Strengthening Interprofessional Education for HIV

Module 4

Preventing Vertical Transmission & Care for the Pregnant Woman with HIV

Facilitator Guide

OVERVIEW

Goal

The goal of this module is to prepare learners to manage the care of pregnant women, new mothers, and newborns living with HIV using an integrated approach to service delivery in order to prevent mother-to-child HIV transmission (PMTCT).

Objectives

By the end of the module, the learner will be able to:

1. Recognize the risks of HIV acquisition during pregnancy and breastfeeding
2. Identify appropriate ART options during pregnancy, delivery and breastfeeding
3. Identify strategies to prevent mother-to-child transmission (PMTCT) in a mother presenting late in pregnancy with a high viral load, including ART prophylaxis for exposed infants
4. Explain the importance of early infant diagnosis (EID)
5. Illustrate factors leading to low EID rates using a fishbone diagram (QI)
6. Discuss the unique needs of mothers and newborns related to HIV (IPE)

PEPFAR

HRSA Health Resources & Services Administration

UCSF Institute for Global Health Sciences

AFREhealth African Forum for Research and Education in Health

Workshop Roadmap

Duration: 120 minutes

Duration	Activity	Content
5 min.	Introduction	
10 min.	1. Discussion	Risks of HIV acquisition during pregnancy and breastfeeding
10 min.	2. Table	ART options during pregnancy, delivery and breastfeeding
20 min.	3. Discussion	Peri-partum ART management for mothers and infants
10 min.	4. Discussion	EID
20 min.	5. Diagram	Fishbone analysis for low EID rates
15 min.	6. Discussion	Psychosocial effects
5 min.	Conclusion	

Workshop Setup

How to tailor this module: All references to guidelines are based on WHO guidelines. Where country-specific recommendations on the provision are different from these, we encourage STRIPE partners to adapt to align with country guidelines.

Reminder to facilitators: Key learning points in the Answers will be underlined. Please emphasize these learning points as you move through the module.

Additional learner materials

- PMTCT PowerPoint answer slides

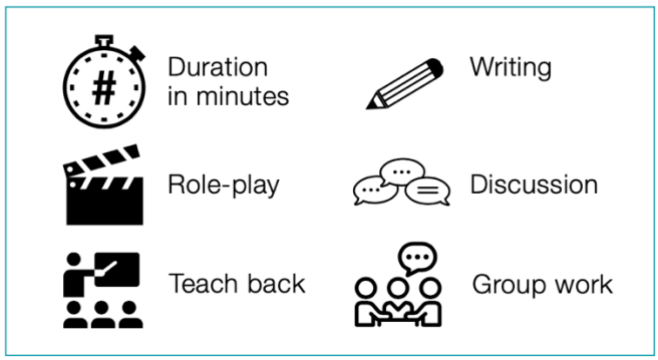
Additional learner materials

- Use country-specific PMTCT guidelines if available
- Annex 4 Algorithm from the 2018 WHO Guidelines or HIV diagnosis and ARV use in HIV-exposed infants: a programmatic update
- Can be accessed on learners' laptops or print a few copies per table

Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
ART	Anti-retroviral therapy
ARV	Anti-retrovirals
AZT	Zidovudine (also sometimes abbreviated ZDV)
DTG	Dolutegravir
EFV	Efavirenz
EID	Early infant diagnosis
ePNP	enhanced post-natal prophylaxis
HEU	HIV exposed but uninfected infant
HIV	Human Immunodeficiency Virus
HIV-1 DNA PCR	HIV-1 deoxyribonucleic acid polymerase chain reaction
HIV-1 RNA PCR	HIV-1 ribonucleic acid polymerase chain reaction (or HIV viral load)
INSTI	Integrase Strand Transferase Inhibitor
NRTI	Nucleoside Reverse Transcriptase Inhibitor
NNRTI	Non-nucleoside Reverse Transcriptase Inhibitor
NVP	Nevirapine
PI	Protease inhibitor
PMTCT	Prevention of mother-to-child transmission
RAL	Raltegravir
QI	Quality Improvement
WHO	World Health Organization

Introduction



Facilitator: Introduce yourself and ask all learners to introduce themselves, as well as their health profession area. Next, go over each of the objectives with learners. Then, read aloud the introduction to PMTCT and case vignette to the classroom. Prevention of mother-to-child transmission (PMTCT) has long-lasting health benefits for mothers and children. PMTCT involves four main strategies:

1. Preventing pregnant women who are HIV-positive from acquiring HIV during pregnancy or breastfeeding
2. Ensuring that pregnant women with HIV are maintained on effective ART from pregnancy through delivery and breastfeeding
3. Minimizing the risk of transmission at delivery through various obstetric approaches
4. Ensuring that HIV-exposed newborns receive appropriate prophylactic ART.

