Guidelines on Management of HIV Infection in Pregnancy in Sri Lanka

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Message from the Director National STD/AIDS Control Programme

The health care delivery system in Sri Lanka is considered to be one of the best in the South East Asia Region. It has played a pivotal role in achieving high social and health indices which are almost in par with those of some developed countries. The prevalence of HIV among antenatal mothers has been maintained at a low level over the last decade. Thus introducing interventions for prevention of mother-to-child transmission (MTCT) of HIV infection as an entry point for a range of services that provide counselling, testing, treatment, care and support to the HIV infected women and partners in a gradual scale up manner, is considered as an important strategy to prevent paediatric HIV infections.

The "Guidelines on Management of HIV infection in Pregnancy in Sri Lanka-2011" was prepared to assist policy makers to plan PMTCT interventions and healthcare workers to provide optimal services to antenatal mothers, taking into consideration the WHO recommendations (2010) for PMTCT.

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Dr N Edirisinghe
Director/NSACP

Abbreviations and acronyms

3TC	lamivudine
ABC	abacavir
AIDS	acquired immunodeficiency syndrome
AFASS	acceptable, feasible, affordable, safe and sustainable
ANC	antenatal care
ART	antiretroviral therapy
ARV	antiretroviral
AZT	zidovudine
CNS	central nervous system
d4T	stavudine
ddI	didanosine
EFV	efavirenz
FTC	emtricitabine
GFR	glomerular filteration rate
HAART	highly active antiretroviral therapy
HBV	hepatitis B virus
HCV	hepatitis C virus
HIV	human immunodeficiency virus
LPV/r	lopinavir/ritonavir
MCH	maternal and child health
MTCT	mother-to-child transmission (of HIV)
NSACP	National STD/AIDS Control Programme
NNRTI	non-nucleoside reverse transcriptase inhibitor
NRTI	nucleoside reverse transcriptase inhibitor
NVP	nevirapine
PI	protease inhibitor
PITC	provider initiated testing and counselling
PMTCT	prevention of mother-to-child transmission (of HIV)
PHC	primary health care
RIF	rifampicin
sd-NVP	single-dose nevirapine
STI	sexually transmitted infection
TB	tuberculosis
TDF	tenofovir disoproxil fumarate
WHO	World Health Organization

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Introduction

The human immunodeficiency virus (HIV) pandemic is one of the serious social, health and developmental challenges the world has to face today. In 2009, an estimated 33.4 million people were living with HIV, of whom 15.7 million were women and 2.1 million were children under 15 years of age[1]. Globally HIV is the leading cause of death in women of reproductive age. Since nearly all HIV infections in children are acquired from their mothers during pregnancy, child birth or breastfeeding, the HIV burden in children reflects that of HIV in women. An estimated 1 million women aged 15 years and above are currently living with HIV in the South East Asia Region[2]. In 2008, an estimated 130,000 HIV infected children were living with HIV in the Region. In the same year, an estimated 14,000 new infections occurred among children[2]. Nearly all such infections could have been prevented by wide implementation of evidence-based interventions built around primary prevention, use of antiretroviral drugs, safe delivery practices and safe infant feeding practices. Interventions for prevention of mother-to-child transmission (PMTCT) will reinforce the progress towards achieving the health related Millennium Development Goals (MDG) of reducing under-five year mortality rates by two thirds, decreasing maternal mortality rates by three quarters and halting and reversing the spread of HIV/AIDS by 2015.

In the absence of any intervention, the rate of mother-to-child-transmission (MTCT) of HIV can vary from 15-30% in a non breast feeding population. Breast feeding by an infected mother increases the risk to the baby by a further 5-20% thus increasing the overall transmission rate to 20-45%[3]. The policy of the Government of Sri Lanka is to adopt the four pronged comprehensive approach recommended by the WHO/UNICEF to prevent HIV among infants and young children. The four strategies adopted by the National STD/AIDS Control Programme (NSACP) are: 1) primary prevention of HIV transmission 2) prevention of unintended pregnancies among women living with HIV 3) prevention of HIV transmission from pregnant women living with HIV to their offspring through provision of ART, safer delivery practices and safer infant feeding practices 4) provision of treatment, care and support for pregnant women living with HIV, their children and families.

In Sri Lanka, as of the end of 2009, the estimated number of people living with HIV was 3000. Almost 84% of the reported infections have occurred due to heterosexual transmission whilst mother to child transmission accounts for 5.4% of infections. Almost all paediatric HIV infections were vertically transmitted. Prevention and control of HIV is the main strategy of the National Strategic Plan for HIV and AIDS in Sri Lanka.

In countries with a low prevalence of HIV infection such as Sri Lanka, the most effective approach to prevent vertical transmission is through primary prevention of HIV infection among men and women in the reproductive age group. Literature reveals that early identification of HIV infection in pregnant women, provision of ART as treatment or prophylaxis, combined with elective cesarean delivery and complete avoidance of breastfeeding have reduced the risk of transmission to 1%-3%. Therefore, NSACP together with the Family Health Bureau (FHB) has used the existing health infrastructure in the country which caters to all pregnant women including those at risk and vulnerable to HIV, as an entry point to implement these strategies through integration of PMTCT strategies to maternal and child health (MCH) services. Highly effective ART is provided to pregnant women and their newborns with the support of clinical care providers. NSAP has also taken steps to provide care and support with the support of civil society organizations and people living with HIV (PLHIV).

The antenatal service package that has been broad based by the Family Health Bureau will now include a comprehensive HIV component as well. This would ensure in achieving the ultimate goal of reducing MTCT of HIV infection and reducing maternal and infant morbidity and mortality due to HIV infection. Coverage of PMTCT interventions need to be scaled up gradually in a stepwise manner as they are considered as one of the most powerful and highly effective tools for HIV prevention, which also have huge potential to further improve both maternal and child health.

The comprehensive HIV component of the antenatal package of services will consist of providing information on HIV and AIDS and its prevention, promoting and providing condoms, counselling on safer sex, referral for treatment of sexually transmitted infections, promoting HIV testing with pre and post test information and counselling, referral to ART centers and male partner involvement. Integration of PMTCT and MCH services will provide an opportunity to reach the expectant father which would help raise awareness among men about MTCT of HIV, encourage safer sexual behaviors especially during the time that the woman is pregnant and breastfeeding, encourage personal risk assessment and increase attendance for counselling and HIV testing.

Preconception package of services provided by FHB which includes behavior change communication will also give men and women the opportunity to understand the risky behaviors that promote HIV transmission and adopt safer sexual practices and even opt for counselling and testing for HIV.

Counselling and testing services are available at the National STD/AIDS Control Programme and its network of peripheral STD clinics. Life skills based school education programme will ensure that girls as well as boys will have comprehensive knowledge on HIV including PMTCT and acquire skills required to face sexual challenges. For maximum utilization of PMTCT interventions including antiretroviral therapy (ART) provider initiated counselling and testing (PICT) is encouraged in antenatal and medical settings when women present with clinical manifestations of HIV infection.

Key challenges in the implementation of prevention of mother-to-child transmission programme will be scaling up HIV counselling and testing in antenatal settings for mothers to know their HIV status, partner testing and improving linkages between antenatal care, reproductive and child health, and antiretroviral treatment care and support centers. Forging closer linkages between the NSACP and FHB and clinical care providers (obstetricians, paediatricians, etc) will result in significant public health benefits and would facilitate in attaining international development goals and save lives of mothers and infants.

This guideline is an update of the 2008 guideline for prevention of HIV infection in pregnancy in Sri Lanka with the incorporation of WHO recommendations given in: Antiretroviral drugs for treating pregnant women and preventing HIV infections in infants-2010 version. This guideline would help those responsible for establishing national policies and standards and for designing and implementing national PMTCT services. For clinicians this guideline provides information on quality evidence based interventions to reduce the risk of transmission of HIV infection from an infected mother to her newborn during pregnancy, labour and delivery and breastfeeding while at the same time promoting the health of both the mother and the child.

Chapter -1

Antenatal, delivery and postnatal care for HIV positive pregnant women

Pregnant HIV positive women should receive optimal care by a team including an obstetrician, venereologist, paediatrician, anesthetist, theatre sister, medical officer of health, midwife and a counsellor. Good coordination, confidential communication and shared responsibility are very important.

Ideally, HIV positive pregnant women (with their husband, if the woman agrees) should be assessed at the STD clinic at 12-14 weeks gestation. A consultation with the obstetrician is essential for the mother at 12, 20, 32 and 36 weeks.

Antenatal care (when the mother presents to a hospital obstetric clinic)

When an HIV positive pregnant woman is seen in the antenatal clinic she should be given the same services that other mothers are given. Good quality antenatal care and support are important for HIV positive pregnant women to reduce the risk of MTCT of HIV and for the sake of both mother and child.

The head of the unit would identify a person (eg SR/SN) to be the link person for further care. Health care providers should ensure that women living with HIV are provided antenatal care, labour and delivery care, post partum services and care for the newborn in a user friendly environment. The head of the institution should take all measures to prevent stigma & discrimination of HIV positive mothers, her children and family.

Management

- Greet and meet the woman in a friendly manner and make her feel comfortable in your clinic environment.
- Ensure privacy and confidentiality during consultations and reassure the woman that her HIV status will be kept confidential.
- Document history, examination and test findings and explain to the woman who the information will be shared with.
- If the pregnant woman has already been assessed at the STD Clinic, review the findings, test reports, and management plan.

- Give her confidence by discussing the management plan with her

- If she has not been assessed at the STD clinic, inform her of the need and refer her and her husband (if she agrees) to the STD clinic for appropriate assessment and management of her HIV infection, and for a decision about ARV prophylaxis or treatment. Since ART has to be initiated by 14 weeks of gestation, ensure that the woman is referred early.

- Explain to the mother that she will follow routine antenatal clinic visits

- She should be seen by the VOG at 12 weeks, 20 weeks, 32 weeks and 36 weeks.

- Assess fetal growth as routine

- Check whether the woman has had appropriate antenatal tests including syphilis serology, haemoglobin, blood grouping and Rhesus factor. Do not repeat these if already performed at the STD clinic/MOH clinic.

- An ultrasound scan should be done during the first trimester to confirm gestational age and to guide potential timing of elective caesarean section. If an elective caesarean delivery is planned an ultrasound scan should be performed at 38weeks gestation

- Avoid invasive procedures such as amniocentesis.

- Ensure that she receives routine antenatal supplements (Iron and Folate, Calcium, Vit C), antihelminthics and tetanus toxoid immunizations, as for HIV negative pregnant women.

- Provide advice about danger signs in pregnancy and advise early care seeking for complications such as bleeding, fever, swelling, headaches and abdominal pain.

- Review the plan for ARV prophylaxis or treatment

- Discuss and document a plan for safer delivery care

- Assist her to follow her choice of infant feeding practice selected during counselling sessions at the STD clinic.

- Check whether a post partum contraception plan is available.

- Review the latest CD4 count report and baseline investigations.

Safer delivery care for HIV positive women

Plan for delivery

Plan and discuss the mode of delivery with the pregnant woman (and her husband if possible) during antenatal care. Give her instructions on when to get admitted to the hospital for delivery and whom she should contact.

