

Clinical Cases in Pediatric HIV Management

A TEACHING TOOL
MALAWI



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Pediatric AIDS Initiative



*Based on the Clinical Management of HIV in
Children and Adults, First Edition, July 2011,
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Understanding the Teaching Tool

Purpose:

- To improve clinical knowledge and confidence on paediatric HIV-related topics among clinical staff in Malawi

Target Audience:

- Clinicians or nurses who are providing HIV-related care in Malawi
- Best suited for one-on-one or small group teaching

How to use the cards:

1. Each card has a clinical case scenario and questions on the front of the card. The answers with key summary points are on the back of the card.
2. The mentor should hold the card such that only the case and questions are visible to the mentee(s).
3. The case should be presented to the mentee(s) and time should be allowed for discussion and answers.
4. The answers can then be reviewed and discussed with the mentee(s).
5. Summary points are outlined in the grey boxes on the back of the card. These are the key learning points that the mentee should understand after reviewing the clinical case scenario.

Developed by Baylor College of Medicine Children's Foundation Malawi

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The Baylor College of Medicine Abbott Fund Children's Clinical Centre of Excellence (COE), officially opened its doors in 2006 and is located on the premise of Kamuzu Central Hospital. It is Malawi's first and only stand-alone pediatric HIV clinic in the country. The COE offers testing, counseling and treatment for HIV-exposed and infected pediatric patients, with an additional special focus on the medical and psycho-social needs of adolescents living with HIV. It also serves as referral center for complex cases, treatment for pediatric Kaposi sarcoma, tuberculosis and malnutrition, and provides direct patient care on the paediatric ward. The COE also participates in national policy level activities, including trainings and technical support to the Ministry of Health.

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CLINICAL CASES IN PEDIATRIC HIV MANAGEMENT – A TEACHING TOOL

Table of Contents

Diagnosis

Presumed Severe HIV Disease (PSHD)

Exposed Infant

ART Eligibility

Adherence Case 1 – Child

Adherence Case 2 – Disclosure

Adherence Case 3 – Adolescent

Tuberculosis and HIV

Diagnosis: Case Study 1

Case:

Patience, a 5 month old infant, presents to Under-5 with complaints of fever and vomiting for 2 days. She is breastfeeding less than usual. You recognize the mother as an ART patient but have never cared for the child there. Passbook has vaccinations documented and weight on growth chart.

Questions:

1. What are possible causes of the child's fever and vomiting?
2. What do you do next?
3. What test(s) would you order today?
4. If the HIV rapid test is positive (reactive) today would this infant be exposed, infected, or uninfected?
 - How do you explain these results to the mother?
 - How do you treat the baby?
 - What feeding advice do you give to the mother?
5. If the HIV rapid test is negative (non-reactive) today would this infant be exposed, infected, or uninfected?
 - How do you explain these results to the mother?
 - How do you treat the baby?
 - What feeding advice do you give to the mother?

Diagnosis: Case Study 1

Answers:

1. **What are possible causes of the child's fever and vomiting?** Malaria, gastroenteritis, pneumonia, sepsis, acute HIV
2. **What do you do next?**
 - Examine the baby. Exam is remarkable for: warm to touch, tired appearing, in no distress; lungs are clear, no nasal flaring, no retractions, abdomen soft, extremities warm with brisk capillary refill.
 - Ask Mum her HIV status and about any other illnesses for baby: Mum is HIV-infected, on ART for 1 year. This is baby's first illness.
3. **What test(s) would you order today?**
 - Rapid malaria test (Positive malaria test); Rapid HIV test and DNA PCR (DBS).
4. **If the HIV rapid test is positive (reactive) today what is the status? Exposed, infected, uninfected? EXPOSED**
 - **How do you explain these results to the mother?** Baby is exposed to HIV from Mum. Babies require special HIV testing directly for the HIV virus (DBS). Baby needs to continue to follow-up in clinic until 2 years old, even if he is well appearing.
 - **What feeding advice do you give to the mother?** Continue exclusive breastfeeding (EBF) until 6 months then add complementary feeds and continue breastfeeding to 24 months. Remind them that although they may receive different advice from family and friends, EBF is enough until 6 months.
 - **How do you treat the baby?** Review ORT. Treat malaria. Provide ITN. Start CPT. Give 1 month follow up appointment.
5. **If HIV rapid test is negative (non-reactive) today what is the status? Exposed, infected, uninfected? EXPOSED**
 - **How do you explain these results to the mother? What would you do next? What feeding advice do you give to the mother?** All same as #4. Rapid test is not diagnostic in an asymptomatic infant. If child has symptoms then rapid test can be used for presumptive diagnosis (refer to guidelines page 13).

Summary Points:

- In an infant less than 1 year of age, a rapid HIV test is used to determine HIV EXPOSURE; a positive rapid test indicates HIV ANTIBODY presence (i.e. exposure), but does not confirm infection.
- A positive DNA PCR in anyone indicates HIV INFECTION. DNA PCR tests directly for the HIV virus.

Diagnosis: Case Study 2

Case:

Chimwemwe, a 13 month old infant, comes to your clinic for follow up and CPT refill. Her DBS (HIV DNA PCR) at 6 weeks of age was negative. She has not had any tests since then. There are no complaints today. Mum is on ART and the child is breastfeeding and eating complementary food.

**He is starting to stand and walk. He babbles a lot.
He is comfortable and playful and energetic with Mum.**

Questions:

1. What would you do next?
2. What test(s) would you order today?
3. How do you treat the baby?
4. What counseling advice do you give?



Diagnosis: Case Study 2

Answers:

1. What would you do next?

- Plot weight (normal growth); Examine baby (normal exam).

1. What test(s) would you order today?

- Order a rapid HIV test because the child is over 12 months of age.

2. How do you treat the baby?

3. What counseling advice do you give?

If HIV rapid test is negative (non-reactive) today what is the status? Exposed, infected, uninfected? **EXPOSED**

- How do you explain these results to the mother? Nothing has changed, status is still exposed.
- What feeding advice do you give to the mother? Continue breastfeeding until 24 months.
- How do you treat the baby? Continue CPT. Follow-up at HCC. Repeat rapid HIV testing at 24 months old and/or 6 weeks after stopping breastfeeding.

If HIV rapid test is positive (reactive) today what is the status? Exposed, infected, uninfected? **INFECTED**

- How do you explain these results to the mother? Positive rapid test in infant over 12 months old indicates HIV infection. Tell Mum the baby is infected with HIV and needs to start ART so she doesn't fall sick.
- What feeding advice do you give to the mother? Continue breastfeeding. You cannot give the baby "more" HIV. There is no reason to stop breastfeeding now.
- How do you treat the baby? Continue CPT. Schedule pre-ART session as baby eligible for ART.

Summary Points:

- A positive (reactive) rapid test in a child 12 months and older indicates HIV infection.
- A breastfeeding child whose mother has HIV is EXPOSED even if the initial DNA PCR is negative.
- All HIV-infected people are eligible for ART under Treat All.

