



# Improving AHD Management Through Algorithms: A case of HIV, Cryptococcal Meningitis, and TB Co-infection

More Mungati, MBCChB MPH  
Program Director, EGPAF Lesotho  
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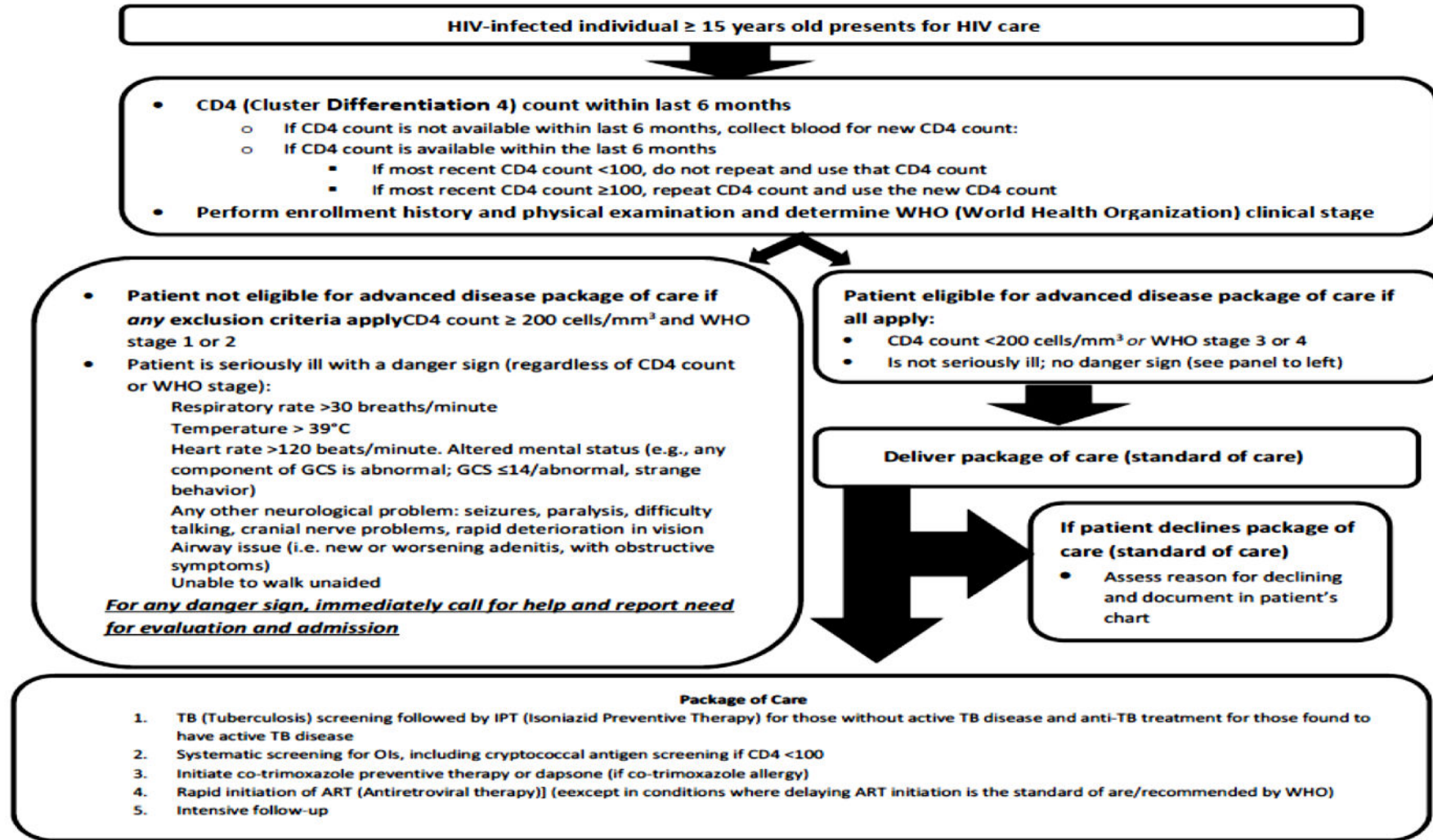