If normal vaginal delivery is planned

Normal vaginal delivery may be planned for a primigravida or multigravida without obstetric complications who has been on ARV treatment or prophylaxis and has an undetectable viral load (< 50 copies/mm^3). When admitted for delivery:

- Check the expected date of delivery
- Confirm normal growth of the foetus
- Check which ART have been prescribed and whether drugs have been taken as prescribed and what is prescribed during labour and post partum
- Head should be presenting and well engaged.
- Check whether the cervix is effaced and dilated and await spontaneous onset of labour

At delivery:

- Minimize vaginal examinations to reduce the risks of infection to the mother. Maintain aseptic techniques throughout labour.
- ART prescribed to be given during labour should be given according to the ART plan
- Avoid early rupture of membranes. Prolonged rupture of membranes, especially for more than four hours, increases the risk of MTCT of HIV. Artificial rupture of membranes increases the risk of infection of the placental membranes[4]. It is an unnecessary procedure unless there is an important reason to speed up delivery.

- Plot the course of labour on a partogram to determine whether labour is progressing normally. The objective is to prevent intrapartum complications such as prolonged labour, fetal distress, shoulder dystocia and to avoid emergency caesarean section.
- Avoid prolonged labor by monitoring labor carefully and intervening appropriately (ie, augmentation of labour through oxytocin or caesarean section).
- Avoid unnecessary episiotomy. Studies of the influences on MTCT have not been large enough to determine whether episiotomy is an important factor. Episiotomy increases the chance that the baby will be exposed to maternal blood. Studies show that routine episiotomy does not improve outcomes for the baby or the mother[5]. Only perform an episiotomy when there is a good reason.
- Avoid the use of forceps or other instruments to assist delivery
- Do not apply a foetal scalp electrode or undertake foetal scalp blood sampling.

If elective caesarean section is planned:

- Explain to the patient about the reason for the caesarean section and obtain informed consent.
- Notify the Hospital Director, sister in charge of the theatre, consultant anesthetist, neonatologist, paediatrician and head of the intensive care unit
- Provide pre medication and prepare as usual for surgery
- Regional analgesia is not contraindicated in delivery care of HIV infected women
- Continue ARV regimen as recommended. If necessary seek advice from STD team.
- Give antibiotic prophylaxis

Caesarean section

Caesarean section *before* labour begins and *before* membranes have ruptured allows the baby to avoid contact with the mother's blood and cervical secretions. Summary results from observational studies, and a randomised controlled trial, have shown that pre labour elective caesarean section (PLCS) can reduce the risk of MTCT of HIV by 50 to 66% [6].

It is reported that Caesarean section delivery after the onset of labour and/or *after* ruptured membranes was associated with a risk of HIV transmission to the newborn similar to that associated with vaginal delivery. Emergency caesarean section may be needed for the usual obstetric indications [6].

For HIV uninfected women guidelines recommend that a planned caesarean delivery be performed at 39 weeks to reduce the frequency of transient tachypnoea of the newborn[7]. Caesarean delivery at 38 weeks versus 39 weeks entails a small absolute but substantially increased risk of development of infant respiratory distress requiring mechanical ventilation. This increased risk must be balanced against the potential risk for labour or membrane rupture before a HIV positive woman would reach 39 weeks of gestation. It has been observed that the risk of HIV transmission was twice as high among women with ruptured membranes for more than 4 hours before delivery compared with those with shorter duration of membrane rupture

In Sri Lanka, the experts' opinion is to deliver the baby by PLCS at 38 weeks of gestation. However, a decision for elective caesarean section must take into account the possibility of maternal morbidity and mortality, the availability of safe operating facilities, the potential increased service commitments and the accessibility of maternal services for the woman in future pregnancies.

Malpresentations

If the woman has a breech presentation it is safer for her to have an elective caesarean section than external cephalic version and a vaginal delivery. However if for some reason it is not possible for her to have a caesarean section, external cephalic version should be performed because the obstetric risk and the risk of MTCT is likely to be less than undergoing a breech vaginal delivery [8].

Points for consideration

All known HIV infected pregnant women should have an individualised, regularly updated, plan of care which summarises mutually agreed obstetric/HIV management including the drug regimen and recommended mode of delivery.

Universal Infection Control measures, properly applied, provide adequate protection for staff. Routine incorporation of universal precautions in service delivery is crucial to mitigate occupational risk and reduce fear of blood borne infections on the part of the health care workers.

All ward staff should be aware of the need for confidentiality in relation to the patient's HIV status. On the basis of shared confidentiality staff members could be informed of the HIV status of the woman only on a "need to know" basis.

Care for the baby:

- Avoid suctioning the infant's mouth and pharynx, which may cause trauma to the mucus membranes thus promoting MTCT.
- Clean the eyes of the baby with saline at delivery of the head.
- Clamp the cord as soon as possible to minimise the risk of maternal fetal micro-transfusions.
- Cover the umbilical cord with a swab when cutting to prevent blood spurting.
- Towel dry the baby
- Clean the baby's skin thoroughly before any infusions or injections.

Minimize the risk of postpartum haemorrhage by:

- Actively managing the third stage of labor
- Using controlled cord traction
- Performing uterine massage
- Repair any genital tears
- Carefully removing all products of conception

Antenatal care (Mother presents to a primary health care –PHC antenatal clinic)

When an HIV positive pregnant woman is seen in the antenatal clinic, she should be given the same services that other mothers are given. Ensure privacy and confidentiality during consultations and reassure the woman that her care will be kept confidential. Sharing of information with other staff members should be done only on "need to know" basis. Since the public health midwife (PHM) will be providing routine post partum home care, she could be informed by the MOH of the mother's HIV status with the assurance that confidentiality would be maintained.

The MOH should check whether the woman has attended the STD clinic. If the woman has already been assessed at the STD Clinic review the findings, test reports, and management plan.

- If the woman has not attended the STD clinic, discuss with her the usefulness of attending the STD clinic and refer her and her husband (if she agrees), to the STD clinic for appropriate assessment and management of her HIV infection and for a decision about ARV prophylaxis or treatment.

- Check whether she has been seen by the VOG at 12 weeks, 20 weeks, 32 weeks and 36 weeks.

- Ensure that the woman has had appropriate antenatal tests including syphilis serology, haemoglobin, blood grouping and Rhesus factor. Do not repeat these if already performed at the STD clinic.

- Check the management plan made by the obstetrician and venereologist and assist in the management plan.

Chapter -2

Management of HIV positive pregnant women in the STD Clinic

A pregnant woman may learn of her positive HIV status during pregnancy and referred to the STD Clinic for assessment and management of her HIV infection. On the other hand an HIV positive woman under the care of the STD clinic can become pregnant. HIV positive women should be assessed for her current status and prepare a management plan and should be referred for routine antenatal care.

All known HIV positive women should have an individualised, regularly updated, plan of care which summarises mutually agreed obstetric/HIV management for each woman, including the drug regimen and recommended mode of delivery. In all cases, management in pregnancy, including ARV prophylaxis or treatment, should be seen as only a part of the continuum of care for the mother, father and their child.

Ensure privacy and confidentiality when taking a history and examination and assure the woman/couple that the consultations will remain confidential.

Clinical evaluation & Laboratory evaluation

History

- Check whether the woman has already attended for antenatal care and encourage regular attendance at antenatal visits.
- Check their understanding of HIV/ AIDS infection, especially routes of transmission, natural history and how to prevent further spread of HIV. Check for and correct any misconceptions.
- Ask about health and well-being of other children. May need to counsel on the need to check the HIV status of the children.
- Ask about whether and to whom the woman/couple have disclosed their status. This has important implications for the management of the pregnancy and interventions to prevent MTCT.
- Obtain routine data including medical, obstetric and psychosocial history.

- Ask about symptoms and signs of HIV infection: fever, loss of weight, cough, diarrhoea, rashes, weakness, fatigue, neurological and psychological problems, including memory loss and depression, and gynaecological and urinary symptoms.

- Ask about symptoms and signs of tuberculosis (TB) and sexually transmitted infections (STIs). Ask about any problems during the pregnancy.

- Document medications, including medicines to treat symptoms, prophylaxis or treatment for opportunistic infections, and antiretroviral treatment.

- Ask about any allergies.

Physical examination

When the mother is referred to the STD clinic a clinical and immunological evaluation will be done to determine her HIV status. WHO clinical staging is given in Annex -1.

General examination. Pay attention to:

- Weight (maternal weight should be monitored and nutritional supplementation advised when necessary)
- Pallor
- Shortness of breath and tachypnoea
- Fever
- Generalized lymphadenopathy

- **Look in the mouth.**

  Oral manifestations of HIV infection are common and pregnant women are more vulnerable to dental and oral problems. You may find opportunistic infections, including: oral candidiasis, ulcers, which may be herpetic, aphthous or bacterial, viral warts. You may find specific manifestations, such as Kaposi sarcoma or oral hairy leukoplakia. You may also find a number of non-specific conditions, such as: severe dental caries, dental abscesses, gingivitis, lip depigmentation and coated tongue. Encourage HIV positive pregnant women to keep their mouths clean and to brush their teeth after meals.

- **Examine the skin.**

  Skin rashes are an important feature of HIV related illness. Commonly encountered skin manifestations are seborrhoeic dermatitis, psoriasis, pruritic papular eruption, acquired ichthyosis, herpes simplex, herpes zoster, bacterial infections and folliculitis from yeasts such as *Pytyrosporum orbiculare* and *Penicillium marneffe,* drug reactions

- **Ophthalmoscopy *:***

  check for miliary tuberculosis or CMV retinitis

- **Examine the chest:**

  for signs of TB or other chest infections.

- **Examine the abdomen:**

  for enlarged liver, spleen, and any other swellings. Determine the size of the uterus, if palpable.

Other tests and examination

- **Genital examination**

  Screen for other STI. Genital infections in particular ulcerative disease are associated with sexual transmission of HIV. Chorioamnionitis is associated with chlamydia, gonorrhoea infections and bacterial vaginosis. Chorioamnionitis may lead to premature rupture of membranes with the possibility of premature birth. Chorioamnionitis, premature rupture of membranes and premature birth have all been associated with mother to child transmission of HIV. Detection and treatment of STI/RTI are important to reduce the risk of transmitting infection to the neonate during delivery.

  When a **speculum examination** is permitted check for

  - Gonococcal and chlamydia infection
  - Vaginal candida infection (note whether it is recurring in future examinations)
  - Bacterial vaginosis
  - Trichomoniasis

  When required partner notification and treatment should take place where indicated to avoid re-infection.

- Pap smear for cytology.

  An association between CIN, cervical cancer and HIV related immune-suppression has been known for many years. If an abnormality is detected refer to the Visiting Obstetrician and Gynaecologist (VOG) for colposcopy. If CIN is present at colposcopy the colposcopy should be repeated on one or two occasions during pregnancy to ensure there are no signs of invasive cancer developing. Usually if any abnormality is detected treatment is deferred until six weeks post partum unless invasive cancer is suspected when biopsies are required. Irrespective of HIV status it is prudent to do these in the operating theatre since bleeding may be brisk.

Laboratory tests

Check whether the following tests have been conducted, and if not, explain and request them:

- Haemoglobin (anaemia is more common in HIV positive women and may need to be corrected before commencing on antiretroviral drugs. Severe anaemia, Hb< 7g/dl in turn increases the risk of an adverse maternal outcome of delivery.)
- Blood group and Rhesus factor
- Syphilis serology (VDRL and TPPA)
- Screening tests for hepatitis B & C
- Complete blood count
- Liver function tests (If ALT is > 2.5 times the upper limit of normal avoid NVP)
- Urea and creatinine (TDF may cause renal toxicity)
- Urine sugar – perform urine sugar before commencing ART
- Blood glucose levels (hyperglycemia, new-onset diabetes mellitus, exacerbation of existing diabetes mellitus, and diabetic ketoacidosis have been reported with receipt of protease inhibitor antiretroviral drugs by HIV-infected patients. In addition, pregnancy is itself a risk factor for hyperglycemia. However, the majority of data to date have not shown an increased risk of glucose intolerance with protease inhibitor therapy during pregnancy. HIV-infected women receiving PIs during pregnancy should receive standard glucose screening with a standard, 1-hour, 50-gram glucose loading test at 24 to 28 weeks of gestation. Some experts would perform earlier glucose screening in women with ongoing protease inhibitor-based therapy initiated prior to pregnancy, similar to recommendations for women with high-risk factors for glucose intolerance, such as maternal obesity, advanced maternal age, and family history of type II diabetes mellitus).

