MINISTRY OF HEALTH EMERGENCY MEDICAL SERVICES ECHO

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EMS ECHO Session 97

Brief History

A 4-year-old male, no known chronic illness, who lost his mother and newborn sibling to an unknown febrile illness a week prior, referred to MNRH due to persistent high-grade fevers for 1 week, and reduced levels of consciousness for 2 days

Primary Survey (Emergency Assessment)

Airway	Patent but threatened due to the reduced LOC
Breathing	In mild respiratory distress, with nasal flaring, RR 56b/m, SPO2 88 -90% on RA, equal air entry bilaterally, bronchovesicular sounds, no added sounds,
Circulation	Cold extremities, capillary refill time>3 sec, HR 160 bpm, BP 78/45 mmHg

Primary Survey (Emergency Assessment)

Disability	GCS 10/15 (E-3, V-2, M-5), pupils equal and reactive to light, had normal tone and normal reflexes, RBS 4.6 mmol/dL
Exposure	Febrile (T: 39.5°C), no rash initially, but later ecchymosis and oozing from venipuncture sites

Poll 1

From the primary survey, what are the

3 emergency conditions in

this patient?

What are BEDSIDE priorities?

THREATS	*PRIORITY*	*Findings*	*Associated Risk*	*Immediate Action Taken*
A & B	Threatened airway	Patent	Airway obstruction Aspiration Hypoxic cardiac arrest	Sure, the airway Administer O2
C	Septic Shock	Cold extremities Delayed cap refill tachycardia	*Multiple organ failures*	Establish IV/IO access and start fluid resuscitation Initiate broad-spectrum antibiotics

And always reassess to monitor response to treatments

And always reassess to monitor response to treatments

About 5 hours later, the patient started convulsing, GTC and bleeding from the nose, mouth and ears, and this increased the suspicion of possible EBV

What are your options (poll audience)?

Poll 2

Based on the above information, what are your emergency management priorities for this patient?

What happened in ED to stabilize the patient

- Oxygen via nasal prongs
- IV fluid bolus (20 ml/kg NS)
- Empirical antibiotics (ceftriaxone)
- Blood sent for CBC, malaria test, serum electrolytes, LFTS, cultures
- Isolation due to family history and unexplained febrile deaths
- Consultation with ID team (suspicion of VHFs raised)

This bought the team some time to find out more information

SAMPLE History

Signs & Symptoms	Fever, reduced consciousness, vomiting
Allergies	No known allergies
Medications	Had received 2 cycles of iv artesunate with no clinical improvement

SAMPLE History

Past Medical History	No known chronic illness
Last Oral Intake	Last fed via NGT about 3 hours prior
Events Leading Up to Presentation	Possibly exposed to mother and newborn sibling who died of febrile illness; lives in a high-risk area

Secondary Survey (Head-to-toe examination)

RELEVANT POSITIVES	RELEVANT NEGATIVES
Head: Sunken eyes, neck stiffness **Chest:** Clear breath sounds, increased respiratory effort **Abdomen:** Soft, non-distended, with a hepatomegaly of 5cm **Skin:** Initially normal, later bruising and petechiae, bleeding from cannula site **Neuro:** Drowsy, non-verbal, responds to pain	No focal neurological deficit, no signs of trauma, No abnormal heart sounds

Now before we investigate this patient, what are our differentials?

Poll 3

What are your top
3 differential diagnoses
for this patient?

Audience question

What are all the possible differentials we need to look for?

Category	Differential
Vascular	disseminated intravascular coagulopathy
Infectious	Viral hemorrhagic fever (Ebola, Marburg) Severe malaria with cerebral involvement Meningoencephalitis
Trauma or Toxin	
Autoimmune	Necrotizing encephalomyelopathy
Metabolic	Electrolyte imbalances, r/o acidosis
Iatrogenic	
Neoplastic	

Investigations

- Complete blood count
- Blood smear for malaria parasites
- Renal function tests and extended serum electrolyte
- Liver function tests
- Brain CT scan
- RT-PCR for Ebola

Bloods

Investigation	Result
Full Blood Count	*Wbc-11.5, neu-2.62, lym-7.41, hb- 8.9, plt 90*
Malaria RDT	negative
Random Blood Sugar	*4.6mmo/l*
Electrolytes, Creatinine	Urea- 70mg/dl, creatinine was 655mmol
LFTS	AST- 696, ALT-855, GGT-68
Ebola PCR	(Only sent postmortem due to suspicion raised late)- POSITIVE

Poll 3

Based on the above laboratory results, what are your next steps in the management priorities for this patient?