Diagnosis: Case Study 3

Case:

Tiyamike, a 7 month old exposed infant, comes to clinic with complaints of sores in the mouth, fast breathing, and fever.

Physical exam reveals a sick-appearing infant with white plaques of oral thrush, nasal flaring, chest in-drawing, fast breathing, and fever.

Questions:

1. What are possible causes of the child's symptoms?
2. What do you do next?
3. What test(s) would you order today?
4. What diagnosis do you make and what treatment do you provide for this infant today?
5. Is she eligible to start ART?

Diagnosis: Case Study 3

Answers:

1. What are possible causes of the child's symptoms?

- Thrush, anemia, malaria, pneumonia, dehydration, sepsis, HIV infection.

2. What do you do next?

- Examine the child. Lungs: bilateral crackles, eyes: no conjunctival pallor, skin: no tenting.

1. What test(s) would you order today?

- Rapid malaria test, HIV rapid test, DNA PCR (DBS), Hemoglobin

1. What diagnosis do you make and what treatment do you provide for this infant today?

- Diagnosis: severe pneumonia (chest indrawing and crackles with rapid breathing) , thrush, maybe malaria
- Treatment: Admit and treat pneumonia with oxygen, IV or IM antibiotics. Treat thrush with nystatin or fluconazole; If Malaria test positive, treat malaria. Continue breastfeeding. Refer mum to start ART if she is not already on ART (she qualifies because she is breastfeeding).

1. Is she eligible to start ART?

- If the child is HIV exposed and has a **positive** rapid HIV test (reactive), **AND** severe pneumonia **AND** thrush → Presumptive Severe HIV Disease (PSHD). Therefore, she qualifies for ART.

Summary Points:

• Presumptive Diagnosis criteria (PSHD): **positive HIV rapid test** in infants less than one year **AND any TWO** of the following:

- Oral thrush (in an infant greater than 6 weeks),
- Severe Pneumonia, or
- Severe Sepsis

OR

- Any WHO stage IV highlighted conditions listed on the staging card (refer to job aid or guidelines page 13).

Diagnosis: Case Study 4

Case:

You are at the ART clinic providing an ART refill for a mother who has an 18 month old child on her back. The child has never been to clinic before and the mother tells you she weaned the child 2 months ago.

You send the child for a rapid HIV test today to determine the status.

Questions:

1. If the rapid test returns positive (reactive), is the child exposed, infected, or uninfected?
2. If the rapid test returns negative (non-reactive), is the child exposed, infected, or uninfected?
3. What else would you do for a child with a positive (reactive) rapid test today?
4. What else would you do for this child today?

Diagnosis: Case Study 4

Answers:

1. If HIV rapid test is positive (reactive), is the child exposed, infected, or uninfected? **INFECTED**
2. If the rapid test returns negative (non-reactive), is the child exposed, infected, or uninfected?
 - **UNINFECTED.** Child was weaned 3 months ago, window period for breastfeeding is 6 weeks.
1. What would you do for this child if rapid HIV test is positive (reactive) today?
 - The child is infected, therefore is ART-eligible. Do a confirmatory DNA PCR, do pre-ART counseling, screen for TB, start CPT, and initiate ART if TB screen negative.
 - Confirm diagnosis with DNA PCR on the day of ART initiation. Do not wait for the DNA PCR result to start ART.
1. What else would you do for this child today?
 - As long as HIV rapid test is negative (non-reactive) review HIV prevention with mother (no injections outside the health center, no cutting).
 - Keep enrolled in exposed infant care (HCC) & do confirmatory rapid test at 24 months and/or 6 weeks after cessation of breastfeeding.

Summary Points:

- Rapid test is used to diagnose HIV infection in children 12 months and older.
- Infected infants need confirmatory HIV test by DNA PCR on the day of ART initiation, and do NOT need additional tests at 12 months or 24 months (do not delay ART initiation waiting for confirmatory test).
- The window period for breastfeeding infants is 6 weeks for both rapid test and DNA PCR.
- It is recommended that HIV-infected mothers on ART aim to wean by 24 months of age.
- Babies with mum at ART clinic must always be assessed. Remember to ask about them at every visit and test them early. Do not assume they have been tested or are in care.

Diagnosis: Case Study 5

Case:

You are working in the ART clinic and have a 2 year old patient who was started on ART for a positive DNA PCR at 6 weeks of age. He did not have a confirmatory DNA PCR at the time of ART initiation.

A rapid test today is negative (non-reactive).

Questions:

1. What do you do next?
2. Do you stop ART? Why or why not?



Diagnosis: Case Study 5

Answers:

1. What do you do next?

- Send an HIV DNA PCR, but **DO NOT STOP ART.**

1. Do you stop ART? Why or why not?

- No. **DO NOT STOP ART.**
- When infants start ART at a very young age, their immune system is immature. It is just starting to make antibodies on its own. When ART is started and the virus “goes to sleep” there is no virus awake when the body is more mature and good at making antibody. It appears that the immune systems may not “remember” the HIV virus.
- When their immune systems do not remember the HIV by not making antibodies, this can lead to a FALSELY NEGATIVE rapid test, which means the test is NON-REACTIVE but the child does have HIV VIRUS in the body. (Remember: Rapid test checks for antibody).
- In this case, a more specific test, HIV DNA PCR, is needed to test for HIV virus in the body. Continue ART while waiting for HIV DNA PCR (DBS) result.
- If the HIV DNA PCR is positive, continue ART. Child is HIV-INFECTED.
- If the HIV DNA PCR is negative, stop ART and repeat DNA PCR in 8 weeks' time. (*counsel the mother about the importance of returning for this result!*) If this DNA PCR is positive, the child should reinstate ART. If negative, the child is uninfected and should be discharged.

Summary Points:

- Infected infants should have a confirmatory DNA PCR on the day of diagnosis, and do not need additional confirmatory testing at 12 and 24 months if the DNA PCR result is positive.
- Repeat rapid test for all exposed infants at 12 and 24 months of age.
- If an infant on ART has a non-reactive rapid test, send another DNA PCR. Keep child on ART while awaiting results. If DNA PCR is negative, **DO NOT STOP ART.** Refer to a pediatric HIV specialist for consultation.

PSHD – Presumed Severe HIV Disease: Case Study 1

Case:

Loveness, an 11.5 month old boy, comes to clinic today with oral sores. He has never been sick before. Mother is HIV-infected and not on ART. Today, he has mild malnutrition and thrush, but otherwise is stable.

HIV rapid test for the child is positive (reactive). DBS is done today, but results are not yet available.

Questions:

1. What is the status of the child?
2. Does the child meet criteria for presumptive HIV diagnosis?
3. If not, how high is your concern that this child is in fact HIV-infected?
4. What is your clinical plan for this patient?

PSHD – Presumed Severe HIV Disease: Case Study 1

Answers:

1. What is the status of the child?

- **EXPOSED.** He is less than 12 months old with HIV Rapid test **REACTIVE**.