Immunological assessment

CD4 cell count:

The baseline CD4 cell count should be assessed at the initial visit and at 3, 6 months after initiation of ART. The results should be conveyed to the obstetrician.

Viral load:

If viral load testing is available, measure baseline viral load at the initial visit. Viral load should be measured again 2-6 weeks after initiating or changing antiretroviral therapy. It should then be measured monthly until undetectable levels are reached and then at least every two months. The recommended viral load monitoring in pregnancy is more frequent than in non-pregnant individuals because of the need to lower viral load as rapidly as possible to reduce the risk of MTCT.

If viral load is used to help decide mode of delivery it should be assessed at 34 -36 weeks of gestation. The viral load result should be communicated to the obstetrician by 36 weeks so that a decision could be made regarding the mode of delivery.

HIV viral load testing is not recommended as a determining factor when deciding whether to use ARV drugs for prevention of MTCT.

Screen for other infections

- hepatitis B and C infection
- toxoplasmosis
- cytomegalovirus infection
- herpes simplex virus infection

Initiating Anti Retroviral Therapy (ART):

Based on clinical and immunological evaluation determine her HIV stage using WHO clinical staging criteria (Annex -1).

Women with CD4 cell count of 350 cells/mm^3 or less or in WHO clinical stage 3 or 4 will need ART for their own health. They should be offered combination ART as recommended in this guideline. Asymptomatic women with CD4 > 350 cells/mm^3 who do not require ART for their own health should be offered prophylaxis.

Develop a ART plan for the mother. It should be sent to the Obstetrician.

Prophylaxis for opportunistic infections

Co-trimoxazole

The World Health Organization (WHO) recommends the use of cotrimoxazole for HIV-infected individuals with CD4 cell counts below 200 cells/mm^3, including pregnant women at any stage of pregnancy, since benefits to women's health outweigh the risks of birth defects.

Cotrimoxazole (fixed dose combination of sulfamethoxazole and trimethoprim) is a broad spectrum antimicrobial agent that targets a range of aerobic gram positive and gram negative organisms, fungi and protozoa. Cotrimoxazole prophylaxis prevents the opportunistic infections *Pneumocystis jerovici* pneumonia (PCP) and toxoplasmosis and improves maternal health of HIV positive women. Improvements in birth outcomes with reductions in chorioamnionitis, prematurity and neonatal mortality have been observed following the introduction of routine co-trimoxazole prophylaxis for women living with HIV who had CD4 cell counts <200 cells per mm^3 (9).

The risk to the foetus of maternal sulphonamide administration in the third trimester is outweighed by the risk of PCP to the mother. Kernicterus has not been reported where the drug was not also used in the neonatal period.

- If already on co-trimoxazoleprophylaxis continue through pregnancy. Check for drug adherence.
- If not, begin with two single tablets once a day or one double-strength tablet once a day (total daily dose is 960mg: sulfamethoxazole 800 mg + 160 mg trimethoprim) to women with CD4 cell count <200 cells per mm^3or in clinical stage 3 or 4 (10).

Treatment for opportunistic infections:

If treatment is necessary, it should be used in pregnancy, depending on the clinical stage of the patient. Treatment regimens should follow local policy guidelines. When treatment options are available, those with the lowest risk to the foetus should be used.

The obstetrician should be informed of the initial assessment giving the clinical and, immunological status of the patient and the ART plan. Thereafter the obstetrician should be informed of the progress especially in relation to clinical status, CD4 level and if available the viral load. A close and a regular liaison with the obstetric unit is required for successful management.

Women with anaemia

Women eligible for ART who have clinically significant or severe anaemia should be started on a non-AZT containing regimen while anaemia is being corrected. In such cases AZT can be replaced with TDF.

For women not eligible for ART who have clinically significant or severe aneamia could be initiated on a ART prophylaxis regimen after the anaemia has been corrected

Counselling

She will need a series of counselling sessions at the STD clinic. Some important issues to be addressed during counselling are:

- ART and adherence to treatment.
- Help her to choose the best safer infant feeding choice
- Partner disclosure
- HIV testing of her other children
- Benefits of using condoms during pregnancy to prevent re-infection with a different virus strain
- Counsel the woman/couple in a non-coercive and non-judgmental way about post partum contraception

Refer – Counselling Guide of NSACP

Chapter -3

ART eligibility for pregnant women

The criteria for initiating ART for pregnant women are the same as for non-pregnant women. The recommendations prioritize the health of women over potential risks and increased cost.

During pregnancy, ART is recommended for 2 purposes.

1. Lifelong ART for HIV infected women who need treatment for their own health which is also effective in reducing MTCT

2. ARV prophylaxis for HIV infected women not in need of treatment but is effective in reducing MTCT

Assessment of CD4 count is currently the cornerstone in determining ART eligibility and is strongly recommended for a public health approach to ART in all areas where ARV are being provided. The WHO clinical stage can provide additional information about ART eligibility. In settings where CD4 cell counts are not available, assessment of the WHO clinical stage alone can be used to determine ART eligibility.

The table given below guides the initiation of therapy when CD4 counts are available and not available

Recommendations for initiating ARV treatment in pregnant women based on clinical stage and availability of immunological markers

WHO clinical stage	CD4 count not available	CD4 count available	
		CD4≤ 350 cells/mm^3	CD4 ≥350 cells/mm^3
1	ART prophylaxis	ART	ART prophylaxis
2	ART prophylaxis	ART	ART prophylaxis
3	ART	ART	ART
4	ART	ART	ART

*Refer annex -1 for WHO clinical staging

ART regimens recommended in the current guidelines are based on WHO recommendations (2010) and selected taking into account ARV safety and efficacy data available in pregnancy.

Pregnant women eligible for ART for their own health

When is ART indicated

In pregnant women with confirmed HIV status initiation of ART for their own health is recommended when their **CD4 count is 350 cells/mm^3 or less irrespective of WHO clinical staging and for all women in WHO clinical stage 3 or 4, irrespective of the CD4 count.**

When to start ART in pregnancy

Commence ART without delay regardless of gestational age and continue throughout pregnancy, labour and delivery, breastfeeding (if breastfeeding) and thereafter[3].

What ART regimens to initiate

ART should include a potent combination of drugs, generally consisting of two nucleoside reverse transcriptase inhibitors (NRTI) as the backbone plus a non-nucleoside reverse transcriptase inhibitor (NNRTI) or a protease inhibitor with continuation of treatment post partum depending on the selected regimen[3].

I. The preferred 1st line regimen in pregnancy should comprise of AZT+3TC backbone combined with a non-nucleoside reverse transcriptase inhibitor (NNRT).

   AZT+3TC+EFV or AZT+3TC+NVP is the preferred regimen for Sri Lanka based on evidence and cost. The 1st line regimen is the same as that is recommended for non pregnant women and adults in general.

II. Alternative recommended regimens are TDF+3TC(or FTC)+ EFV or TDF+3TC(or FTC)+NVP

III. EFV should be avoided in the 1st trimester and NVP should be used instead. However NVP should be avoided in females when CD4 >250cells/mm^3. EFV can be used in the 2nd and 3rd trimesters

IV. If women present in late pregnancy, in labour or at delivery initiate ART prophylaxis for PMTCT while plans are made to start ART for the mother as soon as possible after delivery

What ARV prophylaxis to give infants of HIV-infected women receiving triple ART

Maternal ART should be coupled with the daily administration of syr NVP daily or syr AZT twice daily to the infant from birth or as soon as feasible thereafter until 4-6 weeks of age irrespective of the mode of infant feeding[3].

Pregnant women eligible for ART prophylaxis

Eligibility for ART prophylaxis

I. In pregnant women with confirmed HIV status initiation of ART as prophylaxis is recommended even when their **CD4 count is >350 cells/mm^3.**

When to start ART in pregnancy

I. start prophylaxis as early as 14 weeks of gestation (second trimester) or as soon as feasible thereafter during pregnancy, labour or delivery

What ART prophylaxis regimens to initiate

WHO recommends a choice of one of two ARV prophylaxis options [3].

Option A:

Antepartum AZT, plus sd -NVP and AZT+3TC during labour and delivery, followed by AZT+3TC tail post partum for 7 days [3].

Option B:

Antepartum triple ART

- AZT + 3TC+ Lpv/r or
- AZT + 3TC + ABC or
- AZT + 3TC+EFV or
- TDF+3TC(or FTC) + EFV

HIV infected mother not in need of ARV for her own health, but require ARV prophylaxis solely to prevent HIV infection in the infant

HIV infected pregnant women who are not in need of ARV for their own health requires effective ARV prophylaxis solely to prevent HIV infection in their infants.

Prophylaxis is based on a combined approach of prophylaxis to both the mother and the infant which also provide appropriate protection against postpartum transmission (with either maternal or infant prophylaxis) in settings where breastfeeding is the best infant feeding option.

There was consensus of opinion that the choice for the preferred option for Sri Lanka would be **option B.**

The **alternative** would be **Option A:**
Antepartum AZT, plus sd -NVP and AZT+3TC during labour and delivery, followed by AZT+3TC tail post partum for 7 days

Option B: Maternal triple ARV prophylaxis

Recommended triple prophylaxis regimen:

- AZT+3TC+LPV/r or
- AZT+3TC+EFV

Alternative triple prophylaxis regimen :

- AZT+3TC+ABC or
- TDF+3TC(or FTC)+EFV

When to start

At 14 weeks of gestation or as soon as possible thereafter

AZT+3TC+LPV/r Regimen

Antepartum	Commence AZT+3TC+LPV/r at 14 weeks gestation or soon as possible there after (one tablet twice a day)
Intrapartum	Continue AZT+3TC+LPV/r prophylaxis The drugs can be given at least 4 hours before surgery with 15 ml of water

Post partum	If breastfeeding : Maternal AZT+3TC+LPV/r to be continued until 1 week after cessation of all breast feeding
	If not breast feeding: Maternal triple ARV to be stopped just after delivery
To the newborn (regardless of infant feeding practices- breast feeding/ replacement feeding)	Daily administration of NVP syrup or AZT syrup twice daily until the infant is 4-6 weeks of age

AZT+3TC+EFV Regimen

Antepartum	Commence AZT+3TC+EFV at 14 weeks gestation or as soon as possible there after
Intrapartum	Continue AZT+3TC+EFV prophylaxis The drugs can be given at least 4 hours before surgery with 15 ml of water
Post partum	If breastfeeding: Maternal AZT+3TC+EFV to be continued until 1 week after cessation of all breast feeding.When stopping, EFV should be stopped first and continue the other two NRTIs for another 7 days to reduce the chance of NNRTI resistance
	If not breast feeding: EFV should be stopped just after delivery.Contiue the other two NRTIs for another 7 days to reduce the chance of NNRTI resistance.
To the **newborn** (regardless of infant feeding practices- breast feeding/ replacement feeding)	Daily administration of NVP syrup **or** AZT syrup twice daily until the infant is 4-6 weeks of age

Refer both mother & infant to the STD clinic

Option A: Maternal AZT+ sd NVP+ infant ARV prophylaxis

Antepartum	AZT 300mg oral twice a day from 14 weeks of gestation or as soon as possible thereafter
Intra partum	On the day planned for elective caesarean section or when active labour begins if the plan is to deliver vaginally, following drugs are given to mother NVP 200mg oral as a single dose at the onset of labour plus AZT 300mg+3TC 150mg orally(this combination comes as a single tablet) twice daily The drugs can be given at least 4 hours before surgery with 15 ml of water
Post partum	AZT 300mg +3TC 150mg (combination tablet) oral twice a day for 7 days after delivery
To the **newborn**	<u>If breast feeding</u> Syrup- NVP immediately after birth (or if not within 12 hours after delivery) and daily thereafter until 1week following cessation of breast feeding
	<u>If not breast feeding</u> sd syr. NVP + syr AZT twice a day or syr. NVP daily for 4-6 weeks

Notes:

- If maternal AZT was provided for more than 4 weeks antenatal, consideration may be given to omit both the sd NVP and AZT+3TC and continue AZT alone during labour.
- If the pregnant women who need ARV prophylaxis has severe anaemia(Hb<7g/dl) , TDF+3TC(or FTC) +EFV can be given from 14 weeks of gestation and to be continued during intrapartum period and during post partum period until 1 week after cessation of breast feeding or to be stopped just after delivery if not breast feeding.
- Refer mother to the STD Clinic before discharge from the hospital for post partum clinical & immunological assessment (CD4 count).