Supportive Management

- Isotonic fluids (20ml/kg boluses then reassess)
- Maintenance fluids
- Monitoring vitals q15min initially
- Antipyretics (paracetamol)
- Blood transfusion with platelets and FFPs at 10ml/kg
- IV phenobarbitone, 2 loading doses at 18mg/kg
- Urine catheter to monitor urine output
- Isolation with strict barrier nursing

Specific Management

- **Remdesivir for Ebola not available in the facility**
- **Supportive care including hydration, oxygen, transfusion**
- **Infection control reinforced**
- **Family members and staff exposed were quarantined and monitored**

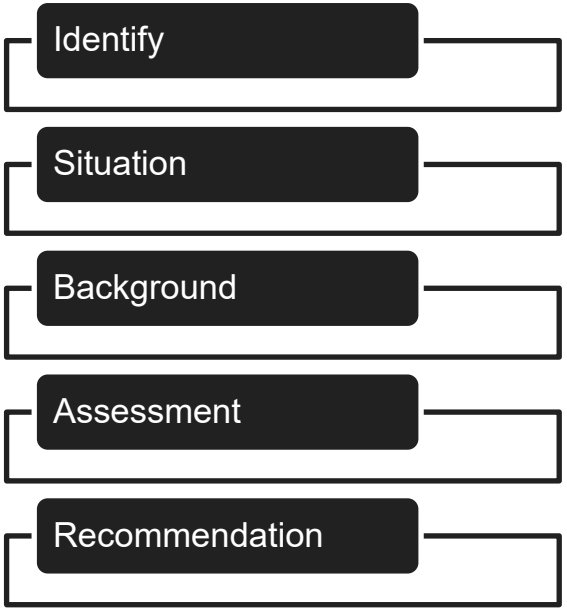
Follow-up & Disposition

Patient died within the firsts 24 hours following excessive bleeding

Prehospital team:

What do you need to prepare for pre-hospital care for this patient?

- Staff
- Patient
- Equipment / Medications
- Mode of transport
- Documentation/Handover



Session pobjectives

a) To understand how decision to transfer is arrived at; Before transfer

b) To understand how to prepare and transfer the patient

c) To understand post-transfer activities

A) How decision to transfer is arrived at? Before transfer

1. Define the reason for the transfer

Where should the patient be transferred, to a higher-level resource facility?

The choice to choose the facility will depend on factors like resources, availability of health workers, patient burden, mode and duration of transport, and patient condition.

Cont'd……

2. Risk-benefit analysis for the transfer and coordination with the emergency coordinator/medical control team.

3. The case should be discussed between the referring facility, CAD and the receiving facility must accept the patient before transfer; CAD is a conduit for interfacility transfers

Note community: community will entirely depend on CAD for prior notification and discussion

B) How to prepare and transfer the patient; Before transfer

1. Communication and patient consent

The referring facility should communicate to the patient about the reason for referral and offer to them psychological and emotional support.

In case of community transfers, the ambulance teams should explain to patient and their relatives about the transfer and offer emotional and psychological support

Cont'd……

- **Expressed**

✓ 1. Patient must be of legal age and able to make a rational decision.
✓ 2. Patient must be informed of the steps of the procedures and all related risks.
✓ 3. Must be obtained from every conscious, mentally competent adult before rendering treatment.

- **Implied**

✓ 1. Consent assumed from the unconscious patient requiring emergency intervention
✓ 2. Based on the assumption that the unconscious patient would consent to life saving interventions

Cont'd……

Special consideration for consent

Children and mentally incompetent adults

- ✓ Consent for treatment must be obtained from the parent or legal guardian.
- ✓ When life threatening situations exist and the parent or legal guardian is not available for consent, emergency treatment should be rendered based on implied consent.

Cont'd……

2. Notification of the EMS teams

Upon acceptance of the transfer by the receiving facility, the referring should notify the EMS team for evacuation for Interfacility transfers.

- ✓ Staff
- ✓ Ambulance type (Need for equipment)

3. Patient Stabilisation prior to evacuation; on scene care

Conduct a thorough primary survey using the ABCDE approach to promptly identify and stabilize life-threatening conditions.

Cont'd……

Stabilize the patient only to the extent necessary to ensure safe transfer, avoiding stabilization that could delay evacuation.

Prepare comprehensive clinical summaries, including relevant medical and surgical checklists, to guide ongoing patient management.

4. Referral form
For all interfacility transfers, ensure that the referral form is filled out thoroughly and accurately, including all essential patient details, clinical findings, interventions provided, reasons for referral, and the identity of the referring healthcare provider.