2. Does the child meet the criteria for presumptive HIV diagnosis?

- **No, he does not meet criteria for PSHD:** has a reactive rapid test and oral thrush, but does not have severe pneumonia, sepsis, nor one of the highlighted WHO stage IV clinical conditions.

3. If not, how high is your concern that this child is in fact HIV-infected?

- There is a **VERY HIGH CONCERN** that the child is HIV-infected, as oral candidiasis is an uncommon clinical finding in a person over 6 wks of age with a functioning immune system.

4. What is your clinical plan for this patient?

- **The child is most likely HIV-infected**, but still does not fit the criteria for PSHD. Given the age of the patient, preparations should be made to start the child on ART. Today, do pre-ART counseling, evaluate for TB, and give nutritional advice to the guardian. Treat oral thrush with Nystatin or GV.
- Have the patient follow-up in next 2 weeks for repeat rapid test at 12 months and to start ART.

Don't' forget to refer mom for ART initiation!

Summary Points:

• Presumptive Diagnosis criteria (PSHD) include a **positive (reactive) antibody rapid test** in an infant less than one year **AND any TWO** of the following:

- Oral thrush (in an infant greater than 6 weeks),
- Severe Pneumonia, or
- Severe Sepsis

OR

- Positive rapid test and any of the WHO stage IV highlighted conditions listed on the staging card (refer to job aid or guidelines page 13).

• **Keep a very high index of suspicion of HIV infection in children who have a REACTIVE HIV test and are almost 12 months age.** Do not allow these children to delay appointments or be lost to follow up.

PSHD – Presumed Severe HIV Disease: Case Study 2

Case:

Precious, a 4 month old girl, is here for the first visit to clinic today. Mum reports no problems. Mother is HIV-infected and has been on ART for 9 months. The baby is exclusively breastfed and growing well. At 1 month of age, the child had oral thrush. Otherwise, the baby has been healthy.

A rapid test is positive (reactive) today. A DBS is also done, but results will not be available for 2 months.

Questions:

1. What is the status of the child?
2. Does the child meet criteria for presumptive HIV diagnosis?
3. If not, how high is your concern that this child is in fact HIV-infected?
4. What is your clinical plan for the next month for this patient?

PSHD – Presumed Severe HIV Disease: Case Study 2

Answers:

1. What is the status of the child?

- EXPOSED

2. Does child meet the criteria for presumptive HIV diagnosis?

- NO

3. If not, how high is your concern that this child is in fact HIV-infected?

- Very low concern that the child is infected, as she had oral thrush at age 1 month (which is still within normal age range) and is healthy and growing well.

4. What is your clinical plan for the next month for this patient?

- Mum should continue to **exclusively breastfeed** the infant until 6 months and add complementary feeding at 6 months. She should start weaning gradually from 18-24 months. Mom should continue ART and ensure that her viral load is checked appropriately. The infant should receive daily bactrim and should be monitored monthly until the DBS result is returned. After that, the child should remain in HCC care until he or she has been confirmed uninfected.

Summary Points:

- An initial DNA PCR should be performed at 6 weeks of age for all exposed infants, or at first appointment when enrolled in care if older than age 6 weeks.
- Even if the initial PCR is negative, follow exposed babies regularly for signs of HIV infection and provide with daily bactrim prophylaxis.
- Stress the importance of mother's adherence to her own ART and appropriate feeding guidelines. Make sure she has her viral load checked at appropriate milestones.

PSHD – Presumed Severe HIV Disease: Case Study 3

Case:

Chifundo, a 9 month old girl, was admitted to the NRU 2 weeks ago. Mother is HIV-infected and not on ART. The child is still breastfeeding.

The child was severely malnourished upon admission to the NRU with oral thrush and severe pneumonia. Since admission she has improved significantly and she is tolerating chiponde well.

HIV rapid test is positive (reactive). DBS was done last week, but results will not be available for another 6 weeks.

Questions:

1. What is the status of the child?
2. Does child meet the criteria for presumptive HIV diagnosis?
3. If not, how high is your concern that this child is in fact HIV-infected?
4. What is your clinical plan for the next month for this patient?

PSHD – Presumed Severe HIV Disease: Case Study 3

Answers:

1. What is the status of the child?

- The child is presumed to be HIV-infected (PSHD).

2. Does child meet the criteria for presumptive HIV diagnosis?

- Yes, she does meet criteria for presumptive HIV diagnosis. She has a positive rapid test and was sick with oral thrush and severe pneumonia, as well as severe acute malnutrition.

3. If not, how high is your concern that this child is in fact HIV-infected?

- She meets criteria for HIV-infection based on presumptive diagnosis.

4. What is your clinical plan for the next month for this patient?

- The child should start CPT, continue follow-up with Outpatient Therapeutic Programme (OTP), do pre-ART counseling, be evaluated for TB, and then initiated on ART.
- A confirmatory DNA PCR (DBS) should be sent on the day of ART initiation.

Summary Points:

- In a child with severe malnutrition and a positive (reactive) HIV rapid test, both HIV and TB should be suspected.
- Before starting ART it is important to try to rule out TB. If there is a suspicion for TB, start TB treatment before starting ART to reduce the risk of IRIS.
- Presumed Severe HIV Disease can also include children with a positive (reactive) rapid test and the highlighted WHO stage IV conditions on the staging card (refer to job aid or HIV guidelines).

Exposed Infant: Case Study 1

Case:

Esther, a 3 month old, is brought to the HCC clinic by her aunt. The aunt tells you the mum died 7 weeks ago and looked “very thin” when she died. She thinks she may have had HIV. Mum breastfed Esther until a few days before she died.

The baby is thin, but vigorous and looks at you. She has no thrush, lungs are clear.

Questions:

1. What test is needed to determine if the child is exposed?
2. If child is HIV exposed, what test will determine if HIV infected?
1. What do you do for this infant if HIV exposed? If not HIV exposed?
2. What feeding advice should you give to this auntie for the baby?

Exposed Infant: Case Study 1

Answers:

1. **What test is needed to determine if the child is exposed?** HIV rapid test. It will test for antibody to HIV.
2. **If child is HIV exposed, what test do you need to determine if the child is infected?**
 - A DBS (dried blood spot) or DNA PCR test. It tests for the presence of HIV DNA (i.e. tests for the virus directly) and is a definitive test in infants less than 12 months.
3. **What do you do for this infant if HIV exposed? If not HIV exposed?**
 - If HIV exposed (HIV rapid REACTIVE), send DBS, enrol in HCC, start CPT, evaluate for possible TB, monitor growth.
 - If HIV not exposed (HIV rapid NON-REACTIVE), evaluate for possible TB, refer to U5/peds to follow growth.
4. **What feeding advice should you give to this auntie for the baby?**
 - This child will need formula. Exclusive formula feeding is called **replacement feeding**. Auntie should buy formula or look for a local organisation that may help support her. Note: Exclusive breastfeeding for 6 months with complementary feeding to 24 months is the recommended feeding for infants. If unable to breastfeed (e.g. due to maternal death) then replacement feeding is recommended.
 - Formula should be prepared with clean water and according to the instructions. It should not be diluted with extra water. The baby should drink from a cup. If bottle and nipple must be used, they should be cleaned in boiling water daily and allowed to air dry.