HIV infected pregnant mother needs to start ART for her own health (initiation during pregnancy)

In pregnant women with confirmed HIV infection, the initiation of ART for maternal health is recommended for all women with CD4 cell counts of ≤350 cells/mm3, irrespective of the WHO clinical staging, and for all women in WHO clinical stage 3 or 4, irrespective of the CD4 cell count (3). Evidence suggests that this could prevent 75% of all mothers to child transmission while also providing the best available treatment for the mother's health. Based on WHO guidelines the following are recommended.

When to start

HIV-infected pregnant women in need of ART for their own health should start ART as soon as feasible regardless of gestational age and continue throughout pregnancy, childbirth, breastfeeding (if breastfeeding), and thereafter.

What to start

The preferred first-line ART regimen should include an AZT + 3TC backbone combined with an NNRTI.

It is recommended that AZT should be a component of the antenatal ARV treatment regimen, but there may be circumstances, such as the occurrence of severe AZT related toxicity, when this is not possible.

Long term AZT may result in aneamia. Start women with severe aneamia (Hb<7 g/dl) on a non- AZT containing regimen. Aneamia has to be investigated and corrected.

Long term use of NVP is not recommended for women with CD4 counts >250 as there is an increased risk of developing skin rash or hepatotoxicity which can be severe, life threatening and in some cases fatal. NVP should be stopped in all women who develop signs and symptoms of hepatitis and grade 3 and 4 skin rash. Transaminase levels (ALT & AST) should be checked in all women who develop a skin rash while receiving NVP(refer Annex -2). Close clinical & laboratory monitoring during the first 12 weeks of therapy is recommended when NVP is initiated in women with a CD4 cell count of 250-350 cells/mm^3.

Efavirenz (EFV) should be avoided during the first trimester.

Do not prescribe a combination of Stavudine (d4T) and didanosine (ddI) during pregnancy because of the potential for lactic acidosis with prolonged use.

If an infected woman with indications for treatment is first seen very late in pregnancy (beyond 36-38 weeks of pregnancy) and treatment cannot be initiated prior to delivery, the appropriate prophylaxis regimen should be given to mother and infant. Plan to initiate ARV treatment for the woman as soon as possible.

Recommended 1st Line Regimen

- AZT + 3TC + EFV or
- AZT + 3TC + NVP

Alternative recommended regimens

- TDF +3TC (or FTC) + EFV or
- TDF + 3TC (or FTC) + NVP.

(*Note: avoid the use of EFV in the first trimester and use NVP instead*.)

For the infants born to HIV positive mothers

All infants (regardless of whether breastfeeding or receiving only replacement feeding) born to HIV-infected women receiving ART for their own health should be given daily NVP or twice-daily AZT from birth or as soon as feasible thereafter until 4 to 6 weeks of age.

HIV infected mother conceives while on ARV treatment

Women who become pregnant while receiving ART for their own HIV status should continue treatment during pregnancy. Counsel women (and their husbands, if appropriate)on the benefits of ART, importance of adherence to treatment and follow up. Emphasize that treatment should be continued during pregnancy, and during postnatal period, whether or not the mother decides to breastfeed. Stress that stopping treatment will result in an increase in viral load, with decline in immune status and disease progression, and increase in risk of MTCT of HIV.

It is recommended that Efevirenz (EFV) should be avoided during the first trimester. If women who have continued EFV and present in the second trimester it could be continued given that the high risk exposure (neural tube close at approximately 28 days) has already occurred (3).

If EFV needs to be substituted, the preferred drug is Nevarapine (NVP). Pharmacokinetic data indicate that when NVP is substituted for EFV, women should be immediately commenced on NVP twice daily as the escalation dosing of NVP is associated with sub therapeutic NVP levels (3). Lopinavir/ritonovir is also recommended as an alternative substitute drug (3).

ARV treatment with the full regimen should be continued during labour and infants born to women receiving ARV treatment should be given NVP daily or AZT twice daily for 4-6 weeks irrespective of the mode of infant feeding.

Pregnant women who are receiving regimens containing NVP should continue therapy regardless of CD4 count. An increased risk of hepatotoxicity has not been seen in women who continue NVP based combination therapy and has achieved an increase in the immune status. However, when initiating NVP with a CD4 count of $>$ 250 cells/mm^3 hepatatic toxicity should be a concern.

It is recommended that AZT should be a component of the antenatal ARV treatment regimen, but women already receiving an ARV regimen which does not contain AZT, but who have achieved undetectable viral levels, should continue the non-AZT containing regimen.

Women receiving TDF are recommended to continue the regime during pregnancy. The benefits of continuing treatment are likely to exceed the risks to the foetus from a potential association between TDF and abnormal bone development.

Women receiving ART and planning to become pregnant

Preconception counselling should cover the risk of infant HIV infection, risk factors for MTCT, potential drug toxicity to mother and infant, safer sexual practices to prevent other STI.

Women who are planning to become pregnant and is receiving EFV, it should be substituted with NVP before conception. Pharmacokinetic data indicate that when NVP is substituted for EFV, women should be immediately commenced on NVP twice daily as the escalation dosing of NVP is associated with sub therapeutic NVP levels (3). Alternatively a triple NRTI or PI based regimen could be used.

HIV infected mother presents in labour and has not taken any ARV during ante partum period

Option A :Maternal AZT plus infant ARV prophylaxis
For mother-

Intrapartum (while in labour)	Give sd-NVP as soon as possible during labour and AZT+3TC oral twice a day
Postpartum	Continue AZT+3TC twice daily tail for 7 days.

Refer the mother and baby to the STD clinic for assessment

- Clinical and immunological assessment will be done at the STD clinic.

Management of mother & infant

if mother's CD4 >350	At the moment the mother does not require ART for her own health therefore stop ART tail after 7 days.
To the newborn	if breast feeding: syrup NVP to be started within 12 hours after delivery and daily there after until 1week following cessation of breast feeding or 4-6 weeks if breastfeeding ceases before 6 weeks
	Infant if not breastfeeding : Daily administration of NVP syrup or single dose NVP followed by AZT syrup twice daily until the infant is 4-6 weeks of age

Option B :Maternal triple ARV prophylaxis – only for breastfeeding mothers

Intrapartum	Triple ARV prophylaxis during labour until 1 week after all exposure to breast milk has ended • AZT+3TC+EFV or • AZT+3TC+LPV/r or • TDF+3TC(or FTC)+EFV If on EFV regimen, EFV should be stopped first and continue the two NRTIs for another 7 days to reduce the chance of NNRTI resistance
To the newborn (regardless of infant feeding practices- breast feeding/ replacement feeding	Daily administration of NVP syrup to the infant from birth until 6 weeks of age

- if CD4 < 350 cells/mm ^{3}then mother requires ART for her own health and would require to commence on an appropriate life long ART triple regimen

Women diagnosed with HIV infection immediately postpartum

Option A : Infant ARV prophylaxis

To the newborn	if breast feeding: syrup NVP* within 12 hours after delivery and daily thereafter until 1week following cessation of breast feeding or 4-6 weeks if breastfeeding ceases before 6 weeks
	If not breast feeding: sd syr. NVP+ syr AZT twice a day or daily syr. NVP daily from birth until 4-6 weeks of age

Notes:

- Refer to STD Clinic for clinical and immunological assessment
- Women who are eligible for ARV for their own health should be started on appropriate life long ARV regimen .

Option B : Maternal triple ARV prophylaxis, relevant only if breastfeeding

Mother	Triple ARV prophylaxis until 1 week after cessation of breast feeding or 4-6 weeks if breast feeding ceases before 6 weeks (always continue for 1 week after all exposure to breast milk has ended)
Infant	Daily NVP from birth until 6 weeks of age (if breast feeding the infant should continue daily NVP until the mother has received at least 6 weeks of ART before discontinuing infant prophylaxis)

Notes:

- Refer to STD Clinic for clinical and immunological assessment
- Women who are eligible for ARV for their own health should not discontinue their triple ARV regimen but continue on an appropriate lifelong regimen.

Threatened pre term delivery with +/- rupture of membranes

A vaginal swab should be taken for bacteriology if gestation is < 34 weeks and intra muscular steroids should be started aiming for two doses 24 hours apart for fetal lung maturation. If the mother is ART naïve, take baseline blood samples for CD4 count and other haematological and biochemical tests. Decide on the regimen according to the CD4 count. The timing of caesarean section should be taken after balancing the risk of mother to child transmission of HIV with the risk of severe prematurity (7).

Mother who has not been on ART presents with ruptured membranes

She should be given the single NVP dose immediately and AZT + 3TC oral every 12 hours and continue for 7 days post partum. After commencing on ARV proceed to a caesarean section after 2-4 hours (7).

After partus refer mother to the STD Clinic for clinical and immunological assessment.

Women exposed to ARV in previous pregnancies

Women previously exposed to an ARV prophylaxis regimen for PMTCT in an earlier pregnancy and who are not in need of treatment for their own health even now, the same ARV prophylaxis given previously could be given in the current pregnancy.

HIV infected pregnant women with tuberculosis

All HIV-infected women should be assessed for TB at each visit, and those presenting with a cough, fever, night sweats and weight loss should be evaluated for TB and started on TB treatment when indicated.

HIV-infected pregnant women with active TB should start ART, irrespective of the CD4 cell count. The TB treatment should be started first, and followed by ART as soon as clinically possible (within 8 weeks after the start of TB treatment).

Drug interactions between rifampicin and some of the antiretroviral drugs (i.e. the boosted protease inhibitors) complicate simultaneous treatment of the two diseases. As for all adults, EFV is the preferred NNRTI for HIV/TB co-infected pregnant women (starting after the first trimester). For those HIV/TB co-infected women not able to tolerate EFV, an NVP-based regimen or a triple NRTI regimen (e.g. AZT + 3TC +ABC or AZT + 3TC + TDF) can be used. In the presence of rifampicin, no lead-in dose of NVP is required.

HIV infected pregnant women with hepatitis B or C infection

HIV/ Hepatitis B co-infection:

Women who require treatment for HBV disease

ART should be started in all pregnant women co-infected with HIV and HBV when treatment is required for the HBV infection, irrespective of the CD4 cell count or the WHO clinical stage (3).
They should receive a ART regimen containing TDF and 3TC (or FTC).

