Paediatric up referral pathway and the hospitalised patient

Dr P.Padayachee- Paediatric infectious diseases

Victoria Mxenge Hospital/ UKZN



Outline

- Advanced HIV disease- definition
- Continuity of care
- Recognising danger signs
- High risk patients
- Clinical categories and overview of identification and management
- Danger signs in children
- Case presentations
- Discharge and continuity of care
- Take home message
- References

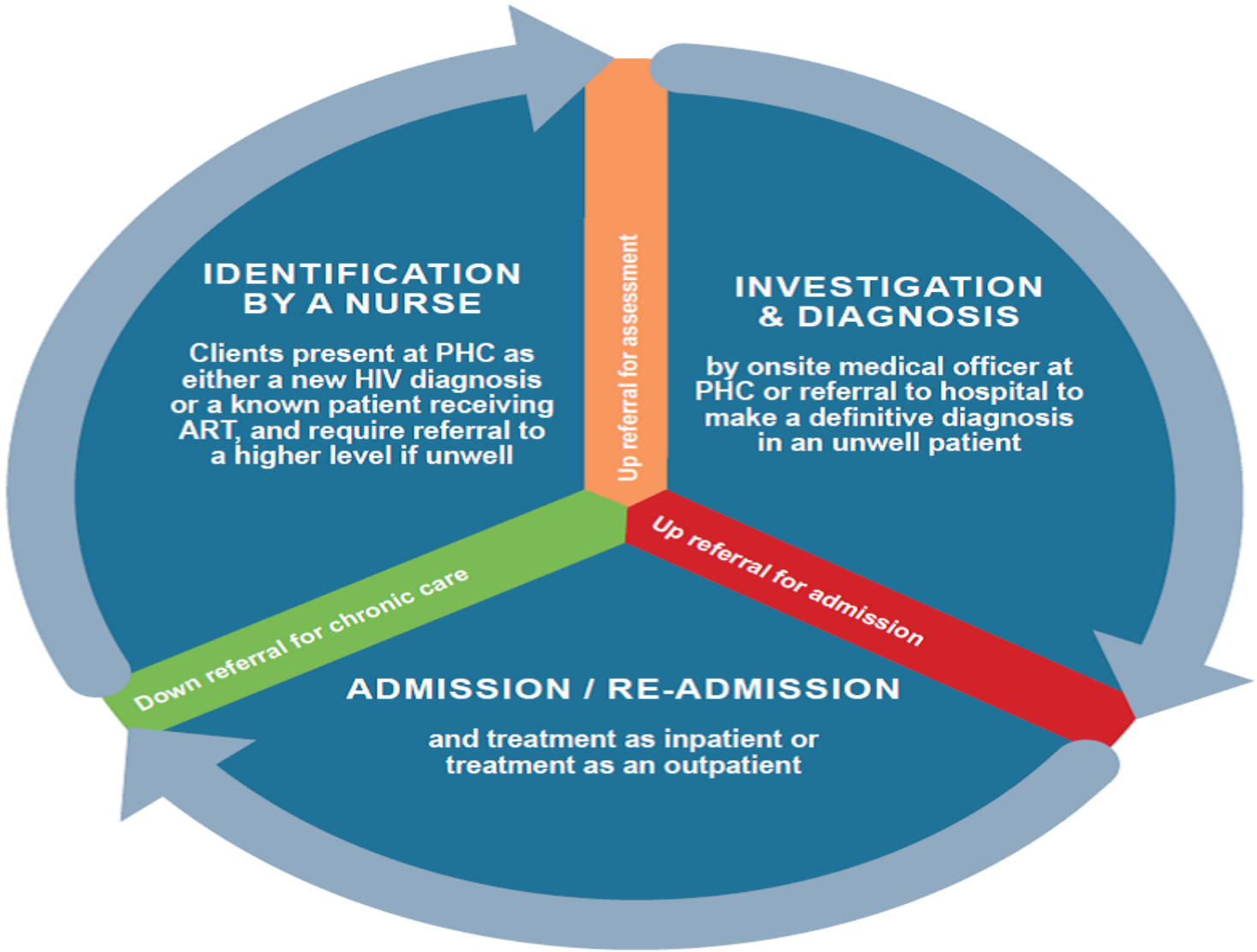
Advanced HIV Disease (AHD)