Summary Points:

- A rapid test is an important test to determine exposure for infants whose mother is unavailable or refuses to be tested; it can confirm the child was exposed to HIV by testing for antibodies in the child's blood.
- A rapid test detects HIV antibody, while a DNA PCR (DBS) tests for the presence of HIV DNA in the body. An infant can have maternal antibody in their blood up until 12 months, sometimes as long as 18 months; therefore the rapid test can only determine HIV EXPOSURE in infants less than 12 months of age. You cannot be sure whether the mother's antibody or the baby's antibody is what is testing positive (reactive).
- Replacement feeding involves extensive counselling. It is an expensive option for families but may be the only way to give the baby proper nutrition and to prevent malnutrition **if breastfeeding is not an option.**

Exposed Infant: Case Study 2

Case:

Adam, age 4 months, was born to an HIV-infected mother who is not currently on ART. He is breastfeeding and eats *phala*.

Mum took ART during pregnancy and labour but stopped after Adam was born because she thought she did not have to take it anymore.

Questions:

1. What HIV test does Adam need to determine his status?
2. What nutritional information should you give the mother?
3. What is the difference between complementary feeding and mixed feeding?
4. What advice should you offer the mum regarding her ART?

Exposed Infant: Case Study 2

Answers:

1. What HIV test does Adam need to determine his status? **DNA PCR since he is less than 12 months.**
2. What nutritional information should you give the mother?
 - She should **exclusively breastfeed** the baby (breast milk only) until the baby is 6 months old. Once the baby turns 6 months old, she should continue breastfeeding and add other foods (**complementary feeding**). She should continue breastfeeding until the child is 22-24 months of age and wean slowly, over a month.
3. What is the difference between complementary feeding and mixed feeding? What is the danger in mixed feeding?
 - **Complementary feeding** is defined as a combination of breast milk and other foods in a child 6 months and older. It is recommended to provide adequate nutrition in children over 6 months of age.
 - **Mixed feeding** is providing a mix of breast milk, formula, and / or food when the child is less than 6 months old.
 - Mixed feeding is **NOT** recommended.
 - Children less than 6 months old have immature immune and gastrointestinal systems. Mixing breast milk with other foods or formula weakens the intestinal lining, increasing the chance that HIV in the breast milk will cross over into the bloodstream and infect the child.
4. What advice should you offer the mum regarding her ART?
 - The best way to decrease transmission of HIV to her infant is for mum to start and continue taking ART. Therefore, she should re-start ART but needs counselling before re-starting. She needs to understand the importance of good adherence in reducing the HIV in her body and breast milk, which will decrease the risk of transmitting HIV to the baby. She also needs to understand that ART is life-long treatment for her health.

Summary Points:

- DNA PCR (DBS) is the diagnostic test for exposed children less than 12 months. The first test should be performed at 6 weeks of age or at the first appointment if greater than 6 weeks and less than 12 months.
- Mixed feeding is NOT recommended due to increased risk of HIV transmission from mother to child.
- Mothers must have a good understanding of ART: that ART is life-long treatment and that good adherence is important for their own health, as well as that of the child (can prevent HIV transmission to the baby).
- Infants should breastfeed until about 22-24 months of age and wean slowly over 1 month.

Exposed Infant: Case Study 3

Case:

Chikondi, age 20 months, is enrolled in the HCC clinic. She stopped breastfeeding 6 weeks ago and mum started ART during pregnancy.

She had a negative DNA PCR at age 6 weeks and a negative HIV Rapid test at 12 months. She is clinically well.

Questions:

1. What test do you do today? Is it definitive?
2. What is the status of the child?
3. What are the next steps?

Exposed Infant: Case Study 3

Answers:

1. What test do you do today? Is it definitive?

- HIV rapid test should be done 6 weeks after cessation of breastfeeding. If breastfeeding stopped over 6 weeks ago, the test is considered definitive.

2. The Rapid test comes back POSITIVE. What is the status of the child?

- **INFECTED**

3. What are the next steps?

- WHO staging and rule out PTB infection. Continue CPT.
- Send a Confirmatory DNA PCR test (do not await result to start ART)
- Pre-ART classes for the guardian(s)
- ART initiation (do not delay ART initiation for the result of the confirmatory test).

What are some reasons this child may have been infected?

- The mother may have poor adherence to her own ART.
- The mother may have a resistant strain of HIV virus and her ART is not working.
- The mother still has active virus in her body that can be passed along to the child through breast milk.
- Even with all measures in place, a small percentage of children may be infected.

Summary Points:

- People who are HIV-infected must start ART. Do not delay for confirmatory DNA PCR result.
- Confirmatory test should be done by DNA PCR on the day of ART initiation.
- The window period for rapid test after the cessation of breastfeeding is 6 weeks.
- There are still some children who may become infected even if their mother is on ART. Children who are infected while mum is on ART should be followed closely for signs of ART resistance and should have a viral load done after 6 months on ART.

Exposed Infant: Case Study 4

Case:

A 3-day old baby born at home is brought to the Under 5 Clinic for the BCG vaccine. His weight is 2.8 kg today. You look in the mother's passport book as part of routine screening and note that she has been collecting ART monthly for the last 7 months.

Questions:

1. In addition to the BCG vaccine, what should be done for the baby today?
2. What counselling should you do regarding follow up for the baby?
3. What infant feeding advice do you give this mum?

Exposed Infant: Case Study 4

Answers:

- 1. In addition to the BCG vaccine, what should be done for the baby today?**
 - The baby should start on Nevirapine (NVP) syrup 1.5 mL once daily until the baby is 6 weeks old.
 - The baby should also be enrolled in HCC by filling out a pink mastercard and given an appointment date.
- 2. What counselling should you do regarding follow up for the child?**
 - The child should take the NVP syrup daily until he is 6 weeks old. He should be brought to the clinic if he has any side effects, such as rash.
 - He should be brought to the clinic at age 6 weeks old to get a DBS test and start Bactrim (CPT).
- 3. What infant feeding advice to you give this mum?**
 - Exclusive breastfeeding (no *phala, sobo*, or water) until 6 months of age.
 - At age 6 months, continue breastfeeding with the addition of hygienically prepared, nutritious foods.
 - The child should breastfeed until age 24 months

Don't forget to counsel mum on good adherence with her own ART, and ensure that she has had her viral load checked as she has been on ART >6 months!

