculating indicators or other aggregated data

Agreed minimum essential data elements	What happens to the data	Indicators or other aggregated data
<p><b>A.</b> At <b>baseline, 6, 12 months</b> then <b>yearly</b>; disaggregated by <b>sex</b> and <b>child/adult</b>:</p> <ol style="list-style-type: none"> <li>1. On ART and: <ul style="list-style-type: none"> <li>• ALIVE</li> <li>• DEAD</li> <li>• LOST/DROP/Transfer out</li> </ul> </li> <li>2. Current regimen <ul style="list-style-type: none"> <li>• Original 1st-line</li> <li>• Substituted to alternative 1st-line</li> <li>• 2nd-line or higher</li> </ul> </li> <li>3. CD4 test results</li> <li>4. Functional status</li> <li>5. Regimen collected in last quarter</li> </ol>	<p>Transfer to ART register then to <b>Cohort Analysis Report</b></p>	<p>Based on cohort analysis form, at <b>6, 12 months</b> then <b>yearly</b> and compared to <b>baseline</b>:</p> <p><b>Indicators related to success of ART</b></p> <ul style="list-style-type: none"> <li>✓ Proportion alive and on ART/Mortality on ART</li> <li>✓ Proportion still on a first-line regimen</li> <li>• Proportion working, ambulatory, bedridden</li> <li>• Median or mean CD4 counts (optional)</li> </ul> <p><b>HIV drug resistance early warning indicators:</b></p> <ul style="list-style-type: none"> <li>• Proportion switched to a second-line (or higher) regimen</li> <li>• Proportion collected ARV drugs 6/6 or 12/12 months</li> </ul>
<p><b>B.</b></p> <ol style="list-style-type: none"> <li>1. When registered for HIV care</li> <li>2. When medically eligible for ART</li> <li>3. When medically eligible and ready for ART</li> <li>4. When ART started</li> <li>5. Dead before ART</li> <li>6. Lost or Transfer out before ART</li> </ol>	<p>Transfer to pre-ART or ART register then to <b>Quarterly Report</b></p>	<p><b>Indicators related to patients accessing HIV care and ART:</b></p> <p>Disaggregated by adult, child, sex, pregnancy status:</p> <ul style="list-style-type: none"> <li>• Number enrolled in HIV care: new and cumulative ever at the facility</li> <li>• Number started on ART: new and cumulative ever started at the facility</li> <li>• Number currently on ART at the facility</li> </ul> <p>Not disaggregated:</p> <ul style="list-style-type: none"> <li>• Number eligible for ART but not yet started</li> </ul>
<p><b>C.</b></p> <ol style="list-style-type: none"> <li>1. Entry point</li> <li>2. Why eligible for ART</li> <li>3. Reasons for: <ul style="list-style-type: none"> <li>• Substitution within first-line</li> <li>• Switch/Substitution to or within second-line</li> <li>• Stop ART</li> </ul> </li> <li>4. Number and weeks of each ART treatment interruption</li> <li>5. Pregnancy status</li> <li>6. Start/stop dates of prophylaxis: <ul style="list-style-type: none"> <li>• Co-trimoxazole</li> <li>• Fluconazole</li> <li>• INH</li> </ul> </li> <li>7. TB treatment</li> <li>8. Adherence on ART</li> </ol>	<p>Transferred to <b>Pre-ART or ART Register</b> but used only by clinical team /district ART coordinator not transferred to quarterly report or cohort analysis</p>	<p><b>Indicators for patient and programme management at the facility/district level:</b></p> <ul style="list-style-type: none"> <li>• Distribution of entry points in patients enrolled in HIV care</li> <li>• Why eligible for ART: clinical only, CD4 or TLC</li> <li>• Distribution of patients not yet on ART by clinical stage</li> <li>• Distribution of reasons for substitute, switch, stop to investigate problems; whether substitutions and switches are appropriate (use in context reviewing medical officer log)</li> <li>• ART treatment interruptions: <ul style="list-style-type: none"> <li>• Number/Proportion of patients</li> <li>• Number weeks</li> </ul> </li> <li>• Proportion of pregnant patients linked with PMTCT interventions (or simply use to generate lists to assure linkage)</li> <li>• Number on co-trimoxazole, fluconazole, INH prophylaxis at end of quarter (for ordering</li> </ul>

		prophylaxis drugs) <ul style="list-style-type: none"> <li>• Number/Proportion of patients on both TB treatment and ART</li> <li>• % patients with good adherence to ART</li> </ul>
<b>D.</b> 1. Date of each encounter 2. Weight (each visit; % wt gain or loss) 3. Adherence on CTX 4. Adherence on INH 5. Potential side effects 6. New OI, other problems 7. TB status (other than treatment or prophylaxis) 8. Referred or consulted with MD 9. Number inpatient days 10. If poor adherence on ART, reasons (coded)	<b>Patient Card only.</b> Not transferred to register	<b>Indicators for patient management at the facility level or special studies:</b> <ul style="list-style-type: none"> <li>• % patients referred to MD</li> <li>❖ Common side effects, OI, other problems:             <ul style="list-style-type: none"> <li>❖ Patients with special problems</li> <li>❖ Identify patients for review at clinical team meetings</li> </ul> </li> <li>○ # or proportion patients hospitalized; number days</li> <li>○ Reasons for poor adherence</li> </ul>

- ✓ National core indicators
- ❖ These are used both for individual patient management and for medical officer or clinical mentor review on site visits. For potentially serious side effects which result in a consultation or referral, medical officer needs to put in log and do further adverse even reporting.
- Tabulations for special studies

**Annex 20 Anti-tuberculosis dosing for fixed dose combination of isoniazid, rifampicin, and pyrazinamide for children.**

<b>INITIAL PHASE: 2 MONTHS <u>Rifater Jr or Rimcure</u> (Rifampicin 60mg, INH 30mg, Pyrazinamide 150mg)</b>		<b>CONTINUATION PHASE: 4 MONTHS <u>Rimactizid or Rifinah Jr</u> (Rifampicin 60mg, INH 30mg)</b>	
<b>Weight</b>	<b>Dose</b>	<b>Weight</b>	<b>Dose</b>
3-4kg	½ sachet or tab	3-4kg	½ sachet or tab
5-7kg	1 sachet or tab	5-7kg	1 sachet or tab
8-9kg	1 ½ sachets or tabs	8-9kg	1 ½ sachets or tabs
10-14kg	2 sachets or tabs	10-14kg	2 sachets or tabs
15-19kg	3 sachets or tabs	15-19kg	3 sachets or tabs
20-24kg	4 sachets or tabs	20-24kg	4 sachets or tabs
25-29kg	5 sachets or tabs	25-29kg	5 sachets or tabs
30-35kg	6 sachets or tabs	30-35kg	6 sachets or tabs

ATT includes isoniazid, rifampicin, pyrazinamide (FDC) and ethambutol. Ethambutol dosing is 20mg / kg / day. 400mg tablets can be cut into quarters for appropriate paediatric dosing if 100mg tablets are not available.

### Annex 21 Ready-to-use-therapeutic-food dosing

<b>Weight (kg)</b>	<b>Sachets per Day</b>	<b>Sachets per Week</b>
3.5-3.9	1.5	11
4.0-5.4	2	14
5.5-6.9	2.5	18
7.0-8.4	3	21
8.5-9.4	3.5	25
9.5-10.4	4	28
10.5-11.9	4.5	32
≥ 12	5	35