An elevation in hepatic enzymes following the initiation of ART may occur because of an immune-mediated flare in HBV disease secondary to immune reconstitution with therapy, particularly in women with low CD4 cell counts .

HBV infection may also increase the risk of hepatotoxicity with certain antiretroviral drugs, specifically NVP and protease inhibitors. Thereafter women should be counselled about signs and symptoms of liver toxicity.

Women who do not require treatment for HBV disease

Women who do not require treatment for HBV and not require ART for their own HIV status, when commenced on triple therapy (Option B), may experience hepatic flare when the triple therapy is stopped.

Option A (maternal AZT and extended infant prophylaxis), which does not contain drugs with anti-HBV activity, may therefore be preferred if HBV treatment is not needed and lifelong ART is not planned.

HIV/ Hepatitis C co-infection:

HCV is also increasingly recognized as an important co-infection with HIV. Pregnant women with co-infection, should receive triple ART or ARV prophylaxis according to the general recommendations for HIV-infected pregnant women.

Women on ART require careful clinical and laboratory monitoring, irrespective of the ARV regimens.

Chapter - 4

Monitoring of pregnant women receiving ART for their own health

Clinical evaluation as for non pregnant women

Hemoglobin concentration should be monitored to exclude an AZT associated anemia, transaminase levels for potential risk of hepatic toxicity, lactate levels to detect early lactic acidosis. If PIs are given it is of particular importance to monitor blood glucose levels closely.

Haematological and biochemistry parameters should be monitored as appropriate to the ART regimen used

The monitoring of immunological status through measurement of CD4 cell count is not essential (3). However, it should be noted that the absolute CD4 count decreases during pregnancy because of pregnancy related haemodilution. After delivery body fluid changes normalize to the non pregnant status and CD4 levels may rise by 50-100 cells/mm3 (3). A decrease in the absolute CD4 count of a pregnant woman from her CD4 values before pregnancy should therefore be interpreted with caution.

If available, viral load testing is useful for monitoring response to treatment.

Monitoring of pregnant women receiving ART as prophylaxis

Clinical evaluation as for non pregnant women

Hemoglobin concentration should be monitored to exclude an AZT associated anemia, transaminase levels for potential risk of hepatic toxicity, lactate levels to detect early lactic acidosis. If PIs are given it is of particular importance to monitor blood glucose levels closely.

Haematological and biochemistry parameters should be monitored as appropriate to the ART regimen used

Immunological status should be monitored through the measurement of CD4 cell counts every 6 months in order to determine possible need for treatment.

During monitoring if women receiving prophylaxis meets eligible criteria for treatment, she should be initiated on triple ART.

Chapter - 5

Simplified infant NVP dosing recommendations

Dosing for NVP and AZT depends on the age and weight of the infant and the dosing schedule is given below:

Infant age	NVP daily dose
Birth* to 6 weeks • Birth weight 2000g-2499g • Birth weight > 2500g	10 mg once daily 15 mg once daily
>6 weeks to 6 months	20 mg once daily
>6 months to 9 months	30 mg once daily
> 9 months to end of breast feeding	40 mg once daily

*Notes:
Low birth weight babies should receive NVP mg/kg dosing, starting with 2 mg/kg per day

Simplified infant AZT dosing recommendations

Infant age	AZT dosing
Birth* to 6 weeks • Birth weight 2000g-2499g • Birth weight > 2500g	10 mg twice daily 15 mg twice daily

*Notes:
Low birth weight babies should receive AZT mg/kg dosing.

Infants born before 35 weeks of gestation should start on AZT 2 mg/kg orally every 12 hourly, increased to every 8 hours at 2 week of age (neonates born at≥30 weeks of gestational age) or at 4 weeks of age (neonates born at < 30 weeks gestational age)

Chapter - 6

Post- partum care (includes care in the institution and the field)

- Physical assessment in the postpartum period should follow routine guidelines. Examine women within 12 hours following delivery.

- Be aware of signs of infection following delivery. Like uninfected women, HIV positive women are also vulnerable to infection following delivery and retained blood and placental tissues. Postpartum uterine infection is a common and potentially life-threatening condition, and early detection and effective treatment are important measures to prevent complications.

- Monitor for secondary postpartum haemorrhage

- Manage infected tears or episiotomy

- Refer women who have urinary incontinence or vaginal prolapsed

- Advice women to come back to the same institution if LSCS wound infection is observed

- When they are discharged from the healthcare facility women should be advised to return to the clinic or inform the PHM if they notice symptoms such as fever, lower abdominal pain, burning with urination, foul smelling discharge, abnormal bleeding, cough, shortness of breath, calf pain (increasing on walking), diarrhoea, unusual / abnormal behaviour

- Give the mother information on care of the perineum and breasts. Women living with HIV require special care to reduce breast engorgement, mitigate pain and avoid mastitis

- Women who choose to breast feed should be counselled to avoid breast engorgement which could lead to mastitis, since inflammation is associated with increased risk of HIV transmission. She should be advised to seek immediate medical care if breast engorgement is associated with fever and pain

- Instruct her about the safe disposal of lochia and blood-stained sanitary wear or other potential infectious materials.

- If contraception has not been discussed before delivery it should be done during the early postpartum period (see below).

Chapter - 7

Contraception counseling for HIV positive post-partum women

HIV positive women and men should be empowered to take informed choices relating to their reproductive lives, free of coercion. When selecting a family planning method, when only one partner is HIV positive the potential risk of transmitting HIV to the uninfected partner as well as the possibility of infection with other STI should be taken into account. When both partners are living with HIV, possible re-infection with other HIV strains has to be considered.

The same contraceptive options which are available to uninfected couples are available to HIV infected couples. Most methods are considered to be safe and effective for HIV infected women.

Recent WHO publications indicate that there are no restrictions on the use of **hormonal contraception** by HIV positive women who are not on ART. However, use of OCP containing high dose oestrogen is recommended when women are on ART. Rifampicin used in tuberculosis treatment may decrease the effectiveness of oral contraceptives. Long-acting injectables (DMPA) can be safely used in all HIV positive women including those on ART.

Intra uterine contraceptive devices (IUD) can be used in case of HIV infection, except for women with AIDS and not on antiretroviral therapy.

Female sterilization or **male sterilization** is often the most commonly used family planning method in developing countries.

Emergency contraception can help to prevent unintended pregnancies. It should not be used as a substitute to regular contraception. Women on ART should be given double the normal dose, ie 2 tablets within 72 hours and 2 tablets 24 hours later.

Protection against both unintended pregnancy and STI is referred to as “dual protection”. Condoms are the mainstay of dual protection, alone or in combination with another method.

During counselling for a contraceptive plan;

- Introduce yourself and put them at their ease.
- Encourage the woman to bring her husband for contraception counselling as it is best that they both decide on a suitable method.
- Discuss their thoughts about having more children.

- Ensure that they have the information they need about their own future prognosis, availability of HIV treatment, and risk of transmission of HIV to the baby in future pregnancies.

- Listen carefully to the couples' views. Correct any factual misunderstandings.

- If the husband is HIV negative emphasize the importance of using condoms to protect him from HIV infection.

- If the husband is HIV positive, explain that although they both have HIV they could become infected with another strain of HIV and so it is sensible to use condoms to prevent pregnancy and infection.

- Discuss where they could obtain condoms. Demonstrate how to use condoms correctly. Let both members of the couple handle a condom. Provide them with condoms and an information leaflet.

- If they have decided that they want no more children, discuss vasectomy and female sterilization.

- If they are uncertain about having more children in future, explain that waiting at least 2 years after the last birth to become pregnant again is healthiest for mother and child. Discuss the need of a planned pregnancy.

- Discuss other temporary methods of contraception.

- Ask the woman if she has had infant feeding counselling and how she is planning to feed her baby. If she has not yet been counselled, counsel or refer for counselling.

- Explain that if not breastfeeding, she could get pregnant again as soon as even 4 weeks after childbirth. It is necessary to consider a family planning method early.

- If breastfeeding, explain that exclusive breastfeeding is very important during first six months for the health of her child and to prevent pregnancy. During exclusive breastfeeding no mixed feeding is allowed as mixed feeding will increase the risk of transmission of HIV to the baby. Breastfeeding will provide protection against pregnancy for up to 6 months but only if the mother is breastfeeding often, day and night, and giving no other food or liquids.

- Discuss about ARV and contraception use. Generally, anti-retrovirals and contraceptives do not conflict, however:

    - Rifampicin (used for TB treatment) lowers effectiveness of contraceptive pills and implants. Other antibiotics do not have this problem.

    - Some antiretrovirals (protease inhibitors and NNRTIs*) *may* lower effectiveness of hormonal methods. Correct use of the method and use of condoms can make up for any decrease in contraceptive effectiveness.

    - Some women may have other medical conditions that affect choice of a method

- While breastfeeding non-hormonal methods such as condoms or IUD are suitable. The IUD can be inserted after 6 weeks.

- Progestogen-only methods can also be used while breastfeeding, starting 6 weeks after childbirth (long-acting DMPA injectables, subdermal implants).

- If not breastfeeding, she can use any method. She can start any progestogen-only methods immediately (the mini-pill, long-acting injectables, implants), or the oral combined contraception pill after 3 weeks.

Chapter - 8

Diagnosis of HIV infection in the infant

Early diagnosis of HIV infection in the infant is important. It reduces the anxiety of uncertainty for the parents, allows early, life-saving antiretroviral treatment for the child if infected, and assists in decisions about infant feeding.

The definitive diagnosis of HIV infection at any age requires diagnostic testing to confirm the presence of HIV infection. Children who are breastfed have an ongoing risk for acquiring HIV infection. Therefore HIV infection can be excluded only after breastfeeding is stopped for more than 6 weeks prior to the test. A positive virology test at any age indicates HIV infection. However, in the event of a negative test in breastfed children the test should be repeated 6 weeks after cessation of complete breastfeeding.

Diagnosis of HIV infection in children aged < 18 months

Assays that detect the virus or its components are eg HIV DNA /RNA- PCR test or ultra sensitive p24 antigen test. A Virology test is required to diagnose HIV infection in infants less than 18 months of age.

Symptomatic children aged < 18 months

Where access to virologic testing is not yet available a presumptive diagnosis of severe HIV disease can be made in infants and children who are less than 18 months of age with a positive HIV serological test (in either in the mother or child) and who have specific symptoms suggestive of HIV infection.

Diagnosis of HIV infection in children aged > 18 months

HIV antibody test is used in diagnosing children > 18 months of age. An antibody test beyond 18 months of age is diagnostic of HIV infection in the baby. Serological tests for the diagnosis of paediatric infection will be done according to the national testing protocols.

Antibody testing identifies HIV antibodies generated as part of the immune response to HIV infection. Diagnosis of HIV infection in infants is difficult because maternal HIV antibodies cross the placenta. Maternal antibodies are expected to disappear in 18 months. Therefore an HIV antibody test will be positive even if the child is not infected up till 18 months of age. Maternal antibodies disappear over time, with 74% of uninfected infants becoming antibody negative by 9 months of age and 96% by 12 months; all are negative by 18 months of age.[i] HIV exposed infants who have a positive antibody test result at 9 or 12 months of age are likely to be infected, but a definitive diagnosis of HIV infection using antibody testing can be made only at 18 months or later.

Guidelines for diagnosis

- Examine the infant. Clinical examination of the HIV exposed infant may show signs suggestive of HIV infection, including failure to thrive, generalized lymphadenopathy, hepatosplenomegaly, chronic dermatitis, oral candidiasis, and recurrent pneumonia or diarrhoea. Some babies may be HIV infected but asymptomatic.