Summary Points:

- NVP syrup is given daily to an exposed infant from birth until age 6 weeks. NVP syrup can be started between birth and 4 weeks of age if the mother presents to care late, however discontinue NVP syrup by age 6 weeks.
- NVP dose is based on birth weight:
 - For infants 2.5 kg or less give 1 mL once daily. For infants greater than 2.5 kg, give 1.5 mL once daily.
- Three 25mL bottles of NVP syrup should be given to the mother at ANC.
- Infants should be enrolled into HCC at birth (or first point of care) through opening of a pink mastercard.
- Counsel on the importance of follow-up, infant feeding and mother's continued good adherence to ART.
- Screening the mother's health passport book at Under 5 Clinic is a good way to identify exposed infants that may otherwise be missed.

ART Eligibility: Case Study 1

Case:

An 8 month old child comes to the ART clinic for the first time with weight loss and white rash in his mouth. Mum was diagnosed as HIV-infected last month and is breastfeeding the child. Upon further questioning, you realise the child has been hospitalised twice for severe pneumonia.

Child is well appearing but has lost weight on growth curve and has oral thrush. HIV Rapid test today is Reactive, DBS is sent and results will be back in 2 months.

Questions:

1. Is the child infected, uninfected or exposed?
2. Is the child eligible to start ART? Why or why not?
3. What care do you provide for the mum and child?

ART Eligibility: Case Study 1

Answers:

1. Is the child infected, uninfected or exposed? **EXPOSED.**
2. Is the child eligible to start ART ? Why or why not?
 - Yes, the child is ART eligible based on PSHD (presumed severe HIV disease) with HIV rapid test REACTIVE and severe pneumonia and thrush. Start ART for PSHD. Do not wait for the DBS results.
3. What care do you provide for the mum and child?
 - Mum is eligible for ART under Treat All. Start mum on CPT now and start ART as soon as TB has been ruled out and she has received pre-ART counseling. Offer family planning to the mother.
 - Child is eligible for ART under Treat All. Start Bactrim (CPT), and start ART as soon as TB has been ruled out and pre-ART counseling completed.
 - Counsel the mom to continue breastfeeding and begin to wean from 18-24 months old.

Summary Points:

- Exposed infants meeting criteria for Presumed Severe HIV Disease (PSHD) have a **positive HIV rapid antibody test** and **2 of the following: oral thrush, severe pneumonia, or severe sepsis** OR a **highlighted WHO Stage 4 condition** (refer to job aid or guidelines page 13).
- Always follow up DNA PCR results in children, especially those started on ART for PSHD.
- Ensure all breastfeeding mums are on ART.

ART Eligibility: Case Study 2

Case:

A 6 year old HIV-infected boy, WHO III (PTB), comes to your ART clinic because the family wants to know if he is ready for ART. The family completed group counselling and demonstrated a commitment in supervising his medications closely. He is currently being treated for PTB, and is doing well now 2 weeks into the initiation phase.

Questions:

1. Would you start this child on ART? Why or why not?
2. If you were to start ART, which medications would you prescribe? Why?

ART Eligibility: Case Study 2

Answers:

1. Would you start this child on ART? Why or why not?

- Yes, he is ART eligible because of universal eligibility for all people living with HIV under Treat All.

2. If you were to start ART, which medications would you prescribe? Why?

- AZT/3TC + EFV (Zidovudine/Lamivudine + Efavirenz) for children with TB over 3 years and over 10 kg
 - AZT/3TC is used because the child has no clinical signs of anaemia (or Hb > 8g/dL) and is less than 35 kgs. TDF/3TC/EFV would be used for patients weighing 35 kgs or more.
 - EFV is used because it interacts less with TB meds (i.e. Rifampicin) than NVP. EFV can be taken because the child is aged 3 years or older and weighs over 10 kg.
- AZT/3TC/NVP would be used for children with TB who are under age 3 years and under 10 kg.

Summary Points:

•The criteria for starting ART in children depends on their age.

•Start ART for children:

•Less than 12 months of age:

- DNA PCR POSITIVE = confirmed HIV infection, Universal ART eligibility, regardless of WHO stage or CD4 count/%
- Exposed infants meeting criteria for Presumed Severe HIV Disease (PSHD)

•12 months and older:

- Rapid test positive = confirmed HIV infection, Universal ART, regardless of WHO stage or CD4 count/%

ART Eligibility: Case Study 3

Case:

Grace, an 18 year old, tested HIV positive at her local health centre. During the morning health talk at the antenatal clinic, she heard a nurse teaching about universal access to ART and felt the urge to start ART immediately .

Question:

1. Is she eligible to start ART?

ART Eligibility: Case Study 3

Answer:

1. Is she eligible to start ART immediately? *Justify the answer*

- Under Treat All, every person living with HIV is eligible for ART. She should start 5A (TDF/3TC/EFV).

Summary Points:

- Under Treat All, any person living with HIV is eligible for ART and should start as soon as possible after appropriate counselling and clinical evaluation.

Adherence: Case Study 1

Case:

Gift, a 4 year old patient WHO III (severe pneumonia) on ART for 2 years comes to clinic for a refill with his mother. Mom reports he is doing well.

Physical exam is normal. Adherence is 60% today.

Looking through the passbook you note poor adherence for the past three months with noted adherence counseling done at each visit.

Questions:

1. Why is adherence so important?
2. How can you assess adherence at your clinic?
3. How is adherence assessment and counselling different for children versus adults?
4. What are some interventions you can discuss to improve adherence?
5. Would you give another refill this month? Why or not?

Adherence: Case Study 1

Answers:

1. Why is adherence so important?

- Good adherence (>95% adherence, missing only 1-2 doses of ART monthly) keeps enough ART in the body to keep the virus suppressed, or “asleep” as long as possible
- Poor adherence to ART leads to lower levels of ART in the body. When the amount of ART in the body decreases, the virus “wakes up.” The “awake” or “active” HIV virus then tries to change itself so that the ART can no longer keep the HIV “asleep” or “inactive.” This is **resistance - kupima**.
- Adherence rates over 95% help prevent the development of drug resistance.
 - 95% adherence = missing less than 2 doses every month. Remember how hard this is to do.
 - Resistance develops most quickly when adherence is slightly below 95% (3-4 missed doses per month). *Explain this a bit more here*
- With poor adherence, the “awake” or “active” HIV again destroys CD4 cells and people fall sick with opportunistic infections like they did before starting any ART medication. Once resistance develops second line medication is needed to suppress the virus, or “put the virus back to sleep.” Good adherence is also needed with second line medications and there is no standard third line ART in Malawi.
- If a patient has resistant virus they can transmit it to a sexual partner or during pregnancy to the baby.

2. How can you assess adherence for CHILDREN at your clinic?

- Start a dialogue about taking ART using open ended questions:
 - What situations make it difficult to give ART to your child?
 - When do you forget most often to give ART, in the morning or in the evening?
 - How do you remember to give ART on the weekends? How is your weekend routine different?
 - Who gives ART to the child? How do you communicate to each other who should give the dose?
 - If the primary guardian is unexpectedly away due to illness or funeral or caretaking or work or transport problems who knows to give the ART to the child? How do they know?
 - Who in the family knows the child’s HIV status?
- Pill counts: Refer to MOH job aid or MOH Guidelines on pages 46 and 47.