Note; PCF for community

Cont'd……

5. Care and documentation during transportation

The EMT must provide continuous ongoing assessment using the ABCDE approach and provide care to the patient during transportation. All interventions, observations, and changes in the patient's condition should be accurately documented on the patient care form to ensure continuity of care. Include errors made

6.Handover

The EMT should hand over the patient to the receiving facility using the structured SBAR communication tool:

- S – Situation

State the patient's current condition and the reason for referral or transport

Cont'd……

.B – Background

- Provide relevant medical history, events leading to the incident, and any prehospital care or interventions administered.

A – Assessment

- Summarise findings from your assessment, including vital signs and the patient's response to treatment.

R – Recommendation

- Specify what is needed from the receiving team and confirm transfer of care and documentation.

Post transfer activities

- The ambulance team shall notify the Call Ambulance Dispatch (CAD) upon completion of the patient transfer after successful transfer

- Proceed to decontaminate the ambulance in preparation for the next deployment.

- Ensure restock and replacement of used linens, blankets and other supplies used During transfer.
- Debrief especially for complicated cases, near misses or death

Take home

a) Always plan the transfers with the necessary stakeholders; Receiving, referring and CAD. This will help you make right decisions

b) Always consider case specific preparations prior to transfer. This will facilitate a smooth transfer

c) Always give necessary feedback and debrief; CAD

What are the **nursing priorities** for this patient during their inpatient stay?

Presenter
Mr. Osire John Andrew
MNS Critical Care

Introduction

A 4-year-old male with fevers for 1 week, and reduced levels of consciousness for 2 days. Patient in mild respiratory distress, with nasal flaring, RR 56b/m, SPO2 88 -90% on RA

capillary refill time>3 sec, HR 160 bpm, BP 78/45 mmHg

GCS 10/15 (E-3, V-2, M-5), GCS 10/15 (E-3, V-2, M-5), T: 39.5°C), ecchymosis and oozing from venipuncture sites

About 5 hours later, the patient started convulsing, GTC and bleeding from the nose, mouth and ears, and this increased the suspicion of possible EBV

Assessment	Nursing Diagnosis	Goal/Desired Outcome	Intervention	Rationale	Evaluation
4-year-old m **mild respiratory distress, with nasal flaring, RR 56b/m, SPO2 88 - 90% on RA** capillary refill time>3 sec, HR 160 bpm, BP 78/45 mmHg **GCS 10/15** (E-3, V-2, M-5), GCS 10/15 (E-3, V-2, M-5), T: 39.5°C), ecchymosis and oozing from venipuncture sites (Had convulsions)	Impaired gas exchange related to reduced level of consciousness	To improve on oxygenation and maintain normal oxygen saturation	Monitor ABGs Maintain patient on prescribed oxygen therapy - Position semi Fowler to facilitate lung expansion - Suctioning(**minimal closed**) - Administer prescribed bronchodilators and other respiratory medications.	- ABGs provides insight into respiratory efficiency and severity of gaseous exchange issues - Adequate O2 provides optimal gas exchange and prevents hypoxia - Semi Fowlers improves ventilation and decreases work of breathing. - Meds reduce airway resistance and enhance gas exchange	Patient maintained adequate oxygenation as evidenced by stable oxygen saturations and reduced signs of hypoxia

Assessment	Nursing Diagnosis	Goal/Desired Outcome	Intervention	Rationale	Evaluation
4-year-old m mild respiratory distress, with nasal flaring, RR 56b/m, SPO2 88 -90% on RA capillary refill time>3 sec, HR 160 bpm, BP 78/45 mmHg GCS 10/15 (E-3, V-2, M-5), GCS 10/15 (E-3, V-2, M-5), T: 39.5°C), **ecchymosis and oozing from venipuncture sites** Fever, reduced LOC, vomiting and **bleeding**	"Active" bleeding related to impaired clotting factors.	Ensure bleeding is reduced by vitals stabilizing.	To stop the bleeding administer Prescribed tranexamic acid, Vit K pack	Increased HR and orthostatic changes accompany bleeding.	**Short term** Goal partially met, bleeding reduced within the first 2/3 hours.
		Correct the platelets by 2/3 days hence no bleeding	Assess cont. bleeding sites No vigorous procedures e.g brushing, suction (closed) rectal and IM/IV'S etc..	Spontaneous bleeding can occur when platelets < 50,000/mm3	Vitals stabilized and bleeding gradually stopped
			Monitor vitals ensure within normal Check platelets	To detect and manage potential adverse reactions.	Platelets returned to normal range

