



**Strengthening
Interprofessional
Education
for HIV**

Module 21

Advanced HIV Disease
(AHD) in the Inpatient
Setting



**Learner
Guide**

OVERVIEW

Goal

The goal of this module is to prepare learners to provide high-quality care to acutely ill patients with advanced HIV disease (AHD) in the inpatient setting.

Objectives

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

1. Identify patients with AHD by CD4 cell count and WHO clinical staging
2. Within the scope of your profession, describe the initial management of an adult with AHD and neurologic symptoms
3. Identify and assess signs of serious illness in a patient with AHD
4. Define the role of your health profession in the care of a patient with AHD and serious illness (IPC)
5. Understand when to start and when to defer antiretroviral therapy (ART) initiation in the inpatient setting
6. Safely discharge a patient with AHD back to care in the community
7. Describe an approach to evaluating the clinical outcomes of patients with AHD cared for at your healthcare facility (QI)



Workshop Roadmap

Duration: 125 minutes

Duration	Activity	Content
5 min.	Introduction	Icebreaker activity
10 min.	1. Small Group Discussion	Definition of Advanced HIV disease (AHD)
30 min.	2. Table/Small Group Discussion/ Teach Back	Identify and assess signs of critical illness in a patient with AHD
20 min.	3. Table/Small Group discussion	Multidisciplinary rounds in the care of a patient with AHD and serious illness
15 min.	4. Multi- Disciplinary Rounds	Understand when to start and when to defer ART in the inpatient setting
15 min.	5. Small Group Discussion/ Teach Back	Cervical cancer diagnosis
10 min.	6. Role play	Safely discharge a patient with AHD back to care in the community
15 min	7. Discussion, role play	QI
5 min.	Conclusion	

Workshop Setup

Additional learner materials

- Suggested Module 21 Pre-Reading
- 2005 Interim WHO clinical staging of HIV/AIDS and HIV/AIDS case definitions for surveillance (Pages 5-6)
- COAT trial (Abstract)
- ACTG 5164 Trial (Abstract)
- ACTG 5221 Trial (Abstract)
- SAPIT Trial (Abstract)

Abbreviations







AHD	Advanced HIV Disease
AIDS	Acquired Immune Deficiency Syndrome
ART	Anti-retroviral therapy
CBC	Complete blood count
CNS	Central nervous system
CSF	Cerebrospinal fluid
WBC	Cerebrospinal fluid white blood cell count
CT	Computerized tomography
HIV	Human immunodeficiency virus ICP Intracranial pressure
IPC	Interprofessional collaboration LFT Liver function test
OI	Opportunistic infections
PCC	Post COVID-19 Condition or Long
COVIDPPI	Proton pump inhibitor
PUD	Peptic ulcer disease
QI	Quality improvement
TB	Tuberculosis
TTE	Transthoracic echocardiogram
WHO	World Health Organization

TEACHING CONTENT WITH OBJECTIVES

Introduction

Case: Samuel is a 34-year-old man with a known history of HIV who previously was on ART but who has not been to clinic and has been off medications for the last 2 years. His last known CD4 cell count 3 years ago was 250 cells/mm³. Samuel presents to the regional hospital's Emergency Department with altered mental status, headaches, and fever.

Activity Components

	Duration in minutes		Writing
	Role-play		Discussion
	Teach back		Group work

ACTIVITY 1



Identify patients with AHD by CD4 cell count and WHO clinical staging.

As a small group, please determine if each of the following patients meets the criteria for AHD. Use the WHO definition of AHD and HIV clinical stages (in Additional Learner Materials) to complete this activity.



Case 1: Kareem is a 4-year-old boy diagnosed with HIV at birth. He has been on ART for 4 months and his CD4 cell count is 700 cells/mm³.

Case 2: Isaye is a 23-year-old woman diagnosed with HIV 5 years ago. She has not been able to tolerate ART and has been off ART for about 4 years. She has no signs or symptoms of opportunistic infections. She is now re-engaging in care and her current CD4 cell count is 120 cells/mm³.

Case 3: Zahra is a 30-year-old woman who recently had a positive HIV screening test. She presents to clinic today with an unexplained 10kg weight loss and white plaques in her mouth. She also mentions that a month ago she was admitted at the hospital for severe bacterial pneumonia. She has no known CD4 cell count.

Case 4: Omar is a 42-year-old man who was diagnosed with HIV at age 30. He has been taking ART since diagnosis but has missed many doses and has had many treatment interruptions. He is asymptomatic and his CD4 cell count is 350 cells/mm³ but his HIV viral load 650,000 copies/mL.

ACTIVITY 2



Within the scope of your profession, describe the initial management of a patient with AHD and neurologic symptoms.

Case: Samuel is a 34-year-old man with a known history of HIV who previously was on ART but who has not been to clinic and has been off medications for the last 2 years. His last known CD4 cell count 3 years ago was 250 cells/mm³. Samuel presents to the regional hospital's Emergency Department with altered mental status, headaches, and fever.

What are the causes of altered mental status in AHD and what clinical clues and diagnostic studies can help us determine the diagnosis? Work together to fill in the table below.



Answer:

Category	Causes	Clinical clues/ manifestations	Initial work up
Drugs / Toxins			
Infectious (clinical syndromes not specific pathogens)			
Metabolic			
Structural			

Which category do you think Samuel fits into for the cause of his altered mental status?