Adherence: Case Study 1 continued

Answers (continued):

3. How is adherence assessment and counselling different for children versus adults?

- Children are entirely dependent on adults to remember their medication.
- Children cannot make decisions for themselves regarding their care so HCWs must advocate for children to ensure they get the best opportunities and care to stay well by engaging family members as needed.
- HCWs must remain aware that even young children do understand discussions about HIV and overhearing discussions and counseling regarding ART without any partial or full disclosure conversations with the child can cause undue stress. Start disclosure early.

4. What are some interventions you can discuss to improve adherence?

- **Review common challenges to adherence and possible solutions**
 - What is their living situation? Who lives at home? Do they know the child's status? Do they help?
 - Can they disclose to family members who could help?
 - Can guardians verbalize how medications work and why it's so important to give twice daily?
 - Review how ART works and how resistance develops.
 - Do they have transport challenges?
 - Consider spacing visits if they are otherwise able to give ART as directed.
 - Community Health Worker or HSA home visit to encourage good adherence
 - When do they most often forget the dose? Morning or evening? Weekday or weekend? Travel?
 - Strategize how they can remember the particular dose. Set alarm? Chickens in/out? Sun up/down? To church/To bed? Have child draw picture or tie string to door to remind them to give ART when coming/going from home.
 - Plan ahead: always bring medications when traveling.
 - Drugs should be taken as prescribed every 12 hours, but the exact times can vary according to the patient's schedule. For EFV-based regimens, make sure to take at bedtime.
 - Review missed doses: Drugs can be given up until halfway to the next dose. (6 hours for twice-daily medications and 12 hours for once-daily medications)

Adherence: Case Study 1 continued

Answers (continued):

5. Would you give another refill this month? Why or why not?

- Depends on your discussion with the mother.
 - If you identify a very obvious cause for her poor adherence, for example she thought she could only give them medicine at 6 AM but leaves for work at 5 AM so has not been giving it any day she works, then you can easily solve that problem by advising her to just give the medicine at 5 AM and 5 PM instead. Refill meds, have CHW follow-up at home in 2 weeks, and return to clinic in 4 weeks.
 - If your counselling does not reveal an obvious solution and you have been counselling this same guardian for the past 3 months then it may be reasonable to stop ART temporarily (with a tail if needed). Could have CHW visit home to gather more information and find another guardian(s) to disclose status to who can help. Restarting ART within 1-2 months is a PRIORITY. Schedule next visit to restart. This is TEMPORARY. Practice adherence with CPT ½ dose morning ½ dose evening.

What adherence strategies have been useful at your clinic?

Summary Points:

- Adherence to ART is extremely important to help prevent the development of resistant virus.
- Discuss the challenges people face with ART adherence. Provide practical ideas and solutions.
- Start age appropriate disclosure process early.
- Engage all caregivers for children in discussions about ART adherence. Ensure they understand how ART works and why adherence is important. Then strategize techniques to help them remember to give medications.
- If the patient has poor adherence despite counseling on three occasions, consider temporarily stopping the ART (with a tail if needed) while continuing to work on identifying and addressing the adherence challenge. Practice dosing with CPT to achieve 95-105% (missing <2 doses per month) adherence. Have CHWs visit the home and identify any other challenges and solutions. Plan to restart medication within 1-2 months.

Adherence: Case Study 2

Case:

Samson, a 14 year old patient WHO III (PTB) on ART for 2 years comes to clinic for a refill. He has no complaints. He comes alone today.

Physical exam is normal. He has 10 pills remaining in his bottle. He received a sealed 60 tablet bottle one month ago and had 8 pills remaining at last visit. He takes 1 tab twice daily.

Looking through the passbook you note poor adherence for the past 3 months . He states that his auntie joined him 3 months ago and since then she sometimes tells him to take his “TB medicine.” For the past two months he has come alone each month and was told to take his medication. He states he does not know why he takes his medicine. He hates coming to clinic as he has to miss school, which his teacher notices.

Questions:

1. What circumstances affect Samson’s adherence?
2. What may help Samson understand the importance of taking his medication?
3. What are common concerns about #2?
4. Would you give another refill this month? Why or not?

Adherence: Case Study 2

Answers:

1. What circumstances affect Samson's adherence?

- He is alone: Teenagers are often expected to take their own medicine even though they don't know why.
- He does not know why he takes the medicine: As he does not KNOW the importance, and does not feel "better" by taking it, it is common to stop taking it.
- He was told it was for "TB": Don't lie to children. Many adolescents report they are most distressed and angry about being "lied to for so long" especially since it was about their own health .
- He has to miss school: Prioritize allowing children to not miss school to both avoid stigma and to help them to do well by minimizing absenteeism. They are not required to disclose their status to school.

2. What may help Samson understand the importance of taking his medication?

- DISCLOSURE – tell him that he has HIV and help him understand why he takes medicine.
- Disclosure is a process that ideally starts at a younger age. Guardians alone or with HCW disclose status.
- Avoid "ACCIDENTAL DISCLOSURE"
 - Remember that children hear everything though they are sitting quietly. Though they do not always understand everything you are saying, as they approach school age and for some, even sooner, they begin to wonder about what you are talking about.
 - You do not want children to find out they have HIV on accident. Use an intentional process.
 - Children who "find out" they have HIV but are "not supposed to know" report feeling very isolated as they cannot talk to anyone about their feelings or concerns.
- Start the process of disclosure
 - Introduce the idea of disclosure to guardians of young children 3-5 years old.
 - Start with PARTIAL DISCLOSURE – We have "soldiers" and an "invader" (do not call it *kachilombo* – use *ndani*) attacks and kills our soldiers making it easy to fall sick. We take medication every day to help our soldiers stay strong and to put the "enemy" to sleep.
 - Proceed to FULL DISCLOSURE when child starts asking more questions or if solely responsible for ART or as needed. In full disclosure identify "soldiers" as CD4, *Ndani* as HIV, and meds as ART.

Adherence: Case Study 2 continued

Answers (continued):

3. What are common concerns about disclosure?

- Guardians' fears are some of the biggest barriers to disclosure to a child. Guardians may fear:
 - The child will tell other people.
 - Reassure guardians that in our experience children understand the importance and seriousness of this information and it is very, very rare for teens to tell others.
 - The child will be too sad or upset.
 - Reassure guardians that children are resilient. Sadness is normal but they will cope.
 - The child is too young to understand properly.
 - If children are presented information in age appropriate way, they can understand.
 - The teen may ask questions that guardians don't know the answer to.
 - Reassure guardians that they do not need to know the answers to all of their children's questions. Write down or remember the questions, and ask at their next clinic visit.
 - The child will ask about the guardian's own status.
 - Parents may feel guilty or sad that they passed HIV to their child, or they fear explaining how they, the adult, were infected. Reassure them that teens are resilient and can be trusted.
- Health care workers most often report they do not suggest disclosure because they don't know what to say
 - Use the "soldier story." It takes less than 5 minutes.