Case: In this case, we will discuss Ruth, a 24-year-old pregnant woman who presented for a prenatal visit late in the 1st trimester and tested negative for HIV and syphilis. She came back during her 3rd trimester, and the repeat HIV test was positive. She was prescribed and initially started ART but is not seen again until she is in labor. She had stopped her ART and was found to have a detectable HIV RNA.

ACTIVITY 1

Recognize the risks of HIV acquisition during pregnancy and breastfeeding.

Ruth acquired HIV during pregnancy. It is important to understand a pregnant woman's risk for acquiring HIV, as well as her need for HIV testing, and strategies for an HIV negative woman to remain negative.

1. How often should a pregnant woman be seen during the pregnancy?

Answer: Per the WHO, antenatal care models with a minimum of 8 contacts are recommended to reduce perinatal mortality and improve women's experience of care. The first visit should be as early as possible in the first trimester, and the last at around 37 weeks or near the expected date of birth.

2. It has been found that HIV-positive mothers are at increasing risk of acquiring HIV during pregnancy, with the greatest risk during the 3rd trimester, post-partum period, and during breastfeeding. Discuss why this might be.

Answer: Possible mechanisms for the increased risk of HIV acquisition include changes in estrogen and progesterone levels that alter the female genital tract and/or pregnancy-related immune effects that persist in the post-partum period, all of which increase susceptibility. Thus, it is critical to continue counseling about HIV risk during pregnancy. At all antenatal visits, women should be asked about or counselled regarding the importance of

knowing partner status, the presence of or recent history of STIs, and reminded that use of condoms reduces risk of HIV transmission.

3. Who are the different healthcare workers that are important for caring for pregnant women, and how can they play a role in identifying those at highest risk for acquiring HIV and/or caring for those women living with HIV?

Facilitator Reminder: Encourage participation from learners from all professions in the workshop and encourage them to speak up about their role in caring for pregnant women.

ACTIVITY 2

Identify appropriate ART options for mothers during pregnancy, delivery and breastfeeding.

WHO guidelines recommend routine HIV testing for pregnant women both at the initial antenatal visit and at delivery. In light of the increased risk for HIV acquisition late in pregnancy, extra HIV testing can be obtained if the patient is symptomatic and considered if asymptomatic. In addition, the WHO recommends rapid initiation of life-long ART for HIV-positive pregnant women and breastfeeding women.

What are acceptable ART options during pregnancy, and what is the first-line regimen used in your country?

Facilitator note: If completing this section, encourage learners to use any available resources to answer this question. Be aware that the information on DTG and the risk of neural tube defects may have been reviewed in Module 1. Of note (as described in the Clinician's Corner in more detail), dolutegravir is no longer thought to be associated with an increased risk of neural tube defects compared to other ART regimens and is the preferred first line WHO regimen.

Answer: After 5 minutes of discussion, advance to PowerPoint slide 2 to show acceptable ART options during pregnancy. Then advance to slide 3 to show preferred and alternative ART combinations. (These regimens are for all adults and adolescents with HIV).

ART Class*	List which meds in each class are recommended during pregnancy
NRTI	TDF, FTC, 3TC, ABC, AZT
NNRTI	EFV
INSTI	RAL, DTG
PI	r/ATV or r/DRV or r/LPV
Preferred First-Line Regimen	TDF + 3TC (or FTC) + DTG
Alternate First-Line Regimen	TDF + 3TC (or FTC) + EFV

***See Appendix A: "Clinicians' & Pharmacists' Corner" for additional evidence related to this activity.**

What are recommended ART options for mothers during delivery and breastfeeding?