Assessment	Nursing Diagnosis	Goal/Desired Outcome	Intervention	Rationale	Evaluation
4-year-old m mild respiratory distress, with nasal flaring, RR 56b/m, SPO2 88 -90% on RA capillary refill time>3 sec, HR 160 bpm, BP 78/45 mmHg GCS 10/15 (E-3, V-2, M-5), GCS 10/15 (E-3, V-2, M-5), T: 39.5°C), ecchymosis and oozing from venipuncture sites Fever, reduced LOC, **vomiting and bleeding** (Had convulsions)	Risk for electrolyte imbalance related to decreased oral intake evidenced by vomiting and bleeding.	Restoration of normal fluid and electrolyte balance.	Restore normal fluid and electrolyte balance. Administer electrolyte replacements as prescribed; monitor intake and output; note decreased urinary output and positive fluid balance on 24-hour calculations; and administer oral fluids with caution	To ensure proper bodily functions and prevents potentially life-threatening complications . Like convulsions and low GCS	Restored normal fluid and electrolyte balance by end of 24 -48 hrs.

Assessment	Nursing Diagnosis	Goal/Desired Outcome	Intervention	Rationale	Evaluation
4-year-old m mild respiratory distress, with nasal flaring, RR 56b/m, SPO2 88 -90% on RA **capillary refill time>3 sec, HR 160 bpm, BP 78/45 mmHg** GCS 10/15 (E-3, V-2, M-5), GCS 10/15 (E-3, V-2, M-5), T: 39.5°C), ecchymosis and oozing from venipuncture sites (Had convulsions)	Risk for shock related to progressive multi-organ failure.	Reduce and Prevent the risk of shock	Prevent shock. **Monitor daily** weight for sudden decreases, especially in the presence of decreasing urine output or active fluid loss; and monitor the patient closely for cardiovascular overload, signs of difficulty of breathing, pulmonary edema, jugular vein distention, and laboratory results	Preventing shock is crucial because it can lead to serious injury or death where by vital organs are deprived Oxygen etc causing damage.	Prevented occurrence of shock by the end of shift.

Assessment	Nursing Diagnosis	Goal/Desired Outcome	Intervention	Rationale	Evaluation
4-year-old m mild respiratory distress, with nasal flaring, RR 56b/m, SPO2 88 -90% on RA capillary refill time>3 sec, HR **160 bpm, BP 78/45 mmHg** GCS 10/15 (E-3, V-2, M-5), GCS 10/15 (E-3, V-2, M-5), T: 39.5°C), ecchymosis and oozing from venipuncture sites (Had convulsions)	Risk for fluid volume deficit related to restricted oral intake, bleeding and vomiting.	Restoration of normal body fluid volume.	Restore normal fluid volume. NGT give prescribed fluids 3hrly depending on absorption. Monitor THE INPUT AND OUTPUT. Also emphasize the importance of oral hygiene; and emphasize the relevance of maintaining proper nutrition and hydration.	Restoring normal body fluid volume is crucial for maintaining proper organ function, blood pressure, and cellular health	Restored normal body fluid volume

Assessment	Nursing Diagnosis	Goal/Desired Outcome	Intervention	Rationale	Evaluation
4-year-old m mild respiratory distress, with nasal flaring, RR 56b/m, SPO2 88 -90% on RA capillary refill time>3 sec, **HR 160 bpm,** BP 78/45 mmHg GCS 10/15 (E-3, V-2, M-5), GCS 10/15 (E-3, V-2, M-5), T: 39.5°C), ecchymosis and oozing from venipuncture sites (Had convulsions)	Pain related to musculoskeletal and abdominal aches **(facial grimaces)**	Relief from pain	Relieve pain. Provide rest periods to promote relief, sleep, and relaxation; determine the appropriate pain relief method; get rid of additional stressors or sources of discomfort whenever possible; and provide analgesics as ordered, evaluating the effectiveness and inspecting for any signs and symptoms of adverse effects.	Relief from pain in Ebola patients is a crucial part of supportive care, aiming to improve comfort and potentially aid recovery	Relieved from pain by end of shift.

References

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- https://www.ncbi.nlm.nih.gov/books/NBK401936
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- https://www.studocu.com/in/document/university-of-kerala/bsc-nursing/easy-nursing-ebola-virus-disease-evd/41703090

Now, let's dive into Mental and Psychosocial support (MHPSS) During Epidemic Response

Presenter
Dr. Nolbert Gumisiriza
Head of Mental Health Department at Kabale University, and Kabale RRH

What is MHPSS

🧠 **Mental** = How we think, feel and behave
(stress, emotions, thoughts, coping)

🤝 **Psychosocial** = How we relate to others
(family, friends, support, community)

❤️ **Support** = The help we give people
(to feel safe, connected, understood)

MHPSS helping people stay strong emotionally, mentally, and socially during a crisis.

Why MHPSS in epidemic response?