- For adults, adolescents, and children older than five years, advanced HIV disease is defined as
  - → **a CD4 cell count ≤200 cells/μL or**
  - → **a WHO clinical stage 3 or 4 condition**
- All children living with HIV younger than five years should be considered as having advanced HIV disease (regardless of CD4% or clinical stage) unless they have been receiving ART for longer than one year and are clinically stable on ART

Source: Adapted from: Identifying common opportunistic infections among persons with advanced HIV disease: policy brief. Geneva: WHO; 2023

Smooth transitions between levels of care are essential to ensure that:

- Unwell patients get appropriate care at the correct level as rapidly as possible
- Clients are not lost from care during the transition process
- Clients get the ongoing care they require for their chronic conditions, whether at PHC or hospital level OPD (outpatient department).



Continuity of care cycle for patients with AHD

The following patients are at a higher risk of having AHD:

- Any **new HIV diagnosis**
- Any **clinically unwell** patient (including those with untreated/uncontrolled mental health disorders) or patient **on treatment** for an opportunistic infection, whether on ART or not on ART
- Any patient on ART with a **VL ≥ 1000 c/mL**
- Children under five years, unless on ART for > 1 year and virally suppressed
- Any patient returning to care after a **treatment interruption of > 90 days**, regardless of symptoms.

Clinical categories of patients with AHD

Patient category	Potential risks	Actions
Severely ill with danger signs	Inappropriate pre-referral management or delays in referral to the appropriate level of care may increase mortality.	Assessing a patient should always start with a triage assessment to identify any danger signs to determine if the patient requires immediate referral to hospital. Stabilise and refer to/admit for inpatient care as indicated, detailed in Step 1
Unwell/unstable but not sick enough to warrant immediate referral to hospital	More complex conditions may be missed, or there may be delays in referrals for hospital-level investigations.	If any uncertainty exists, the threshold for a nurse to refer a patient to a higher level of care should be low.
Appearance of being **clinically well or asymptomatic**	Clients with CD4 counts < 200 may initially appear well but may rapidly deteriorate and remain at a higher risk for death. Such patients are at risk of receiving a less intensive clinical assessment when their CD4 count is taken.	In all patients at risk of AHD, the earliest opportunity to screen for, treat or prevent serious opportunistic infections should be fully utilised to minimise the risk of rapid deterioration and death

3 Overview of the 9 steps to identifying and managing a patient with AHD

All patients

The package of care for patients with presumed or confirmed AHD

Primary care level | **Hospital level**

STEP 1 Identify the seriously ill client

Are there any danger signs requiring urgent medical care? See Box 2 and Box 3

If yes → Stabilise **and refer/admit** → If yes → **In-hospital management Continue assessment once feasible**

If no danger signs, proceed to Step 2

STEP 2 Identify high-risk clients for AHD

New HIV diagnosis or

PLHIV and unstable (adults, children and PBFW)
- Any clinically unwell client, whether on ART or not on ART
- Any client on ART with a VL > 1000 c/mL
- Any child < 5 years
- Any client returning to care after a missed schedule appointment of > 90 days, regardless of symptoms.

STEP 3 Assess and Treat Assess for AHD & treat any OIs & other HIV-associated conditions

Do **a CD4 count** (see Box 4) on all clients suspected of having AHD with reflex CrAg

Screen and investigate for TB as per the latest national TB guidedance

Evaluate for other AHD related conditions including **possible serious bacterial infections (SBI)** or **WHO Stage 3 or 4 conditions**

Respond to positive Serum CrAg Provide/refer for LP if CrAg positive

Initiate Treatment for opportunistic infections diagnosed at primary care level e.g., TB. Continue treatment of conditions diagnosed in hospital e.g., EPTB, cryptococcal disease, or serious bacterial infections.
Manage other clinical conditions associated with AHD, e.g., malnutrition, STIs or skin conditions as per the APC guidelines, the PHC STGs and the IMCI guidelines

In-hospital assessment for AHD and other conditions requiring advanced clinical care in hospital

In-hospital management Including for TB, CM, PJP, SBIs Manage other advanced clinical conditions e.g., HIVAN, DILI, severe acute malnutrition