Answer: An effective adult treatment regimen should be continued from pregnancy through delivery. Women with HIV who are virally suppressed are also encouraged to breastfeed their infants and do not need to change ART (though we recommend reviewing country-specific guidelines on use of replacement feeding). Newborns receive prophylaxis against HIV for a specified duration depending on risk status of the mother. The 2016 WHO HIV and Infant Feeding Guidelines recommend that breastfeeding should continue until 12 months post-partum, or longer at the mother's choice, while fully supported for ART adherence.

Women often stop ARVs after giving birth – what might be the reasons, and how could all health professionals counsel women to encourage them to stay on ART?

Answer: Women are particularly vulnerable to loss to follow-up and often stop taking ARVs after giving birth, not only putting themselves at risk for HIV progression but also putting their child at increased risk of HIV acquisition while breastfeeding. There are many potential reasons for this, including the stressors and demands of caring for a newborn child, financial difficulties, and concerns about ARVs harming the baby from breastfeeding. It is critical to counsel about adherence in the post-partum period and to reassure mothers that taking ART is not harmful to the baby and will help protect the newborn from HIV acquisition.

ACTIVITY 3

Explain strategies to prevent mother-to-child transmission (PMTCT) in a mother presenting late in pregnancy with a high viral load, including ART prophylaxis for exposed infants.

In your small groups, you will be assigned to answer one of the following questions and report your answer and reasoning back to the group:

1. What scenarios are considered highest risk for perinatal acquisition of HIV (i.e., mother-to-child transmission, MTCT)? Use the annex 4 algorithm in Additional Learner Materials as a resource.

Answer: Advance to slide 4. In general, newborns at highest risk for perinatal HIV acquisition include those born to women with HIV who:

- Were diagnosed as HIV infected at delivery or in the postpartum period
- Were infected with HIV during pregnancy or breastfeeding
- Started ART late in pregnancy
- Did not achieve virologic suppression by the time of delivery
- Are not on ART

2. If a mother presents to care 5 weeks before going into labor, what ART would you recommend for her? What ART would you recommend the infant receives following delivery if the mother has been on ART for 5 weeks before delivery? Use the annex 4 algorithm in Additional Learner Materials as a resource.

Answer: As mentioned in ACTIVITY 2, TDF + 3TC (or FTC) + DTG is recommended when starting ART in the 2nd and 3rd trimester of pregnancy. The DOLPHIN-2 study showed that DTG more rapidly reduced viral load burden

than EFV, so DTG is particularly recommended (in addition to NRTI backbone) for women presenting late in their pregnancy with detectable HIV RNA.

All newborns perinatally exposed to HIV should receive post-natal prophylaxis and begin as soon as possible, preferably within 6 to 12 hours of delivery. Management of the baby depends on what the maternal HIV viral load is at the time of delivery, but after 4 weeks of DTG, the mother should have near virologic suppression. In this case, WHO HIV Diagnosis and ARV use in HIV-exposed infants: a programmatic update guidelines recommend that low-risk infants be given a 4-6 week course of AZT or NVP prophylaxis unless there is a viral load result near delivery that is >1000.

3. If the mother has a detectable HIV RNA > 1000 copies/mL at the time of labor, as in Ruth's case, what ART do you recommend the infant receives following delivery? Use the annex 4 algorithm in Additional Learner Materials as a resource.

Answer: Since Ruth presented to care off ART, the baby was likely exposed to HIV in utero and also will be exposed during the birthing process. This qualifies as a high-risk infant. Thus, the WHO recommends enhanced post-natal prophylaxis (ePNP) with dual-ART (AZT + NVP) for the first 6 weeks. If Ruth plans to breastfeed her baby, this should be followed by either an extra 6 weeks of AZT + NVP or 6 weeks of NVP alone. Documenting maternal viral suppression is important for all breastfeeding women. Countries have adopted PMTCT guidelines differently, so we recommend consulting country-specific guidelines for this when possible.

During labor, in addition to using aseptic technique and standard precautions, unnecessary trauma/ procedures or artificial rupture of membranes should be avoided. Similarly, prolonged labor should be avoided, and if the membranes rupture before labor, labor should be induced in accordance with obstetric factors.

ACTIVITY 4

Explain the importance of early infant diagnosis (EID).