For patients & families

1. 🛡 Protect dignity – Reduce fear, trauma, isolation.
2. 🤝 Support adherence – Improve cooperation with care and isolation.
3. 🧠 Prevent mental disorders – Address stress, PTSD, grief, substance withdrawal.
4. 🏠 Support recovery & reintegration – Reduce stigma, link to community care.

For Health Workers

🩺 Protect responder wellbeing – Reduce burnout, trauma, and moral injury.

Across the health system

1. 🔗 Coordinate with other pillars – RCCE, IPC, Case Mgt, Safe Burial, Surveillance.
2. 🌍 Connect to outside support – Mental health teams, peer groups, child protection, social services.

A range of activities and interventions addressing the *mental health* and *social well-being* of

1. Individuals with the illness
2. Families of affected
3. communities affected
    - Health workers
4. Nation / country

Preparedness phase
(building capacity and resilience)

- Training of health workers, community health volunteers on MHPSS principles, psychological first aid, and referral pathways

- Training of health workers, community health volunteers on MHPSS principles, psychological first aid, and referral pathways

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Emergency response phase (MHPSS during the outbreak)

- MHPSS team attending to anxious communities affected by Ebola

- MHPSS team preparing to go attend to Ebola patients in Ebola units

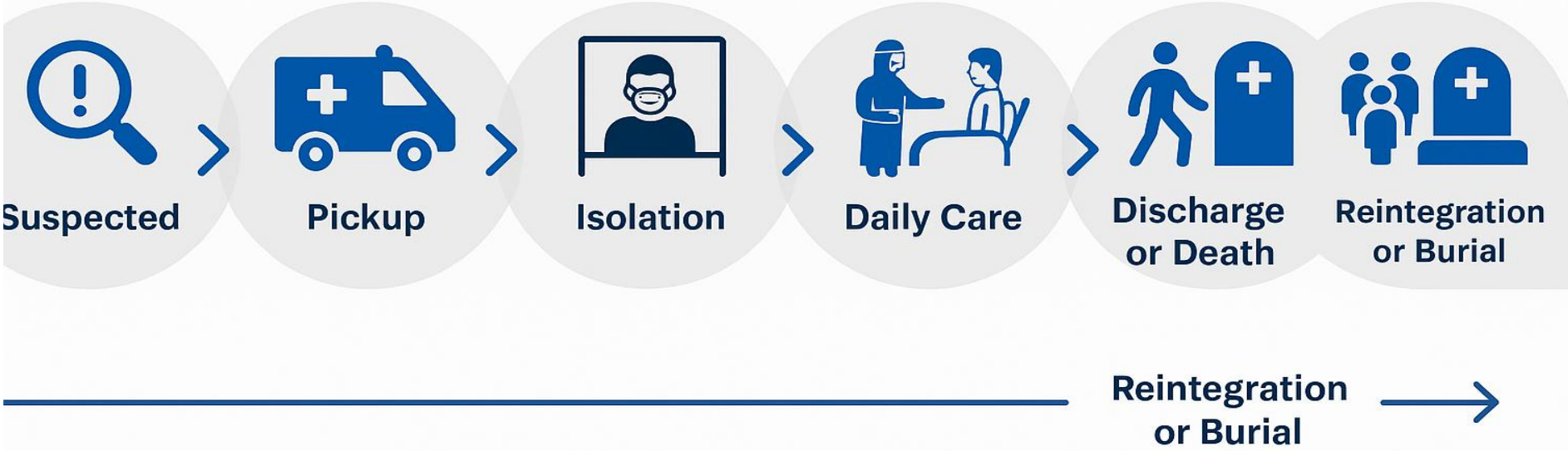
Recovery and follow up (MHPSS after the epidemic)

- **Re-integration** of an Ebola survivor back into the community

- **Ebola Survivors' clinic**: A clinician attends to the mother and child (Ebola survivors during a regular specialist outreach clinic

Safe and dignified burial

MHPSS ACROSS THE LIFECYCLE OF A PATIENT



From the moment a person is labeled ‘suspect’ to their return or their loss, MHPSS ensures dignity, understanding, and human connection at every step

MHPSS practices the treatment unit

1. **Daily ward round**
   → Screen each patient's mental state,
   identify other needs that are not directly medical (eg radio, phone , spiritual & cultural needs etc)
   Action- offer basic support (PFA).