"Inside all of our bodies we have soldiers. These soldiers help us to fight off infections. They fight off flu, rash, pneumonia, diarrhea, malaria. Sometimes an enemy enters our body that kills our soldiers. When we have few soldiers it is easy to fall sick from pneumonia, malaria, diarrhea, rashes and other sicknesses. Sometimes we can do blood tests to count how many soldiers there are in the body. When there are few soldiers we can take medicines to help make the enemy sleep and allow your body to make many soldiers again. The medicine must be taken twice a day, every day, at the right time to keep the enemy asleep. Without the medicine in your body, the enemy can wake up and start to kill the soldiers again, so it's important to remember the medicine every morning and every night. I only share the story of the soldier with people who can understand it because this is not a story for everyone to know. Together with your guardian you can decide who else may be ready to also know the story of the soldier."

Adherence: Case Study 2 continued

Answers (continued):

4. Would you give another refill this month? Why or why not?

- Today, the patient is here alone with poor adherence for the 4th month in a row. He has not had disclosure and does not know that he has HIV or know why he should take the medicine. He is solely responsible. As his adherence is 74% (remaining pills/total pills), he is not getting much benefit from the ART and may be developing resistance.
- He NEEDS DISCLOSURE!
- It would be reasonable to **temporarily** stop ART (with a tail if needed) for 2-4 weeks until fully disclosed.
- Have patient return with caregiver and disclose HIV status to patient (see disclosure packet).
- Continue CPT while off ART. Restart ART as soon as disclosure completed.
- Continue to support “disclosure” and living with HIV throughout adolescence, as a patient’s understanding and consequences of living with HIV changes with age.

Who feels comfortable disclosing HIV status to children? Why or why not? How many disclosures do you do in one clinic? How do you mark the passbook or mastercard to demonstrate disclosure stage to other HCWs?

Summary Points:

- Adherence to ART is extremely important to prevent development of resistance.
- Disclosure is a process of teaching children about their HIV status and treatment. It occurs over time.
- Accidental disclosure should be avoided as children report feeling very isolated and betrayed if they “find out.”
- Discussing fears about disclosure with parents helps them understand the importance of disclosure.
- Disclosure does not take a long time. It is usually less than 5 minutes.
- Discussions about living with HIV continue through adolescence as implications of living with HIV changes with age.
- Sometimes you must consider temporarily stopping ART while making an active intervention (in this case disclosure) to improve adherence.

Adherence: Case Study 3

Case:

Patience, a 16 year old patient on ART for 4 years, comes to clinic for a refill. She has no complaints. She comes alone today. You have known her for several years and she has had good adherence. She has normal menses every month.

She started at boarding school last month and reports it is hard to take her ART in the morning with all of the girls who share her same dormitory. They learned about HIV at school and her friends have been talking about “those people” who have HIV with her. She doesn’t know what to say to them. Her friends have started “dating” boys who live nearby their school and they told her that a boy likes her. One friend is pregnant.

Physical exam is normal. She has 9 pills remaining. She had a refill one month ago.

Questions:

1. What circumstances affect Patience’s adherence?
2. What adherence challenges and behaviour and attitudes are unique to adolescents?
3. What strategies can you use with adolescents living with HIV (ALHIV) to help maintain or improve adherence?
4. How do you address sexual and reproductive health for ALHIV in your health facility?

Adherence: Case Study 3

Answers:

1. What circumstances affect Patience's adherence?

- Living in a new environment: communal living with other students in dormitories, change in schedule, lack of privacy, sometimes moving to new home with family for day school, etc.
- **Stigma** regarding people living with HIV among friends at school; some staff also have similar behaviour
- Decisions about relationships, sex, puberty (**sexual and reproductive health** issues).
- Loneliness, isolation and depression or worry are possible if she feels she cannot relate to peers.
- **Disclosure**: no one knows her status. Due to stigma and discrimination, it is often necessary for teens to not disclose for a while until they can find someone who is trustworthy. Adolescents are NOT required to disclose their status.

2. What adherence challenges and behaviour and attitudes are unique to adolescents/teens?

- Adolescence is a time of emotional, physical and cognitive growth and change.
- *The brain is still growing* and the planning and rational part of the brain is still not completely developed. Teenagers are learning to control urges, consider the future consequences of their current behaviour and make good decisions as this part of the brain is continuing to mature throughout the adolescent years. All people mature at a different rate. Practice at making decisions during adolescence helps this part of the brain fully mature (pre-frontal cortex).
- Adolescents who seem to continue to make bad decisions or who are “unable to understand” are not “being rude” They are just passing through a normal developmental stage.
- Adolescents experience changes in responsibilities, expectations, relationships, brain and body development (puberty), friends, schools, living arrangements. Pretty much all of life changes.
- **Health care workers' role changes as well.** HCWs need to help teenagers identify and anticipate potential adherence challenges, and plan for and negotiate their adherence, which is often a new responsibility.
- More frequent visits to the clinic is not always a good solution as sometimes transport is the biggest barrier.

Adherence: Case Study 3 continued

Answers (continued):

3. What strategies can you use with adolescents living with HIV (ALHIV) to help maintain or improve adherence?

- Work WITH teens and not *against* them. You are part of their team. Create a cooperative relationship. Avoid starting an argument or fighting relationship. DO NOT set them up to fail or try to trick them up.
- **Discuss common challenges**
 - Discuss details of home/school environment (Are they at boarding school? Who knows their status? Does the person they disclosed to help them remember their medication?)
 - Discuss who is responsible for their medication? Usually it is the teen only. Who could be on their “team” to help them remember? Help them consider disclosing to trusted person.
 - Do they remember exactly how the medication works? Remind them and review resistance.
 - How do they pay for transport to clinic for refills?
- **Adherence counseling with adolescents**
 - Address solutions to common challenges that you identify.
 - Ensure they understand why they are drinking the medication.
 - Always praise their EFFORT and ATTEMPTS at good adherence. Do NOT praise them only when they have good adherence, but DO praise them when they are trying hard. Teens will often strive to please you and earn your praise. If you only praise good adherence, then they may not be honest about their challenges with adherence because they want you to be happy with them.
 - Have reasonable expectations and expect that they will miss doses of medication sometimes. Discuss and find out when they are most likely to miss their medication. Do they most often miss in the mornings? Evenings? Weekdays? Weekends? Holidays? When?
 - Work with the teen to help the TEEN identify which methods may help them the most to remember to take their medication. HCWs should offer suggestions, but NOT make the final decision and or tell the teen what to do.
 - Use Community Health Worker or HSA to continue support and consider home visit

Adherence: Case Study 3 continued

Answers (continued):

- **Review practical advice with the adolescent that ideally fits into their own daily routine**
 - Set an alarm on cell phone or watch for twice daily; Use a paper or calendar to tick.
 - Build a “team” to help remember ART. Ask family or friends who have been disclosed to to help.
 - “Shoe tool” -- Place a reminder object or ART bottle in their shoe at night to remind him to take meds in morning when putting on his shoes. Then place the object/ART near sleeping area in the morning to remind him to take meds before sleeping.
 - Bring cup of water into room at night and take ART, then use in morning as reminder and take ART.
 - Consider a treatment buddy, such as a peer living with HIV who patient can trust and disclose to.