Ruth's baby will have been exposed to HIV in utero and during labor as well. What is early infant diagnosis, and why is it important? What is the protocol for assessing the infant's HIV status?

Answer: After a few minutes of discussion, share the following answer and advance to slide 5. Peak mortality for infants diagnosed with HIV is between 2 and 4 months of age. Infants with HIV who are given ART within the first 12 weeks of life are less likely to die from AIDS-related illnesses. Thus, EID is critical to early initiation of lifesaving treatment, and all healthcare providers can play a role in encouraging mothers to have their babies tested. In babies diagnosed with HIV, in addition to using WHO or country-specific ART guidelines, it may be necessary to consider the mother's ART regimen and whether or not she has drug-resistant virus, as this can affect ART choice for the newborn. Many children born to mothers with HIV will not contract the disease, despite being exposed to HIV in utero. Some studies have suggested that HIV-exposed uninfected (HEU) children have effects from in-utero exposure to HIV even if they do not contract HIV; examples include low birthweight and increased overall mortality.

Early infant diagnosis (EID) is based on the WHO recommendation that infants born to mothers with HIV be tested for HIV-1 DNA between 4 and 6 weeks of age. Children should also have a repeat HIV DNA test at 18 months and/or when breastfeeding ends, whichever one is later, to provide the final infant diagnosis. In a different module, pediatric HIV testing diagnostics are reviewed.

ACTIVITY 5

Illustrate factors leading to low EID rates using a fishbone diagram (QI).

A large proportion of infants are not diagnosed with HIV in a timely fashion. Imagine you are in charge of a clinic or hospital and you have very low EID rates. Use a fishbone diagram to illustrate why EID is not occurring at your clinic site.

Answer: First, introduce the topic and explain that a fishbone diagram (also called Ishikawa or Cause & Effect diagram) is an organizational tool to help identify/explore/display the various factors that can contribute to a problem. The Institute for Health Improvement states that it "graphically displays the relationship of the causes to the effect and to each other, helping teams identify areas for improvement." Advance to slide 6 to show an example of a completed fishbone diagram.

Facilitator: Next, ask learners to fill out the fishbone diagram in their Learner Guide to ascertain reasons why EID rates in their particular clinical setting are either low or nonexistent. Depending on time and your learners, you could have each small group work on the entire fishbone and then discuss as a large group or you could have a small group discuss 1-2 of the 5 elements in the fishbone and then teach back to the larger group. Encourage the learners to focus broadly and think more "big picture" when filling out the fishbone diagram for this issue, as compared to the example provided.

They should consider all the reasons why EID does not happen, including social reasons, and they should group causes under the categories of people, method, equipment, material/supplies, and workplace/environment. Learners can use the 5 WHYs technique (introduced in modules 9 and 15) to develop ideas for causes. Allow learners to work 10 minutes on this activity. Advance to slide 7 and keep this up as a reference during the activity. Mention that there are no right or wrong answers. After 10 minutes, spend approximately 5 minutes asking groups to share their answers for each category. Leave learners with thequestion or charge to consider solutions to some of the causes they identified.

Possible reasons why EID rates may be low or non-existent include:

People

- Parent/caregiver lack of information/not aware of
- EID
- Parent/caregiver avoiding EID due to concerns about stigma
- Inability to reach parent post-partum
- Provider lack of knowledge of EID
- Provider not offering/recommending EID
- Health professional, phlebotomist or lab technician may not be present to either obtain sample or run the test

Environment/workplace

- HIV stigma/discrimination in communities

- Transportation network is disrupted
- Difficult for parent/caregiver to come for EID
- Difficult for laboratory to send sample or obtain materials/supplies
- Laboratory is closed