2. **Immediate action for red flags (e.g.,** suicidality, psychosis, depression, refusal of care)
   Action- urgently respond / refer / consult specialists

3. **Help in patient compliances with treatments –** encourage , give hope

4. **Promote social connection**
   → Family communication, spiritual needs, ambulate, talk to fellow patients

5. **Outcome Management**
   →Recovering: prep for reintegration, link to community MHPSS.
   Bad prognosis – prepare for worst outcome (finances, prepare family, spiritual closure)

MHPSS needs of special populations

✅ Vulnerable groups

- 👶 Children (esp. unaccompanied or separated)
- 👵 Older persons (frail, cognitively impaired)
- 🤰 Pregnant women
- 🤱 Breastfeeding mothers
- 👩‍👦 Bereaved families and orphans
- 👩‍⚕️ Exhausted or traumatized frontline workers

♿ People with special needs

- ❑ 🧠 People with pre-existing mental illness
- ❑ 🧍‍♂️ Persons with intellectual disabilities
- ❑ 🏳️ People with cognitive decline (e.g., dementia)
- ❑ 🦽 People with physical disabilities
- ❑ 🚶 🤳 Visual & hearing impairments

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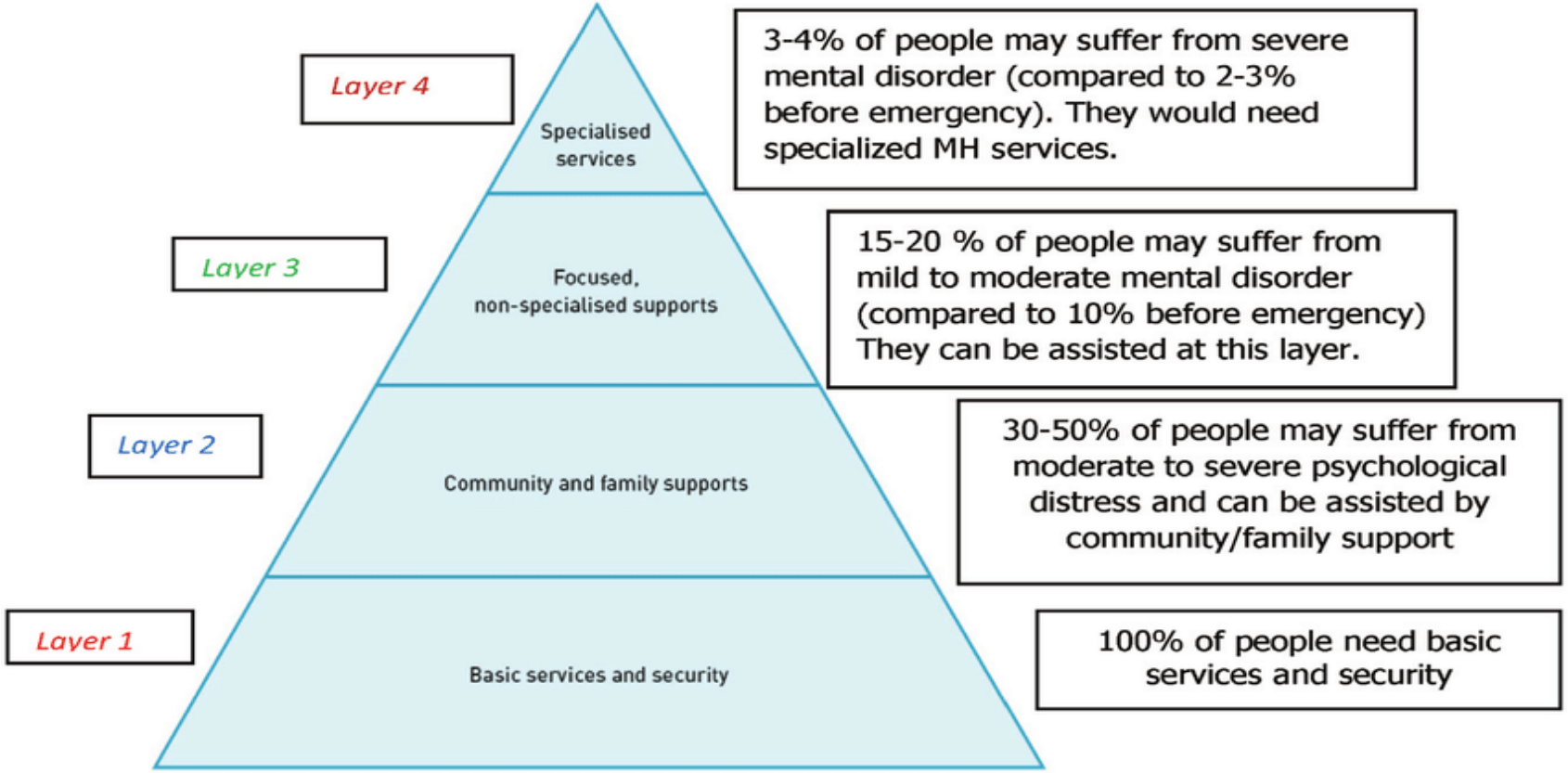
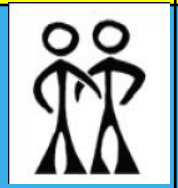
MHPSS interventions for VHF