**HIV LEARNING NETWORK**  
The CQUIN Project for Differentiated Service Delivery

# Introduction

- The WHO defines advanced HIV disease (AHD) as:
  - All HIV-positive patients over age five years with CD4 cell count  $<200$  cells/mm<sup>3</sup> OR a WHO Clinical Stage 3 or 4 disease.
  - All children younger than age five years with HIV are considered as having advanced HIV disease
- A recommended package of services for patients with AHD has been developed by WHO to reduce morbidity and mortality.
- Unless this package is applied to all patients in HIV care, most will be missed
- We applied this package to patients at two hospitals in Lesotho
  - Health worker were trained on the AHD package: Drs, nurses, pharmacists, lab scientists, etc.


**Appendix 2.1: Advanced HIV (Human Immunodeficiency Virus) Disease Screening and Enrollment Job Aid**



GCS Verbal response	GCS Eye response	GCS Motor response
5 = oriented,		6 = obeys commands
4 = confused,	4 = Spontaneously	5 = localizes pain
3 = inappropriate words	3 = to verbal command	4 = withdraws from pain
2 = incomprehensible sounds	2 = to pain	3 = flexion to pain
1 = no verbal response	1 = no eye opening	2 = extension to pain
		1 = no motor response

Note: GCS=Glasgow Coma Score; Note: Maximum score is 15

# Summary of Major Steps in the AHD Algorithm



**STEP 1:** Take history and examination. Major components of clinical evaluation in clients are: History taking; nutritional evaluation; developmental assessment in children; physical examination; presumptive diagnosis of severe HIV disease in children

**STEP 2:** Screen for TB symptoms. In children: cough, feeling of sickness, weight loss/failure to thrive (FTT), fever, night sweats. Test sputum (Gene Xpert) or urine (TB LAM)

**STEP 3:** Assess for symptoms of meningitis (confusion and headache). Perform serum CrAg (if pos collect CSF and test with CrAg)

**STEP 4:** Treat other opportunistic infections and possible bacterial infections. Empiric treatment for pneumocystis or bacterial pneumonia to be considered in patient with severe respiratory distress

**STEP 5:** Start cotrimoxazole prophylaxis

**STEP 6:** Assess for rapid antiretroviral (ART) initiation (if no contraindications)

**STEP 7:** Offer intensive adherence support including tracing those missing appointments

**STEP 8:** Ensure communication for referral back to lower level facility after discharge

# Case Presentation

- PM: 34 y/o female
- Newly diagnosed HIV-positive via community HIV testing but not yet on ART
- Presented with a five-day history of:
  - Shortness of breath (SOB), weight loss, loss of appetite
- Past medical history:
  - Productive cough associated with SOB, chest pain, night sweats
  - Body weakness and vomiting for three days

# Management and Outcome (1)

- Clinical Examination

- Danger signs noted: pulse rate (128), using accessory muscles for breathing, pyrexial
- Poor inspiratory effort, reduced breath sounds right lower zone
- Fully conscious with no abnormal neurological signs

- Working Diagnoses (in addition to HIV)

- HIV WHO Clinical Stage IV
- Community-acquired pneumonia (R/O pulmonary TB)
- Acute gastroenteritis

- Initial Management:

- Admitted to hospital
- Investigations: CD4 count (4); FBC (WBC 5.1; Hb 10.4), Urea 3.5, creatine 84,
- CXR showed consolidation in right lower lobe
- TDF/3TC/EFV, metoclopramide
- Intravenous augmentin

Sputum test not done upon presentation  
CD4 count of 4 but reflex CrAg not done  
Patient initiated on ART while still critically ill

# Management and Outcome (2)

- Inpatient Progress

- Day 1-6

- Deteriorating on treatment
    - Developed oral and vaginal candidiasis
      - Given fluconazole tablets