STEP 4 Prevent OIs

Provide **cotrimoxazole prophylaxis** therapy if eligible (see Table 23)
Provide TPT if TB has been excluded and eligible for TPT (see Table 25)

STEP 5 Provide ART

If ART naive → Offer rapid ART initiation on a DTG-containing regimen **unless indications to defer or discontinue ART** (see Table 8)

If previously on ART but interrupted treatment → Offer rapid ART initiation on a DTG-containing regimen **unless indications to defer or discontinue ART** (see Table 8)

If currently on ART → If VL ≥ 50 c/mL, manage as per the VL Monitoring algorithm on page 101. If the client meets the definition of confirmed virological failure, discuss with an expert to authorise a resistance test as per the eligibility criteria on page 100.

STEP 6 Provide other care

Provide other care as appropriate for mental health, NCDs, SRH services, immunisations, and other care as per RTHB or maternity care guidelines. When indicated, provide **palliative care**.

STEP 7 Provide adherence support

Offer intensified adherence support for OI medication, ART, and condition monitoring. Counsel about IRIS, warning signs and side-effects to look out for, and when to return (DMOC SOP 9).
Involve the client's **family** in the plan for treatment and follow-up.

STEP 8 Ensure continuity of care between hospital and clinic

Clinicians at PHC should have a low threshold for admission or re-admission to hospital. Assign a clinic staff member to do check-in phone calls or CHW to do home visits in the first month to support continuity of care.

At discharge from the hospital provide a discharge plan with follow-up appointments at PHC. Also promote continuity of care at OPD/PHC through locally established mechanisms, such as phone calls to the clinic. Assign linkage officer/community liaison officer where available.

STEP 9 Provide intensified follow-up

At PHC/OPD, provide **two-weekly** (previously admitted / psychosocially vulnerable) **or monthly follow-ups for the first three months.** Ensure that missed appointments can be identified and prioritize these clients for tracing and recall to the facility if they are missed. Ensure provision of any Step 6 or 7 elements that were not provided by the hospital.

Follow hospital discharge plan and ensure hospital follow-up appointments. Provide any advanced clinical care as indicated by the hospital. **Refer back to hospital for assessment and re-admission if patient deteriorates clinically**

Box 3: Danger signs in children and adolescents needing urgent attention

General danger signs:

- Unable to drink or breastfeed
- Vomiting everything
- Convulsions
- Unconscious or lethargic
- Tachypnoea or tachycardia abnormal for age
- Any signs of shock

Signs of severe respiratory illness:

- Chest indrawing
- Stridor in calm child
- Oxygen saturation < 92% on room air
- Central cyanosis

Signs of severe acute malnutrition:

- Oedema of both feet and/or
- Weight for length/height z-score less than -3, or
- MUAC less than 11.5cm, and
- one or more of the following: any other danger sign, any other red or yellow IMCI classification, weight ≤ 4 kg, or age < six months

Signs of severe dehydration (2 of the following)

- Unconscious or lethargic
- Sunken eyes
- Unable to drink or drinking poorly
- Skin pinch goes back very slowly

Signs of meningitis (any of the following)

- Neck stiffness
- Bulging fontanelle
- Restless, continuously irritable

Signs of severe anaemia (any of the following)

- Severe palmar pallor
- HB < 7 g/dl

Adapted from the SA national 2022 IMCI guidelines & Chapter 15: Respiratory System of the STG and EML for paediatric hospitals in SA, 2023, and the WHO Operational Handbook on TB Module 5

Case series

1.
C.J. -8 year old female

Referred from local clinic in July 2026

Presentation: Severe Acute Malnutrition (SAM) with severe respiratory distress and one generalised tonic clonic seizure

Significant background History: Multiple clinic and GP visits this year- Persistant Diarrhoea and LRTI’s with significant weight loss

Road to health Book

Immunisations up to date

Birth, 10 week and 6 month PCR negative- exclusively breastfed

HIV ELISA at 18 months positive- had been initiated on ARV’s

Mum admitted that ARVs had been stopped years ago-difficult historian

Clinic notes scanty- several visits documented, weight loss and persistent AGE noted. Treated and sent home. No further information regarding ART or repeat HIV testing documented in RTHB

Frequent visits to the GP in months prior to presentation for AGE and loss of weight. Discharged home with antibiotics/ supplements

Presentation

Severely distressed and hypoxic – required high flow NPO2. Globally wasted.