Four-tier MHPSS intervention model



Level	Type of support	Examples	Who delivers
Tier 1. Basic services & security	provide safe, respectful access to basic survival needs.	• Food, water, clothing, sanitation • Secure, non-threatening environments • Clear information about the situation • Accessible facilities, including for persons with disabilities	all humanitarian & health workers
Tier 2. Community & family supports	strengthen relationships and familiar routines	Communication (patient-family calls); Peer support groups; Community sensitization; Spiritual support and worship; Recreational activities	local leaders, VHTs, trained volunteers
Tier 3. Focused, non-specialized support	practical help and emotional care	psychological first aid; Problem-solving techniques and coping strategies; Psychoeducation (stress management, coping skills); Supportive counselling (non-specialized)	nurses, social workers, trained responders
Tier 4. Specialized services	clinical mental health care for severe issues	Individual and group psychotherapy; Pharmacological treatment (antidepressants, anxiolytics, antipsychotics); Crisis intervention (suicidal ideation, psychosis, severe anxiety); Management of substance withdrawal; Specialist follow-up care and referral systems	Mental health professionals (psychiatrist, clinical psychologist, Psychiatric clinical officer and nurses)

PFA Action Principles

Prepare	• Learn about the crisis event. • Learn about available services and supports. • Learn about safety and security concerns.
Look 	• Observe for safety. • Observe for people with obvious urgent basic needs. • Observe for people with serious distress reactions.
Listen 	• Make contact with people who may need support. • Ask about people's needs and concerns. • Listen to people and help them feel calm.
Link 	• Help people address basic needs and access services. • Help people cope with problems. • Give information. • Connect people with loved ones and social support.

Trauma reactions among health workers during responses to epidemics

1. Emotional dysregulation –mood swings and irritability
2. Moral and spiritual injury
3. Impostor syndrome
4. Secondary traumatic stress – PTSD by proxy
5. Compassion fatigue
6. Burnout
7. Severe disorders:

   Depression, PTSD, Adjustment disorder, Illness anxiety disorder, Substance Use disorders + substance withdraw , Suicidal thoughts or behavior

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MHPSS tips for health workers during response to epidemics

- Self-care: -Sleep, nutrition, hydration, regular breaks.
- Peer support: -Daily check-ins, team debriefs, buddy systems.
- Mindfulness techniques:-Breathing exercises, grounding activities, journaling.
- Limit exposure: -Shorter shifts in red zones (max 2 hours), rotate frequently to prevent burnout.
- Psychological First Aid (PFA): -Basic emotional support skills for immediate stress relief.
- Stay connected: -Regular remote communication with loved ones.
- Spiritual practices: Prayer or meditation for those who find strength in spirituality.

Take home message

- You isolate the virus, not the person.”
- MHPSS is not a luxury. It’s lifesaving care
- Every patient is more than a case — they are a human being

Now, let's dive into pharmacotherapeutics and support care for an EVD Patient in the ETU

Presenter: Dr. Apiyo Paska

Consultant Internal Medicine Physician, Head Of the Department of Internal Medicine, at Gulu Regional Referral Hospital