Method

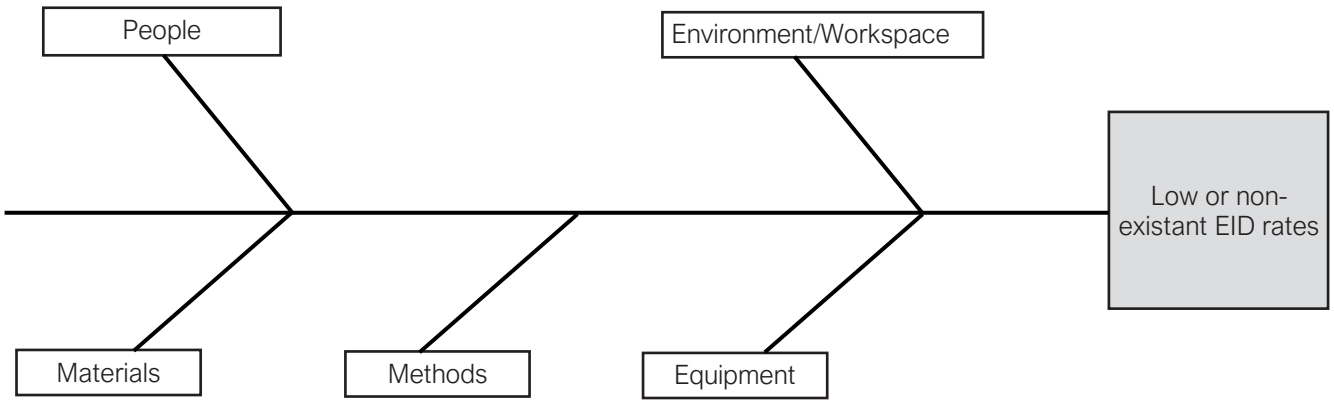
- High costs
- Providers may not be aware of protocol
- Information system slow for return of results or lengthy turnaround time
- Protocol for EID has not been standardized at your institution
- Protocol for indeterminate results does not exist

Equipment

- Lab machine to test this is not operational
- Lab machine to run this test is not available at clinical setting
- No Gene Xpert at this facility
- HIV DNA PCR technology outdated

Material/supplies

- Point-of-care (POC) EID not available or not on site
- Reagents not available or expired
- Blood draw supplies not available or expired
- DBS cards not available



ACTIVITY 6

Discuss the unique needs of mothers and newborns related to HIV (IPE).

In your small group, discuss the common challenges that women face when going home with a new infant and a new HIV diagnosis.

1. Have you cared for an HIV positive mother who has delivered a baby? What difficulties might she encounter due to her HIV status?

Answer: There is no right or wrong answer. Potential issues for new mothers with HIV, in addition to caring for a new baby, include:

- Stigma/Discrimination – Often HIV-related stigma and discrimination are a barrier to mothers enrolling in PMTCT programs or continuing ART after birth.
- Disclosure to spouse and other family members and eventually to her child
- Adjustment to a new chronic illness
- Managing medications and/or medication side effects for self and for baby
- High rates of loss to follow-up

2. What are possible solutions to these issues or barriers? Within the scope of your own profession, how might you be able to address these barriers? What community resources might address these barriers?

Answer: There is no right or wrong answer, but some possible answers regarding community resources are below. Facilitators should encourage participation by all health professions and also share options for resources/services to support new mothers that are available in their local communities.

Potential solutions to these barriers include:

- Peer support from other women with HIV
- Peer support or mentorship from other new mothers ("mothers2mothers" or m2m)
- Linkage to community health educators and other social services
- Integrate post-natal visits and ART care
- Increased focus on wellness and wellbeing for mothers

Conclusion

Advance to slide 8 and review the learning objectives as a group. Ask leaners to briefly summarize what they learned for each objective with a focus on any particularly challenging areas of the training.

CLINICIAN'S CORNER

For pregnant women ART selection may change based on the trimester of pregnancy in which the woman is starting ART. This domain is confusing because of early evidence from Botswana that DTG may be unsafe in pregnancy. Initial studies had highlighted a possible link between DTG and neural tube defects (birth defects of the brain and spinal cord that cause conditions such as spina bifida) in infants born to women using the drug at the time of conception. This potential safety concern was reported in May 2018 from a study in Botswana that found 4 cases of neural tube defects out of 426 women who became pregnant while taking DTG. Based on these preliminary findings, many countries advised pregnant women and women of childbearing potential to take efavirenz (EFV) instead.