- Since virologic tests are not available in Sri Lanka at present, test all infants of an HIV positive mother at 9 months using an EIA.

Negative test result

- The baby is not infected, if the child has not been breast-fed in the previous 6 weeks. Stop cotrimoxazole prophylaxis and advise the mother not to put the baby to the breast.

- If the child is breast-fed and the result is negative the child is probably uninfected but another test should be performed 6 weeks after the baby ceases breastfeeding. Continue cotrimoxazole prophylaxis. Counsel the mother to continue to breastfeed unless it is affordable, feasible, acceptable, safe, and sustainable to provide infant formula.

Positive test result

- Reassure the parents that this does not mean that the child is definitely infected because there may still be maternal antibodies present. Test the child again at 12 months, and if still positive test again at 18 months.[ii] After 18 months if antibody test is positive that confirms the diagnosis of HIV infection in the child.

If HIV DNA/RNA- PCR is available test the child at 6 weeks.

- If test is positive infant is HIV infected. Confirm result with second virologic test as early as possible. Refer the child to STD Clinic for ART. Continue cotrimoxazole prophylaxis. If breastfed, continue breastfeeding as long as possible.

- If the test is negative, and the child has not been breast-fed in the previous 6 weeks then the baby is not infected. Confirm result with second PCR after 6 weeks. If both tests are negative the baby is uninfected. Stop co-trimoxazole prophylaxis and advise the mother not to put the baby to the breast.

- If the child is breast-fed and the result is negative the child is probably uninfected but another virologic test should be performed at 6 weeks after the baby ceases breastfeeding. Continue co-trimoxazole prophylaxis. Counsel the mother to continue to breastfeed unless it is affordable, feasible, acceptable, safe, and sustainable to provide infant formula.

Chapter - 9

Counselling and support for safer infant feeding

Safer infant feeding practices by mothers known to be HIV infected should support the greatest likelihood of HIV free survival of their children and at the same time not harm the health of mothers. In order to achieve this, prioritization of prevention of HIV transmission needs to be balanced with meeting the nutritional requirements and protection of infants against non-HIV morbidity and mortality.

Breast-feeding by any woman confers known benefits to the infant. Children who do not breast feed are more likely to die from diarrhea, malnutrition or pneumonia. Breast feeding substantially reduces the risk of infant mortality from other infectious diseases and malnutrition on average by 4–6 folds in the first six months and close to twofold in the second six months of life. The risks of not breast feeding range from higher mortality in settings with unpredictable water supply or unsafe sanitation to compromising confidentiality regarding HIV status.

Infants born to HIV infected mothers may escape HIV infection during pregnancy and delivery but remain vulnerable to transmission through breastfeeding. The cumulative risk of postnatal transmission is 12%–16% with 18–24 months of breastfeeding. In the absence of interventions, the overall risk of MTCT of HIV in utero, peripartum and via breast milk is 30-45% with transmission through breast milk accounting for a substantial proportion of these infant HIV infections. The only method known to completely eliminate breastfeeding associated HIV transmission is to avoid breastfeeding. This is recommended in settings in which infant replacement feeding is acceptable, feasible, affordable, sustainable and safe (AFASS) where clean water is widely available, hygiene and sanitation conditions are good and death due to diarrheal and other infectious conditions are relatively uncommon (10). However, this approach may not be feasible or safe in our country due to certain reasons including low acceptability due to cultural norms associated with breastfeeding.

For the first time there is evidence that giving ART prophylaxis to the mother or child throughout the breastfeeding period would substantially reduce MTCT (10). Therefore mothers known to be HIV infected should be supported to either :

- Breastfeed and receive ARV interventions

or

- Avoid all breastfeeding

Infant feeding in the context of HIV is complex because of the major influence that feeding practices exerts on child survival. In Sri Lanka, the most appropriate infant feeding option for an HIV positive mother depends on her individual circumstances, including her health status and the local situation, the health services available and the counselling and support she is likely to receive. The expectant mother should be counseled by a counselor who has adequate knowledge on the safer feeding options that are currently recommended. The counselor has to balance the risk of infants acquiring HIV through breast milk with the higher risk of death from causes other than HIV, in particular malnutrition and serious illness such as diarrhea among non-breastfed infants. Therefore counseling is preferably done by a Venereologist or a Pediatrician who is trained in Lactation Management to assist the mother in arriving at a decision.

The following should be considered during counselling :

- Some babies may escape infection although born to HIV infected mothers. These babies are at risk of being infected through breastfeeding.
- There is now enough evidence that triple ART given during prenatal period for either as prophylaxis or for mother's own health with safer delivery practices and safer feeding practices has substantially lowered MTCT of HIV.
- ART is available for antenatal mothers free of charge through government health services
- Exclusive breast feeding (EBF) for 6 months have unlimited benefits to any baby and is the recommendation to all pregnant mothers in Sri Lanka.

The counsellor should support the HIV positive mother to decide on how these very specific conditions are met and support the mother to decide on the best feeding option for her own baby which is sustainable and safe in her individual socio economic and cultural circumstances

When counselling a mother who decides not to breastfeed her HIV uninfected infant or infant's whose HIV status is unknown, the following are recommended.

a) Safe water and sanitation are assured at the house hold level and in the community
b) The mother or other caregiver can reliably provide sufficient infant formula milk to support normal growth and development of the infant
c) The mother or caregiver can prepare it cleanly and frequently enough so that it is safe and carries no risk of diarrhoea and malnutrition
d) The Mother or caregiver can in the first six months exclusively give infant formula milk and not give any kind of mixed feeds
e) The family is supportive of this practice
f) The Mother or caregiver can access health care that offers comprehensive child health services

It is vital to assure that formula fed infants should receive 4-6 weeks of NVP prophylaxis daily or single dose NVP plus 4-6 weeks of zidovudine

If the above conditions cannot be sufficed; and the mother wishes to breast feed then the following is recommended:

- It should be exclusive breastfeeding through age 6 months.
- No mixed feeding should be allowed during the first 6 months as mixed feeding increases the risk of HIV transmission.
- Breastfeeding should be stopped only once a nutritionally adequate and safe diet without breast milk can be provided.
- EBF should be followed by continued breastfeeding with addition of complementary foods through age 12 months with gradual weaning over 1 month.
- when mothers decide to stop breastfeeding at any time, infants should be provided with safe and adequate replacement feeds to enable normal growth and development
- Stopping breast feeding abruptly is not advisable
- The mother should be covered by ART as treatment for her or as prophylaxis.
- Infant prophylaxis for 4-6 weeks is recommended irrespective of the mode of feeding.

There are two choices for breast feeding mothers on ART Prophylaxis and infant treatment.

1) If she receives AZT as prophylaxis, daily NVP is recommended for the infant from birth until one week after the end of the breastfeeding period or
2) If a woman received a triple drug regimen during pregnancy, she should continue the same regimen until one week after ending breastfeeding period. In this situation the infant needs ART only for 4-6 weeks.

If the mother decides to breastfeed it is very important to support the mother to breastfeed. She should be well trained on proper positioning and attachment of the baby to the breast in order to avoid difficulties during breastfeeding. A health care worker who is trained on lactation councelling should support such a mother.

Whatever the feeding decision, health services should follow-up all HIV-exposed infants, and continue to offer infant feeding counselling and support, particularly at key points when feeding decisions may be reconsidered, such as the time of early infant diagnosis and at six months of age.

Where mother and infant are both HIV positive, breastfeeding should be encouraged for at least the first two years of life in line with recommendations for the general population. **The message to health care workers is that breastfeeding is the best for every baby. Babies born to HIV positive mothers should be breastfed if AFASS is not available.**

Recommendation for infant feeding practices in the first 12 months of life

Infants are HIV uninfected or unknown HIV status

Mothers could consider replacement feeding if AFASS is possible. If this is not possible, then they should exclusively breastfeed their infants for the first 6 months of life, after that introduce appropriate complementary foods and continue breastfeeding for the first 12 months of life. Breastfeeding should stop once the diet is nutritionally adequate and safe without breast milk. There should not be any kind of mixed feeding in the first 6 months.

Infants and young children with known HIV infection

Mothers are strongly encouraged to exclusively breastfeed for the first 6 months of life and continue breastfeeding as recommended for the general population that is up to 2 years and beyond.

A pregnant woman living with HIV needs help to decide how to feed her baby. In a counselling session on HIV and infant feeding the counsellor has three main tasks:

- to convey information
- to help a mother to assess the risks for her baby in her own situation
- to give the mother confidence in her choices

During counselling the idea of weighing up risks can be difficult for a woman to understand. Her choice is not a simple one of deciding whether to breast feed or not. Her decision will be influenced by many factors. It is therefore important that the woman makes the decision and not the counsellor. It is important that the counsellor have adequate up to date evidence based knowledge to convey correct information.

A woman does not need to make all decisions about how she will feed her baby at the first counselling session. While she is pregnant she needs to decide whether she will breastfeed or not. She does not need information about safe weaning foods until the baby is older. However these points should be mentioned so that she understands that they are important points to ask about later.

Chapter - 10

Co-trimoxazole prophylaxis for the infant

Pneumocystis jiroveci pneumonia (PCP) has been identified as the leading cause of death in infants with HIV infection in many studies in all settings. The incidence peaks in the first six months of life. Co-trimoxaziole is effective at preventing PCP and other infections (10).

- Because of difficulty in diagnosing HIV infection in infants, start co-trimoxazole prophylaxis for all HIV-exposed children born to mothers living with HIV at 4–6 weeks after birth. Continue until HIV infection has been excluded and the infant is no longer at risk of acquiring HIV through breastfeeding.

- Do not prescribe co-trimoxazole to children with a history of severe adverse reaction to co-trimoxazole or other sulfa drugs and children with glucose-6-phosphate dehydrogenase deficiency.

Co-trimoxazole formulations and dosage for infants and children living with HIV or exposed to HIV (according to age)

Recommended daily dose	Suspension (5 mls of syrup 200 mgs / 40 mg	Child tablet (100 / 20 mgs)	Single strength adult tablet (400 mgs / 80 mgs)	Double strength adult tablet (800mgs / 160 mgs)
< 6 months 100 mgs sulfamethoxazole / 20 mgs trimethoprim	2.5 mls	One tablet	¼ tablet – possibly mixed with feeding (only if suspension not available)	-
6 months – 5 years 200 mgs sulfamethoxazole / 40 mgs trimethoprim	5 mls	Two tablets		
6 – 14 years 400 mgs sulfamethoxazole / 80 mgs trimethoprim	10 mls	Four tablets	One tablet	Half tablet
> 14 years 800 mgs sulfamethoxazole / 160 mgs trimethoprim			Two tablets	One tablet
Frequency once a day				

Reference –(11)

Chapter - 11

Management of HIV infection in children

Children diagnosed with HIV infection require clinical and immunological assessment to allow decisions about their need to start on ARV treatment and diagnosis of any opportunistic infections, including tuberculosis.

Experience in several settings has shown that with careful preparation, monitoring and support, children with HIV infection are able to benefit greatly from treatment with ARVs. It is important to evaluate the response to ARVs and manage any drug toxicity carefully.

Immune reconstitution inflammatory syndrome (IRIS) is a collection of signs and symptoms resulting from the ability to mount an immune response to antigens or organisms associated with immune recovery while on ART. It manifests as an unexpected deterioration of clinical status soon after starting ARV treatment and opportunistic infections may be unmasked, such as TB, hepatitis B and C, and cryptococcal disease. IRIS may require management with prednisone.