- On day 6, patient developed **neck stiffness – ART stopped (?IRIS)**

- **Provisional diagnosis of cryptococcosis pending investigations**





# Management and Outcome (3)

## • Inpatient Progress

- Day 8 - 27
- Excessive productive cough associated with SOB
- Patient desaturating on room air (58%)
- **Sputum sample** collected (for Gene Xpert) and sent to lab – negative for TB (**INH not given**)
  - Diagnosis of exclusion: *Pneumocystis Jirovecii* pneumonia
  - High dose CTX, prednisolone, oxygen PFM
- Serum CrAg done – positive followed by LP.
  - CSF CrAg positive (day 8)
  - Diagnosis of cryptococcal meningitis
  - Start intensive phase: AMB and fluconazole, oxygen
  - Consolidation phase fluconazole on day 22
- Condition improved on treatment
- Discharged on day 27 via ART clinic on cotrimoxazole prophylaxis, fluconazole





# Management and Outcome (4)

## Post-Admission Management

- Day 56 - 85
  - Patient reviewed.
  - Re-initiated on ART: TDF/3TC/EFV
  - Started maintenance phase fluconazole on day 78
- Day 86:
  - Presented with a productive cough
  - Sputum sent for GeneXpert testing, CD4 cell count **17**
    - Result returned TB positive (after patient had left facility)
  - Tracked patient back after sputum result came back
  - Finally returned on day 100
    - Commenced anti-TB treatment, continued ART
- Further reviews on days 142, 170, and 198
- VL test done on day 198: **lower than detectable level**, CD4 cell count **56**

# Conclusion

- Patient is still alive today and continues to take her treatment, including fluconazole prophylaxis.
- She had another sputum sample tested in January 2020 (day 254), which was negative for TB.
- TB treatment was completed in February 2020 (day 284).
- INH prophylaxis commenced in May 2020 (day 373)
- Her last review was in May 2020 when she was commenced on TB preventive treatment.
- Next review is in August 2020.

# Lessons Learned

- **Training clinicians will not guarantee that the algorithm will be followed**
  - Need to actively follow-up and continuously mentor, e.g. CrAg testing & CM management
  - Audit clinical management to ensure correct management
- **Need to consider patient related factors in management**
  - Ability to adhere to clinic visits
  - Improve convenience for patients, e.g. MMD, utilizing lower level facilities for follow-up and resupplies
- **Systemic problems need to be addressed**
  - Shortage of commodities was common during implementation of the package: reagents,
  - Lab test results should be available the same day
  - Need to actively follow up on lab for results
  - Ensure availability of medicines

# Scale-Up Plans for AHD in Lesotho

- MOH swiftly moved to adopt AHD package
- Engaged stakeholders to develop a comprehensive plan
- Baseline assessment of all hospitals done
- Training package being developed
  - Trainings planned for Aug 2020
- Catalytic procurements ongoing
  - CD4 cartridges, CrAg LFA, TB LAM, liposomal AMB, fluconazole, flucytosine
- Scale-up to all hospitals by end of Sep 2020
  - To start providing AHD focused services



# Scale up plans for AHD in Lesotho

	Intervention	CD4 Cell Count/ Eligibility Criteria	Adults and Adolescents	Children (0->10)
Screening and Diagnosis	Sputum Xpert MTB/RIF as first test for TB diagnosis in symptomatic patients Sputum/non-sputum – AFB, Xpert	Any CD4	Yes	Yes
	Urine TB LAM* for TB diagnosis in patients with symptoms and signs of TB	CD4 $\leq$ 100 cells/mm <sup>3</sup>	Yes	Yes
	Cryptococcal antigen (CrAg) screening	CD4 <200 cells/mm <sup>3</sup>	Yes	No
Prophylaxis and Pre-emptive treatment	Co-trimoxazole prophylaxis	CD4 $\leq$ 350 cells/mm <sup>3</sup> or WHO clinical stage 3 or 4 event	Yes	Yes
	TB Preventive Therapy	Any CD4	Yes	Yes
	Fluconazole pre-emptive therapy for CrAg-positive patients without evidence of meningitis	CD4 <200 cells/mm <sup>3</sup>	Yes	N/A (Screening not advised)
Rapid ART initiation	Rapid ART initiation	Any CD4	Yes	Yes
	Defer ART initiation if clinical signs and symptoms are suggestive of TB or cryptococcal meningitis	Any CD4	Yes	Yes
Adherence support	Tailored enhanced adherence counselling to ensure optimal adherence to the advanced disease package, including phone calls and home visits, if feasible	Anyone with AHD	Yes	Yes

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