- Chest Xray -Extensive bilateral pneumonia-? TB/Bacterial/PCP/CMV

-Broad spectrum cover with Ceftriaxone, Cotrimoxazole, 4 drug TB treatment and Gancylovir

-Weaned to NPO2 after 1 week, then room air

MDT rehabilitation- reviewed by dietician , Occupational Therapist, Physiotherapist and Social worker

Investigations

Blood:

- HIV Viral Load 50039, CD4 85, CrAg negative
- Hepatitis screen negative
- CMV viral load- 30 000
- Culture: negative
- Initial LFT normal- developed DILI- resolved on liver friendly regimen

Imaging

- CXR- bilateral pneumonia
- US abdomen not suggestive of TB. NAD
- CT brain- No features of meningitis/ intracranial lesions

Other

- TB work up-Micro- GXP, AFB and TB culture negative
- Urine LAM negative
- UMCS no growth
- CSF- No cells, normal chemistry, culture negative

Progress

Developed Drug induced Liver injury- required Liver friendly TB treatment and reintroduced to standard regimen once LFTs normalised

ART reinitiated (ABC/3TC/ boosted DTG) 2 weeks after TB treatment initiation - adherence counselling done

Multiple social issues addressed by Social worker- Parental conflict, mum had no treatment supporter, stigma influenced non-compliance

Discharged after 19 days once fully mobilised,had adequate weight gain and social interventions

Reviewed at Clinic. Gaining weight, compliant with Rx. HIV VL 1694, CD4 130, CMV VL LTDL

2.
Baby B.N .
6 month old male

Presented from home with failure to gain weight, chronic diarrhoea and seizures

Background history: several visits made to local clinic in the last few months for persistent diarrhoea and failure to gain weight.

Road To Health Book

Immunisations not up to date- missing 10 weeks and 14 weeks- no missed visits

Poor weight gain and ongoing diarrhoea documented at multiple visits- TTO’s given and sent home

HIV exposed-High risk exposure.No documentation of birth PCR (no sticker in file), no repeat HIV PCR done

Note made under delivery record that baby was delivered at VMH- HIV exposed, clinically well and that a birth PCR had been done. Mum opted for formula feeds.Discharged home with plan to follow up at local clinic the following week to trace the birth PCR. Stopped NVP after 2 weeks

Presentation

- Normal Vital signs
- Severe acute malnutrition
- Abnormal neurology- global hypertonia and brisk reflexes
- Feed intolerance with abnormal swallowing
- Multiple seizures shortly after admission
- Started on IV ceftriaxone, loaded with antiseizure medication and started on maintenance doses
- MDT review: Dietician, speech therapist, Occupational Therapist and Social worker

Investigations

Blood:

FBC: WCC 4,3 (N2/L2/M0,2), HB 5.4, Plts 30

U/E: Na129/K 4.1/Cl 104/Bicarb19/Urea 4.7/ Creat 27

LFT:TP 82/ Alb18/Total Bilirubin19/ALT125/ALP 128

CMP: 2.5/0.86/2.39

Culture :adimission- no growth, repeat-ESBL E.coli

HIV PCR at birth: positive, confirmed positive on admission

HIV Viral load 300 000, CD4 123 (29%)

CMV viral load 20 969

Hepatitis screen negative

Imaging:

CXR: No significant pneumonia/ changes

US abdo: NAD

CTB:Bilateral subdural fluid collections suggestive of chronic subdural hygromas/ effusions/ haematomas

Other:

TB: Mantoux,GXP, AFB/ TB culture negative

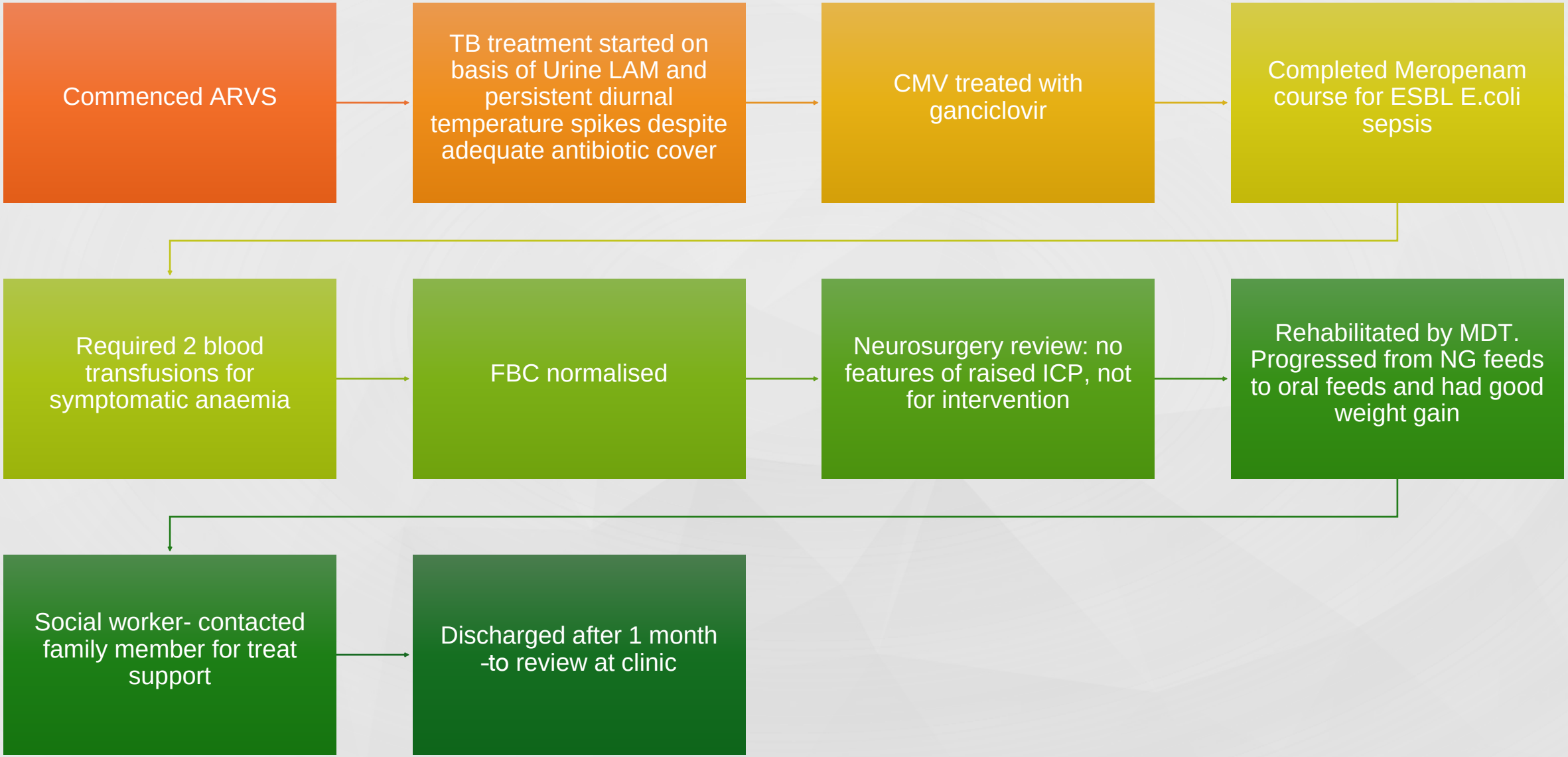
Urine LAM positive

UMCS negative

CSF deferred due to persitant thrombocytopaenia

PJP PCR negative

Progress


Commenced ARVS
TB treatment started on basis of Urine LAM and persistent diurnal temperature spikes despite adequate antibiotic cover
CMV treated with ganciclovir
Completed Meropenam course for ESBL E.coli sepsis
Required 2 blood transfusions for symptomatic anaemia
FBC normalised
Neurosurgery review: no features of raised ICP, not for intervention
Rehabilitated by MDT. Progressed from NG feeds to oral feeds and had good weight gain
Social worker- contacted family member for treat support
Discharged after 1 month -to review at clinic

3.
Baby S.C - 2 week male

Background: Baby delivered at VMH- uncomplicated NVD. High risk exposure. Mum defaulted ART, reinitiated at 5 months gestation. Mums Viral load at delivery 99 000. Baby's birth PCR done and discharged on dual prophylaxis.