Monitoring for failure of first-line ARV treatment is important and some children will require a switch to second-line ARV drugs.

Refer WHO clinical guidelines (2010).

Chapter - 12

Antiretroviral drugs in pregnancy

FDA pregnancy classification of ARV

A - harmlessness through studies on the human being – **no ART drugs**

B - Animal studies have revealed no evidence of harm to the fetus; however, there are no adequate and well controlled studies in pregnant women – **didanosine, emtricitabine, tenofovir, etravirine, nevirapine, ritonavir,**

C – Animal studies have shown an adverse effect and there are no adequate and well controlled studies in pregnant women. Use in pregnancy should occur only after careful benefit/risk appraisal – **all drugs not mentioned in category B fall in to C.**

D – Adequate well controlled or observational studies in pregnant women have demonstrated a risk for the fetus. Nevertheless, the benefits of therapy may outweigh the potential risk –**efavirenz**

Side effects & toxicities of treatment

The use of all potent medication is associated with side effects and toxicities and ARV medication is no exception. Some side effects & toxicities associated with ART are commoner during pregnancy.

The rash associated with the use of NNRTI, NVP in particular is usually a mild toxicity that occurs shortly after the start of treatment. In a subset of patients, however, NNRTI- associated rashes are severe enough to warrant withdrawal of NNRTI. Another toxicity that often follow ART is hepatic toxicity. Management of these toxicities is given in Annex .

Perinatal exposure

Long term side effects of perinatal exposure to ART can be considered in four main - categories: teratogenic, carcinogenic, developmental and mitochondrial

Teratogenecity is most likely to be a problem with first trimester exposure to ART. All currently licensed antiretroviral therapies (except efavirenz which has recently been classified D) are classified either B or C for use in pregnancy.

NRTI drugs are known to induce mitochondrial dysfunction. Clinical disorders linked to mitochondrial toxicity include neuropathy, myopathy, cardiomyopathy, pancreatitis, hepatic steatosis and lactic acidosis. Among these disorders hepatic steatosis and lactic acidosis may have a female preponderance. These syndromes have similarities to rare but life threatening syndromes (HELLP syndrome) that occur during pregnancy, most often during the third trimester:

There are conflicting data regarding that mitochondrial dysfunction might develop in infants with in- utero exposure to NRTI drugs. Data at present are conflicting.

Zidovudine (ZDV/AZT)

AZT is a nucleoside reverse transcriptase inhibitor (NRTI) that inhibits HIV-1 reverse transcription by acting as a DNA chain terminator. AZT was the first antiretroviral drug approved for treatment of HIV infection.

Toxicity and side effects: reversible bone marrow toxicity (anaemia or leucopenia) is the major dose limiting toxicity of AZT treatment. Fatigue, rash, severe muscle pain and inflammation (myopathy), nausea, insomnia and headache are also associated with AZT therapy. Side effects are generally more severe and frequent in patients with advanced disease. Enlarged fatty liver and lactic acidosis has been reported in patients taking AZT. Patients with risk factors for liver disease should be followed very closely. Lactic acidosis should be considered when patients develop tachypnoea, dyspnoea or decreased bicarbonate levels.

Pregnancy & breast feeding

Category C.

Advocated for pregnant women beyond first trimester to prevent vertical transmission.

Infants exposed to zidovudine may exert a small but significant durable negative effect on hematopoiesis up to the age of 18 months. .

Drug interactions*:* with bone marrow suppressive agents and cytotoxic agents dapsone, flucytosine, vincristine, vinblastin may increase the hematologic toxicity.

Ganciclovir : Using gancicolvir with AZT increases the risk of hematologic toxicities and should be administered with caution

Stavudine (*d4T)* : should not be used with AZT because of potential antagonism.

Lamivudine (3TC)

3TC is a nucleoside reverse transcriptase inhibitor (NRTI) that inhibits HIV-1 reverse transmcription by acting as a DNA chain terminator. It crosses the placenta efficiently and is excreted in breast milk.

Toxicity and side effects: headache, nausea, malaise, fatigue, diarrhea, neuropathy, neutropenia and anaemia have been reported.

Pregnancy& lactation
Category C.
Lamivudine is well tolerated and has pharmacokinetic properties similar to those of non pregnant women.

Nevirapine (NVP)

Nevirapine is a non-nucleoside reverse transcriptase inhibitor (NNRTI) that binds directly to HIV-1 reverse transcriptase, slowing the rate of viral DNA synthesis and thereby inhibiting viral replication. NVP is rapidly absorbed when given orally to adults, and has a long elimination half life t ½ of approximately 40 hours. It is even longer in pregnancy (66 hours). NVP cross the placenta efficiently after a single oral 200mg dose to the mother at the onset of labour. In infants median t ½ ranges from 45-72 hours for elimination of the maternal NVP and from 37-46 hours for the elimination of a single 2mg/kg neonatal dose.

Patients receiving NVP should be closely monitored for adverse effects. The most frequent adverse effect of NVP is skin rash which occurs in about 16% of individuals who start long term therapy. The risk of skin rash from NVP is greatest during the first six weeks of treatment and diminishes thereafter. Most cases of rash are mild to moderate and either subsides spontaneously or is manageable without discontinuation of therapy. Guidelines for the management of the rash which have been developed based on clinical presentations of the rash and constitutional findings (Refer pg).

Toxicity and side effects: NVP when given along with NRTI (eg ZDV, ddI, d4T) has been associated with hepatotoxicity. The most common laboratory abnormality observed during nevirapine therapy is an elevation of hepatic transaminase enzyme levels. Cases of overt hepatitis some of them fatal have also been associated with NVP and NRTI treatment. The majority of cases of hepatitis occurred within the first eight weeks of treatment. Patients should be intensively monitored during the first 12 weeks of initiation of therapy and frequently thereafter. NVP should be stopped and never readministered in patients with AST or ALT greater than twice the upper limit of normal when associated with hypersensitivity reactions or hepatitis.

When pregnant women require ART for their own health and if NVP is included in a long term ART regimen initiate as follows. The recommended dose is 200mg once daily for the first 14 days of therapy followed by the standard dose of 200mg twice daily. This "lead-in" period may reduce the incidence of drug related rash. NVP may be taken with or without food.

Resistance

NVP resistance emerges rapidly with universally when NVP is used as monotherapy or in sub optimal combinations.

Pregnancy& lactation

Category C.

Do not initiate NVP based HAART in women with a CD4 >250 due to hepatotoxicity. It does not apply to the single perinatal dose which is highly effective for preventing transmission.

Efavirenz (EFV)

EFV is a non- nucleoside reverse transcriptase inhibitor (NNRTI) binds to HIV-1 reverse transcriptase and inhibits its activity.

Toxicity and side effects :the most commonly reported adverse events are central nervous system related - dizziness, sleep disturbances, nightmares, hallucinations and confusion. Avoid in patients with a history of psychiatric symptoms or suicidal attempts. The rash is generally mild and self resolving and usually does not require discontinuation of therapy. Grade1 or 2 maculo-papular skin eruptions have been reported. Elevated transaminase levels and lipid levels have been reported.

Teratogenic effects have been observed in primates at EFV exposures similar to those given in clinics, therefore EFV should be avoided in first trimester of pregnancy.

Lopinavir/ritonavir

The most frequent side-effectsare weakness, headache and moderate digestive disorders (diarrhea, nausea, vomiting and abdominal pain). LPV/r can also induce metabolic complications such as insulin resistance, fat maldistribution and dyslipdemia. Serious hepatotoxicity and pancreatitis have been observed in patients taking LPV/r in combination with other ARVs. Associations between PI and increased risk of low birth weight and preterm birth have been reported. LPV/r has limited placental transfer and may therefore be less likely to be associated with fetal toxicity.

Tenofovir

Renal toxicity remains a concern in some patients treated with TDF. Although TDF is associated renal toxicity is largely reversible, a small number of patients were reported to have had impaired renal functions in terms of Glomerular Filteration Rate (GFR) more than 6 months after TDF discontinuation. Renal follow up is important for this reason.

Some concerns exist about exposure to TDF in-utero and the risks of abnormal fetal bone development. However, for women requiring ART and receiving TDF who become pregnant, the benefits of continuing treatment are likely to outweigh the theoretical risks of toxicity for the infant. Further safety data are awaited (3).

Chapter - 13

Universal Precautions to prevent transmission of blood borne viruses including HIV

Universal precautions are those which service providers need to follow in order to prevent the transmission of blood borne viruses to other individuals and to themselves. Since most HIV infected women in Sri Lanka may be asymptomatic carriers it is important to consider all body fluids as potentially HIV infected material. This avoids discrimination and ensures a high standard of practice. It is important to remember that the universal precautions are essentially reinforcement and strengthening of time tested routine infection control regimens in health care systems.

Aims of prevention

1. Direct contact
2. Cross infection

Prevent contact with the following body fluids of both mother & baby.

- Blood
- Vaginal discharge
- Serous exudates from ulcers/cuts
- Meconium

Protect yourself from blood and other body fluids during deliveries

- Wash hands with soap and water before and after caring for the mother & baby and after changing linen
- Wear sterile gloves when touching blood, body fluids, mucus membranes, non intact skin, when performing vaginal examination, delivery, cord cutting, blood drawing, handling contaminate waste, cleaning instruments, cleaning blood and body fluid spills
- Wear long sterile gloves for manual removal of placenta
- Wear a plastic apron to protect from splashes
- If splashes of liquor is anticipated protect your eyes

Most HIV transmission to healthcare workers in healthcare settings is the result of skin puncture with contaminated needles or sharps. These injuries occur when sharps are recapped, cleaned or inappropriately discarded.

Patient to patient transmission of HIV could be prevented by disinfecting or sterilizing equipment and devices used in invasive or percutaneous procedures.

If a HIV positive mother presents in labour

I. The usual plan is for the mother to have an elective lower segment caesarean section at 38th week of gestation. However, in the event a vaginal delivery is planned following steps should be taken.

II. Perform vaginal examinations only when absolutely necessary

III. Consider using oxytocin to shorten labour when appropriate

IV. Use the partogram to measure the progress of labour (The partograph should be used to reassure that labour is progressing normally but also to alert them when labour is not progressing within safe parameters). However, vaginal examinations should be minimized.

Adopt the following:

- Minimize invasive procedures
- Have a delivery kit prepared with disposable items
- Prepare bed with washable bed sheets over a fully protective double lined rexine or plastic covered mattress
- Collect waste into a separate bin
- Use disposable needles, syringes, catheters and discard them into puncture resistant waterproof containers

Post exposure prophylaxis therapy is available in case of a needle stick injury or a mucosal contamination. Contact the NSACP or closest STD clinic for details. ART starter pack should be available in your institute.

Steps to minimizefoetal contact with maternal blood and vaginal fluids during delivery :

Avoid routine episiotomy & other invasive procedures

Avoid routine rupture of membranes **(**Transmission rates increase about 2% for every 24 hours of the bag being ruptured. If the membranes rupture spontaneously, delivery should occur in less than 4 hours).