4. How do you address sexual and reproductive health (SRH) for ALHIV in your health facility?

- Studies show that providing adolescents with accurate information about SRH issues including family planning services does not make them to have sex sooner, or more, but does make it more likely they will use condoms and contraception to prevent infection and unintended pregnancy.
- Adolescents receive a lot of information from their friends that is inaccurate and wrong.
- Make a plan with clinic staff to address SRH needs. Have condoms easily accessible.

Can you share any rewarding or challenging situations you have had with adolescent patients?

Summary Points:

- Adolescence is a period of a lot of emotional, physical and cognitive growth and change.
- Social roles, relationships, responsibilities and expectations change during the adolescent years.
- Stigma, emotional health, and new schools, routines and friends lead to adherence challenges for ALHIV.
- Adherence is difficult for adolescents as often this is the first time they become primarily responsible for ART.
- Their brains are still maturing and need practice planning, organizing, making decisions and anticipating.
- Work with adolescents to identify the challenges to adherence and to brainstorm solutions.
- Adolescents are curious about SRH issues. Provide them with accurate information and care. Accurate information and access to SRH services does not cause increased or earlier sexual activity, but can increase condom use and prevent unintended pregnancy with contraceptive use.

TB: Case Study 1

Case:

Mwai is a 5 year old male, now on ART for 3 months.

He reports to ART Clinic with cough, fever, chest pains, and weight loss for one month. His father died 2 months ago of “malaria” with a lot of fever and cough for weeks.

Questions:

1. What is the most likely primary diagnosis?
2. What name is given to the phenomenon described above?
3. Describe how this happens.
4. Would you stop ART? Why or why not?

TB: Case Study 1

Answers:

1. What is the most likely primary diagnosis?

- TB (Tuberculosis)

2. What name is given to the phenomenon described above?

- Immune Reconstitution Syndrome (IRIS)

3. Describe how this happens.

- Individuals with very weak immune systems (low CD4s) will not be able to fight infections such as TB so they may not show significant signs and symptoms of these infections at the beginning.
- Upon starting ART, the immune system is strengthened and starts recognizing and fighting infections. As a result, symptoms of the particular infection begin to show themselves.
- IRIS usually occurs 6 weeks to 6 months after ART initiation.

4. Would you stop ART? Why or why not?

- Do not stop ART. Treat the infection (TB) and follow the patient closely.

Summary Points:

• IRIS is a condition described by sudden recovery of immunity after ART initiation, resulting in an over-aggressive immune response. Clinically, this can present as severe or worsening TB, cryptococcal meningitis, herpes zoster, KS, hepatitis, etc., which usually occurs 6 weeks to 6 months after starting ART.

TB: Case Study 2

Case:

Atupele is a 1.5 year old boy weighing 9.5 kgs whose HIV rapid test was positive today. He has fever, cough, chest pains, and mild malnutrition. After a chest X-ray, he is diagnosed with TB.

Questions:

1. When should the child start ART?
2. Why is the timing important?
3. What ART regimen would you prescribe and why?
4. What investigation(s) would you do?
5. Would you give Starter Pack? Why or why not?

TB: Case Study 2

Answers:

- 1. When should the child start ART?**
 - The ideal time to start ART is 1-2 weeks **AFTER** starting TB treatment.
- 2. Why is the timing important?**
 - Starting TB treatment before ART helps to decrease the risk of IRIS.
 - Starting ART 1-2 weeks after TB treatment (instead of after TB treatment is complete) has been shown to decrease the overall morbidity and mortality of patients with both HIV and TB.
- 3. What ART regimen would you prescribe and why?**
 - AZT/3TC/NVP
 - Use NVP because this child is less than 3 years old.
 - EFV (Efavirenz) interacts less with TB medication than NVP (Nevirapine) but is NOT be the best option in this case since the child is less than 3 years of age.
 - EFV should be used in children over 3 years of age who weigh more than 10 kg.
- 4. What investigation(s) would you do?**
 - Baseline hemoglobin if the child looks pale on exam, as AZT can cause or worsen anemia.
 - Rule out other causes of fever: (MRDT/BF, FBC if available, other tests as clinically indicated)
- 5. Would you give Starter Pack? Why or why not?**
 - No starter pack is needed because Rifampicin decreases the amount of NVP in the blood.
 - Start with continuation dosing of ART or else amount of drug in the body will be too low.

Summary Points:

- In a patient with TB and HIV co-infection, starting TB treatment prior to ART helps prevent IRIS and decreases morbidity and mortality.
- Rifampicin decreases the level of Nevirapine in the blood so use Efavirenz when possible (for patients over 3 years who weigh more than 10 kg).
- DO NOT use a starter pack when patient is on TB treatment.

TB: Case Study 3

Case:

Nelia is a 12 year old girl who has been on ART for over 2 years, but despite good adherence to her medication, her viral load is 175,000 copies/mL.

Today she presents with headache and wasting and, after a lumbar puncture, is diagnosed with TB meningitis .

Questions:

1. What WHO Stage is the patient?
2. Since she has developed TB meningitis on ART with good adherence, what is your concern?
3. What would you do? Describe in detail.

TB: Case Study 3

Answers:

1. What WHO Stage is the patient?

- WHO Stage IV

2. Since she has developed TB meningitis on ART with good adherence, what is your concern?

- Treatment Failure

Despite having good adherence to ART and TB treatment, 3 months later, her viral load is 175,000 copies/mL.

3. What would you do? Describe in detail.

- After confirming that she has been taking her medications and providing teaching for Nelia and her family, she should be switched to second line. She should be started on pediatric ABC/3TC and pediatric Aluvia formulation based on her weight.
- Her Aluvia dose will need to be increased by 1.75 to 2 times the baseline dose because Rifampicin lowers the plasma concentration of protease inhibitors such as Kaletra and Aluvia (Atazanavir should not be used in patients on TB treatment). There is a narrow window of toxicity in these cases, so it is best to refer the patient to a Pediatric referral center.

Summary Points:

- TB meningitis is a WHO stage IV condition.
- Development of new WHO stage III and IV conditions while on ART should prompt evaluation for possible treatment failure.
- If a patient is clinically well, provide adherence counseling and repeat viral load after 3 months.
- Rifampicin decreases the level of Protease inhibitors, as well as other medications. If a patient is on TB treatment as well as Protease Inhibitors (such as Kaletra, Aluvia, or Atazanavir), the dose of the protease inhibitor needs to be temporarily increased only while the patient is on TB treatment. There is a narrow window of toxicity, so it is advised to refer these challenging cases to a Pediatric specialist center.