ARV clinic Dr alerted that baby's Birth PCR was positive. Contacted mum to come to clinc. Mum presented to clinic without baby (baby day 12). Concerned as baby was unwell with diarrhoea, lethargy and poor weight gain. Could not afford to bring baby to VMH due to distance and financial constraints

Road to Health Book

Immunisations up to date

Documented in the last note (2 days prior to presentation) that birth PCR was positive and that baby was for inititation of ARVs. Not initiated at clinic. Mum stopped prophylaxis.

No repeat PCR was done

Progress

Mum instructed to take baby to nearest hospital as soon as possible and given referral letter with details of positive PCR result
Admitted at local regional hospital 2 days later:
-Assessed as moderate acute malnutrition and AGE with no dehydration
-Repeat HIV PCRs(x2) were negative and HIV VL was LTDL
-Discharged after 2 days on dual prophylaxis- to repeat PCR at 10 weeks

Diagnostic Dilemma

High risk exposure with mums history of defaulting treatment and unsuppressed viral load

Could the birth PCR be a true positive in view of high risk exposure?

2nd PCR was done when baby was 2 weeks old- had received 2 weeks of AZT and NVP. Could the repeat PCRs be a false negative?

Virology consultation

Virology stores HIV PCR Cards for some time. The 2 negative PCR Cards were found and had a total of 5 blood spots remaining. They were retested and were negative

Advised to send whole blood for HIV testing at the 10 week visit . Baby to continue with prophylaxis in the interim.

Case summaries and modifiable factors

	Case 1	Case 2	Case 3
Summary	8 year old-Defaulted ARV's, SAM, TB, CMV disease	6 month - Missed congenital HIV,SAM, CMV disease, Seizures with abnormal neurology	3 week old, delayed detection of positive birth PCR, diagnostic dilemma with repeat PCRs
Criteria for Advanced HIV	WHO Stage 4 HIV CD4 <200	< 5 years WHO Stage 4 HIV CD4 <200	< 5 years
Modifiable factors	-Defaulted ARVs for several years- no enquiry done despite multiple health care visits -Sick child with significant weight loss- no up referral done -Social issues- treatment supporter	-Missed birth PCR result- only identified at 6 months on presentation to hospital -No PCR sticker put in RTHB at discharge from hospital -No enquiry regarding birth PCR at clinic, no repeat PCR done until 6 months -Chronic history of diarrhoea/ failure to gain weight- no up	-Birth PCR- positive, delayed detection of results at hospital level -Birth PCR detected late at clinic- no referral to hospital, no initiation of ARVs -Delayed repeat PCR→ reliability of results decreased due to viral suppression by prophylactic ARVs

Discharge

Referral letter/ Discharge Summary

-Diagnosis with symptoms

HIV history:

-Date of diagnosis

-Date of initiation of ART

-Current regimen and previous regimen

-Resistance test results

-Adherence issues and interventions

-Latest test results including CD4, VL and other work up done in hospital

Management:

-Description of in hospital treatment and duration, discharge medication with doses and duration

-Clinic and hospital review dates, review dates with Multidisciplinary team e.g. Social worker, dietician

-Name and contact number of clinician

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Why intensified follow-up

- Clients with AHD are at higher risk of clinical deterioration, including the development of IRIS, especially during the initial months after initiating or re-initiating ART.
- Clients with AHD may need to be reviewed more frequently than the standard intervals of "1 dispensing cycle (DC) after ART initiation" and 2 months later at "3 DCs after ART initiation."

Take home message

- Patient's with advanced HIV- higher risk of morbidity/ mortality
- Use every opportunity at PHC level to test patients with unknown status or no recent VCT- follow guidelines for retesting of exposed babies (PCR- birth, 10 weeks, 6 months, 6 weeks after cessation of breastfeeding (ELISA if 18 months or >)
- Patients known with HIV→check treatment : compliance, correct dose for weight, tolerance and side effects, symptoms of opportunistic infections. Blood monitoring according to guidelines.
- Refer all ill patients with danger signs to hospital. If in doubt- discuss and refer
- Hospitalised patients- holistic management with a comprehensive discharge plan for clinic with hospital review date to facilitate optimal continuity of care

References

- 2026 National Consolidated Guidelines for the Prevention and Management of HIV in Adults, Adolescents, Children, Infants, Pregnant and Breastfeeding Women

Thank you