- Avoid routine episiotomy
- Avoid use of forceps and vacuum
- Avoid Artificial Rupture of Membranes

Care of the cord

- Use controlled cord traction
- Clamp the umbilical cord early and carefully (this procedure is thought to decrease the chance of maternal blood which contains HIV to cross over to the foetus)
- Cut the cord under cover of a lightly wrapped gauze swab to prevent blood spurting.
- Avoid unnecessary suctioning of the neonate with naso-gastric tubes unless there are signs of meconium.
- Mouth operated suction should be avoided
- Avoid other invasive procedures such as intra uterine scalp monitoring and sampling

When collecting a sample of blood from the infant

- Always wear sterile gloves
- Use a needle and syringe to collect foetal blood.
- Avoid spilling blood on the outside of the specimen tube.
- Be sure the rubber stopper is securely fastened on the specimen tube to avoid spills. Label correctly.
- Put the tube into another plastic container lined with absorbing material and send to the lab

Actions to prevent needle stick injuries

- Keep a puncture resistant container for disposal of sharps (sharps bin)
- Use each needle and syringe only once
- After use do not recap, bend or break needles after use
- Avoid hand manipulations of needles
- Drop all disposable needles, plastic syringes, directly into the sharps bin without recapping
- Send for incineration when the bin is three-quarters full

Disposal of soiled linen

Collect all soiled linen into a bag after it is used. Soiled linen should be soaked for 20 minutes in a 1% solution of bleaching powder and then washed with soap in hot water

Disinfectant material

- 0.5% Sodium hypochlorite to disinfect instruments (made by adding 90ml water to 10ml bleach containing 5% available chlorine)
- 10% Lysol
- 2.5% Povidone iodine
- 2% Glutaraldehyde

Cleaning of spillage of blood and other body fluids

- Absorb with material (paper towels, gauze, wadding)
- Pour 1% hypochlorite solution till it is well soaked. Leave for at least 10 minutes
- Remove the absorbent material as clinical material using heavy duty gloves
- Clean the area with detergent
- Discard gloves

Disposal of the placenta

Collect into plastic bag and incinerate or bury deep.

Dispose of infected waste, body fluids and tissue and disposable equipment by incineration, deep burying.

Prevention of mother to child transmission of HIV infection

There is convincing evidence from several studies that mother to child transmission of HIV can be reduced successfully by various interventions that are now proven to be highly effective.

At present Sri Lanka is a country with a low level HIV epidemic. The estimated adult prevalence rate is <0.1%. As of end 2009, the estimated number of people living with HIV was 3000. The number reported in the country is around 1285. The majority of those living with HIV are unaware of their HIV status. The antenatal care package prepared for the benefit of all antenatal mothers in this country consists of several interventions and it will now include interventions for prevention of mother to child transmission of HIV infection.

Sri Lanka is adopting a 4 prong strategy to reduce paediatric infection.

1. Primary prevention of HIV among men and women of childbearing age
2. Prevention of unintended pregnancies among women living with HIV
3. Prevention of HIV transmission from a woman living with HIV to her infant
4. Provision of appropriate treatment, care and support to women living with HIV and their children and families

Since the antenatal HIV prevalence rate ranges between 0.02-0.03 % the best method for Sri Lanka is primary prevention of HIV among men and women of childbearing age. The most effective and humane way to prevent HIV in infants is to help young men and women by promoting safer sexual behaviours to remain free from infection before marriage and before the woman gets pregnant. Therefore there are several key entry points within the health service which gives the opportunity for young men and women to know about HIV/AIDS, PMTCT, counselling and testing opportunities and access the available treatment, care and support services. It is important to integrate PMTCT services into the maternal and child health services to provide women with services to prevent new infections and promote male partner involvement to prevent infections among men.

Testing for HIV infection should be integrated within the established antenatal testing such as for syphilis, anaemia. Opportunities should be made available to identify HIV infected antenatal mothers in order for them to utilize ART, safer delivery and feeding practices to reduce transmission to the offspring.

Primary prevention strategies include the following components:

Raising awareness of antenatal mothers and their partners on PMTCT

All pregnant women, and those planning pregnancy should have accessibility to appropriate information about HIV infection including PMTCT. Information on sexually transmitted infections including HIV and syphilis should be included in the general information given to pregnant women along with information about other infections and antenatal tests. They should be informed about perinatal transmission of HIV and it adverse pregnancy outcomes. They should be aware of the potential benefits of knowing their HIV infection status by getting tested, both for their own health and to reduce the risk of perinatal transmission. As part of routine antenatal care all pregnant women should be made aware that mother to child transmission of HIV can be greatly reduced through antenatal and perinatal treatment with anti-retroviral drugs, safer delivery and safer infant feeding practices.

Information about facilities for screening should be made available to all pregnant women. Discuss about the HIV test and the window period and other related issues about the HIV test. Stress that measures to prevent unintended pregnancies among women living with HIV and prevention of transmission of HIV from mother to child can only be offered if HIV infection is diagnosed before or during pregnancy. In Sri Lanka unfortunately almost 90% of HIV infection in pregnant women remains undiagnosed during pregnancy and often women only discover they are infected when their children develop HIV infection or AIDS. Therefore testing for HIV, as far as possible should be promoted and normalised and should generally be dealt with other conditions discussed within antenatal care. Give details of the procedures for testing and obtaining results.

Information on safe and responsible sexual behaviour and practices should be discussed in a culturally appropriate manner depending on the audience. It should include as appropriate, the importance of avoiding commercial and casual sex, reducing the number of sexual partners and consistent condom use.

Information on services for STI/HIV prevention should also be discussed. Draw their attention to the availability of services to reduce mother to child transmission of HIV for HIV positive women including anti-retrovirals which are offered free of charge.

Discussions should not be limited only for women. Men should be included when information is provided at parent-craft classes

Communication

Information should be presented in a way which reflects the positive outcomes of knowing the HIV infection status for women and men and for their babies. Method of communication should be in forms that are linguistically, culturally and educationally appropriate to women. Groups of women should be utilised for dissemination of information.

Discussions should include eliciting and giving information about basic facts of STI and HIV and PMTCT, exploring any concerns expressed by women.

Health care workers should be aware of the procedures adopted in the respective institution. In some antenatal settings, HIV testing would be included as a routine test in the standard of care package of services. Voluntary counselling & testing should be encouraged if HIV testing is not provided in the antenatal care package.

Significant efforts should be taken to provide men and women with relevant information and services which would help them to assess their own risk to infection. Therefore the service providers should have updated, comprehensive knowledge on STI/HIV/AIDS including PMTCT to educate antenatal mothers and their partners. They should have correct communication skills to talk about the following confidently.

The following information will serve as pre test information. Healthcare workers should have correct technical knowledge and communication skills to talk about the following confidently.

Make antenatal mothers aware of

1. Basic facts about STD/HIV/ AIDS.

- What is HIV and AIDS and the difference between HIV and AIDS
- HIV / AIDS /STI overview-Local situation
- Natural history and what happens when the virus enters the body
- Methods of transmission and non transmission
- Asymptomatic period an HIV infected person could look healthy
- An infected person is infectious for life
- HIV transmission risk during pregnancy, delivery and breastfeeding
- Mother to child transmission of HIV and syphilis. Risk factors and methods of prevention
- Adverse pregnancy outcomes of maternal HIV infection and STI
- Make antenatal mothers understand that there will not be paediatric infections if parents are not HIV infected
- Discuss Behaviour Change efforts among vulnerable groups with promotion and provision of condoms. Counsel to change behaviours that place individuals at risk for becoming HIV infected or spreading HIV infection. Promote access to condoms and dual protection
- How people can continue to stay negative

2. **Secondary prevention : screening for HIV infection**

- How to know the HIV status ? Explain about the screening test.
- Stress that the only way to know for sure whether a person is infected with HIV or not is to be tested.
- Discuss the purpose of HIV testing and advantages of knowing the HIV status during pregnancy.
- Discuss what the window period is and its interpretation in relation to the risky sexual exposure
- If HIV testing is not a routine procedure in the institution, promote voluntary counselling & testing. If it is a routine procedure as standard of care in the antenatal package inform of the availability of test in STD services.
- Make her understand that testing is done confidentially.
- Discuss the HIV testing process. Explain the types of tests: client initiated and provider initiated: screening and confirmatory tests , what the window period means, importance of obtaining test result , implications of both positive and negative results
- Inform that persons who test positive will receive further counselling and referral for treatment, care and support.
- Discuss the importance of male partner involvement
- Approaches for partner disclosure

3. **Interventions available to prevent mother to child transmission of HIV**

- Explain the available interventions to prevent mother to child transmission of HIV to eliminate paediatric HIV. Availability of antiretroviral therapy from the government sector free of charge
- Promote seeking STD care services and confidentiality of STD services
- Discuss about confidentiality measures and efforts for prevention of stigma and discrimination in the institution
- Discuss about the importance of continuous antenatal and postpartum care
- Discuss about the importance newborn care
- Trained healthcare team will provide optimum care for the mother, her partner and the baby

  At the end of the talk, women and men who attend the talk should be able to understand :

- The main modes of transmission of HIV and the need to avoid unsafe sexual behaviours to be HIV free, which is the best method to avoid HIV infection in the newborn
- HIV transmission risk to the infant
- Adverse pregnancy outcomes of maternal HIV infection
- Importance of HIV testing as this is the only method of knowing the HIV status of men and women
- Confidentiality of information
- Available services in the country
- Availability of pre test information/counselling
- If tests are negative how to stay negative
- If HIV infection is confirmed the availability of interventions for HIV positive mothers, partner and the infant
- Advantages of ART to the mother and infant
- Importance of partner testing
- To change attitudes towards PLHIV so that stigma & discrimination could also be reduced
- Safer sexual behaviours can ptotect both parents and the baby

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Annexes

Annex-1

WHO clinical staging of HIV disease in adults and adolescents

Clinical stage 1

Asymptomatic
Persistent generalized lymphadenopathy

Clinical stage 2

Moderate unexplained weight loss (under 10% of presumed or measured body weight)
Recurrent respiratory tract infections (sinusitis, tonsillitis, otitis media, pharyngitis)
Herpes zoster
Angular cheilitis
Recurrent oral ulcerations
Papular pruritic eruptions
Seborrhoeic dermatitis
Fungal nail infections

Clinical stage 3

Unexplained severe weight loss (over 10% of presumed or measured body weight)
Unexplained chronic diarrhoea for longer than 1 month
Unexplained persistent fever (intermittent or constant for longer than 1 month)
Persistent oral candidiasis
Oral hairy leukoplakia
Pulmonary tuberculosis
Severe bacterial infections (e.g. pneumonia, empyema, meningitis, pyomyositis, bone or
joint infection, bacteraemia, severe pelvic inflammatory disease)
Acute necrotizing ulcerative stomatitis, gingivitis or periodontitis
Unexplained anaemia (below 8 g/dl), neutropenia (below 0.5 x 109/l) and/or chronic
thrombocytopenia (below 50 x 109/l)28
Antiretroviral therapy for HIV infection in adults and adolescents
Recommendations for a public health approach

Clinical stage 4

HIV wasting syndrome
Pneumocystis jiroveci pneumonia
Recurrent severe bacterial pneumonia
Chronic herpes simplex infection (orolabial, genital or anorectal of more than 1 month's
duration or visceral at any site)
Oesophageal candidiasis (or candidiasis of trachea, bronchi or lungs)
Extrapulmonary tuberculosis
Kaposi sarcoma
Cytomegalovirus disease (retinitis or infection of other organs, excluding liver, spleen and
lymph nodes)
Central nervous system toxoplasmosis
HIV encephalopathy
Extrapulmonary cryptococcosis including meningitis
Disseminated nontuberculous mycobacteria infection
Progressive multifocal leukoencephalopathy
Chronic cryptosporidiosis
Chronic isosporiasis
Disseminated mycosis (histoplasmosis, coccidiomycosis)
Recurrent septicaemia (including nontyphoidal *Salmonella*)
Lymphoma (cerebral or B cell non-Hodgkin)
Invasive cervical carcinoma
Atypical disseminated leishmaniasis
Symptomatic HIV-associated nephropathy or HIV-associated cardiomyopathy

Annex -2

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