At the regional hospital where Samuel is being evaluated, there is no CT scan available, but a detailed neurological exam does not raise concern for a space-occupying lesion. Subsequently, he undergoes a lumbar puncture that shows: an elevated opening pressure of 32 cmH₂O, a CSF WBC count of 8 with <20% neutrophils, CSF glucose of 50 mg/dL, and CSF protein of 90 mg/dL. An updated CD4 cell count is not yet available.

Which types of brain infections should be considered in a patient with AHD and altered mental status?

What are the empiric treatments for each of these infections? In the table below, list the most common types of organisms that cause brain infections in advanced HIV and what their initial treatments may be.



Answer:

Possible pathogens	Initial treatment
Cryptococcal meningitis	
Other fungal meningitis	
TB meningitis	
Bacterial meningitis	
Viral meningoencephalitis	
Toxoplasma encephalitis	
Neurosyphilis	

ACTIVITY 3



Identify and assess signs of serious illness in a patient with AHD.

Samuel's CSF returns positive for Cryptococcal antigen. Given the CSF findings and clinical presentation – all consistent with cryptococcal meningitis in a patient with AHD – he starts treatment with amphotericin B, flucytosine, and fluconazole. On the second night in the hospital, the overnight nurse who is evaluating Samuel calls the clinician in charge because she is concerned that Samuel's clinical status is worsening.



There are many reasons a patient's condition may worsen in the hospital. Four of the most common scenarios for patients with AHD are listed below. For each scenario below, work together to describe a differential diagnosis (for patients with AHD), initial work-up, and initial steps to stabilize the patient.

Answer:

Scenario	Differential diagnoses in AHD	Initial work up to consider	First steps in stabilizing the patient
Worsening altered mental status			
Hypotension			
Hypoxia			
Gastrointestinal bleed			

ACTIVITY 4



Define the role of your health profession in the care of a patient with AHD and serious illness (IPC).

In Samuel’s case, the changes in his clinical status were due to worsening mental status. Given that he has been diagnosed with cryptococcal meningitis, there is high concern for increased intracranial pressure (ICP). He undergoes another lumbar puncture to remove CSF and normalize his pressure. His mental status and headaches improve with this intervention. He is also noted to be malnourished and has had difficulties walking. The next morning multidisciplinary rounds are held to discuss how to best care for Samuel.

In small groups, model a multi-disciplinary discussion regarding Samuel’s care. Each health care profession represented in your group should be given the opportunity to briefly describe the following within the scope of their practice:



1. How will you evaluate Samuel and what additional information will you need to make your evaluation?
2. In what ways could your health profession meet his medical and/or psychosocial needs?

If you have a clinician in your group, he/she could start by summarizing the case and describing the first steps he/she would take in the clinical evaluation. That person should then take notes as each health professional describes their assessment. At the end of the discussion have the clinician (or another representative) summarize a comprehensive care plan for Samuel.

ACTIVITY 5



Understand when to start and when to defer ART initiation in the inpatient setting.

After receiving 14 days of induction therapy for cryptococcal meningitis and management of his increased ICP with serial lumbar punctures, Samuel is stable and clinically improving. He is back to his baseline mental status and is getting ready for discharge. He asks you when he can resume ART.

The World Health Organization recommends offering ART to all people with HIV and also promotes rapid initiation of ART, particularly in hospitalized patients and for patients with AHD. A small number of concurrent opportunistic infections, however, necessitate delaying ART initiation. Use the scientific abstracts in Additional Learner Materials to determine the appropriate time to start ART following the initiation of OI treatment in the following scenarios:



Pneumocystis pneumonia and severe bacterial infections (not including TB) (ACTG 5164)

Cryptococcal meningitis (COAT Trial)

Tuberculosis (not including CNS tuberculosis) (ACTG 5221 and SAPIT)

ACTIVITY 6



Safely discharge a patient with AHD back to care in the community.

After talking to Samuel about the optimal timing for ART initiation after being diagnosed with cryptococcal meningitis, he is ready for discharge. The healthcare team in charge of Samuel's care wants to ensure that he is discharged safely and engages quickly in outpatient care.

What information about Samuel is important to communicate to his local clinic and community healthcare worker to ensure a smooth transition in care? How would you share this information?



ACTIVITY 7



Describe an approach to evaluating the clinical outcomes of patients with AHD cared for at your healthcare facility (QI)

Samuel is discharged from the hospital after his healthcare team discusses his case with his community healthcare facility and prepares written materials for Samuel and the receiving facility about his care.

You have noticed that there have been increasing numbers of patients admitted with advanced HIV disease at your hospital and that many patients die while in the hospital or soon after leaving the hospital. You are asked to gather more information on patients presenting to your hospital with AHD, with the goal of using that information to create a program to improve the outcomes of patients admitted with AHD.

In order to plan for a quality improvement initiative around the care of patients with AHD in the hospital, what patient information would you like to collect? How would you obtain this information?



Depending on resources, all of this information could be collected retrospectively (from a review of charts from patients who were previously admitted) or prospectively (from each patient who is admitted going forward). Some health systems have electronic databases from which to retrieve some of this information while many more will require a review of paper records.

Conclusion



Advance to slide number 14. Read each objective and summarize the key learning points from each.

References/Resources

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3. Interim WHO clinical staging of HIV/AIDS and HIV/ AIDS case definitions for surveillance, African Region, 2005
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