However, data from two large clinical trials comparing the efficacy and safety of DTG and EFV in Africa have now expanded the evidence base and updated data from the Botswana cohort has also been reassuring. The risks of neural tube defects are significantly lower than what the initial studies suggested. The latest updates (through 2022) in the Botswana group demonstrated a rate of neural tube defects of ~1/1000 pregnancies when the pregnant woman was taking dolutegravir. This rate of neural tube defects is similar to the rate seen in women taking other ART regimens. Consequently, dolutegravir is an appropriate drug for any stage of pregnancy and its use has advantages of tolerability, a rapid decline in HIV viral load, and few drug-drug interactions. Lastly, due to physiologic changes associated with pregnancy, ART dose adjustment may be necessary during pregnancy. Note that in the PI-based regimens, cobicistat is not recommended during pregnancy and should be avoided, though ritonavir is permissible.

References/Resources

1. Bianchi F, Cohn J, Sacks E, et al. Evaluation of a routine point-of-care intervention for early infant diagnosis of HIV: an observational study in eight African countries. Lancet HIV. 2019; 6(6):e373-e381.
2. Kintu K et al. RCT of Dolutegravir vs Efavirenz-based therapy initiated in late pregnancy: DOLPHIN-2. CROI. 2019. Abstract #40.
3. Panel on treatment of HIV-infected pregnant women and prevention of perinatal transmission. Recommendations for use of antiretroviral drugs in pregnant HIV-1 infected women for maternal health and interventions to reduce perinatal HIV transmission in the United States. Available at https://aidsinfo.nih.gov/guidelines/brief-html/3/perinatal/0. Accessed July 13, 2019.
4. Patient Safety Essentials Toolkit. Institute for Healthcare Improvement. Available at http://www.ihi.org/resources/Pages/Tools/Patient-Safety-Essentials-Toolkit.aspx. Accessed June 17, 2019.
5. Prevention of Mother-to-Child Transmission (MTCT) of HIV. Avert. Accessed June 30, 2019 at https://www.avert.org/professionals/hiv-programming/prevention/prevention-mother-child.
6. Slosgrove AL et al. Surviving and Thriving – Shifting the Public Health Response to HIV-Exposed Uninfected Children: Report of the 3rd HIV-Exposed Uninfected Child Workshop. Frontiers in Pediatrics. 2018. https://doi.org/10.3389/fped.2018.00157
7. Tenthani L et al. Retention in care under universal antiretroviral therapy for HIV-infected pregnant and breastfeeding women ("Option B+") in Malawi. AIDS. 2014;28(4): 589-598.
8. Thomson KA et al. Increased risk of HIV acquisition among women throughout pregnancy and during the postpartum period: a prospective percoital-act analysis among women with HIV-infected partners. Journal of Infectious Diseases. 2018; 218(1):16-25.
9. UNAIDS. Miles to go: global AIDS update. 2018.
10. UNAIDS. Start Free Stay Free AIDS Free: 2017 progress report.
11. WHO. HIV diagnosis and ARV use in HIV-exposed infants: a programmatic update. 2018. Available at: https://www.who.int/hiv/pub/paediatric/diagnosis-arv-infants/en/. Accessed July 17, 2019.
12. WHO. Update of recommendations on first and second-line antiretroviral regimens. 2019. Available at: https://apps.who.int/iris/bitstream/handle/10665/325892/WHO-CDS-HIV-19.15-eng.pdf?ua=1. Accessed September 4, 2019.
13. WHO. Updated recommendations on first-line and second-line antiretroviral regimens and post-exposure prophylaxis and recommendations on early infant diagnosis of HIV. 2018. Available at: https://www.who.int/hiv/pub/guidelines/ARV2018update/en/. Accessed July 16, 2019.
14. WHO. Updates on HIV and infant feeding. 2016. Available at: https://www.who.int/maternal_child_adolescent/documents/hiv-infant-feeding-2016/en/. Accessed July 16, 2019.
15. Zash R et al. Comparative safety of dolutegravir-based or efavirenz-based antiretroviral treatment started during pregnancy in Botswana: an observational study. The Lancet Global Health. 2018 Jul 1;6(7):e804-10.
16. Zash, et. al. Update on neural tube defects with antiretroviral exposure in the Tsepamo Study, Botswana. AIDS 2022. Available from https://programme.aids2022.org/Abstract/Abstract/?abstractid=12759. Accessed April 5, 2023.