25th July 2025

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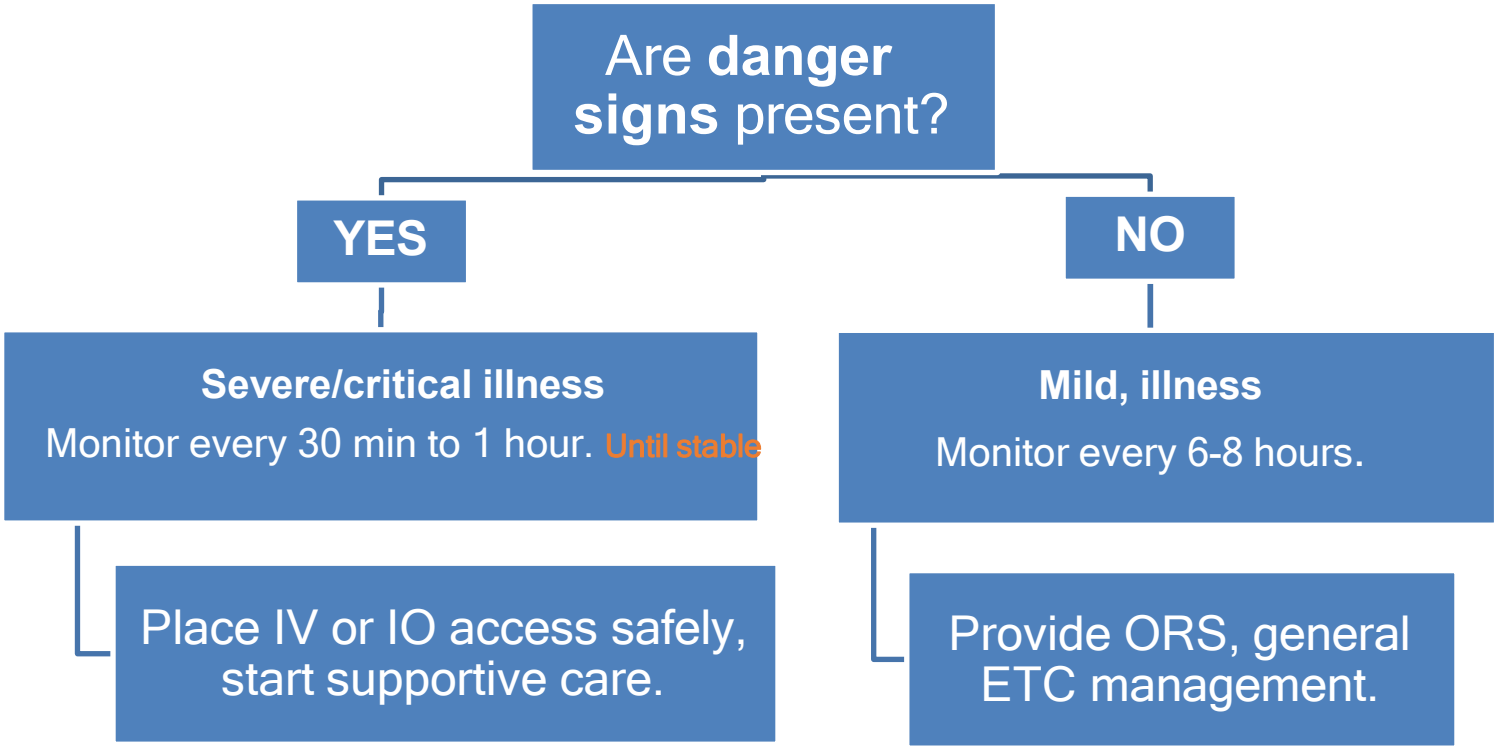
General principles of optimize supportive care for Ebola patients

- Triage: Recognize patient with warning signs that need immediate interventions.
- Give **ORS to all patients** (if tolerating PO).
- Give **IV fluids if** patient in shock or if poor PO tolerance.
- Give **antibiotics for possible co-infection**.
- **Test for malaria and give anti-malarials** if RDT positive or unavailable a febrile patient.
- Correct **electrolyte** abnormalities. Including **glucose**
- Monitor and manage **warning signs/complications.**
- Provide **symptom** specific treatments and **psychological support.**
- If **investigational therapeutics** are available, approach patient, parents and an independent clinician for a consent for approved study or MEURI, if possible.

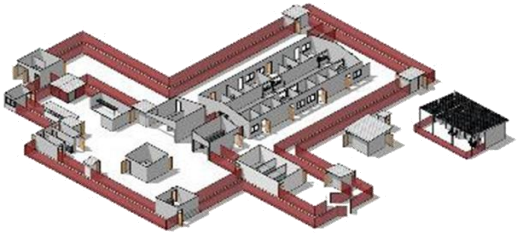
Triaging patients with Ebola virus disease



Management of Ebola patients in the ETU

Life-saving management strategy for FVD patients: three key interventions

Design and biosecurity of Treatment Centre

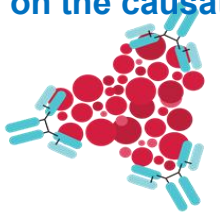


- Not just an isolation unit
- A facility focused on patients, staff, families and communities
- A facility where patients can get quality care, compliant with all biosecurity and IPC standards

Optimized supportive care

- Systematic assessment and monitoring of patients
- Resuscitation with oral and IV fluids
- Availability of point-of-care tests (biochemistry, electrolytes, haemoglobin, glucometer, malaria RDT,) and use of oxygen and blood products
- Prevention and care of complications

Specific therapeutics (depends on the causative virus)



- Recommendation for the treatment of EBOV *(Zaire ebolavirus)*:
  - Ansuvimab (mAb114, Ebanga)
  - Atoltivimab, maftivimab, odesivimab “cocktail” (REGN-EB3, INMAZEB)
- No current specific therapeutic recommendations for other *Ebolaviruses and Marburgviruses*

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Some therapies are proven, others are not

- For Zaire ebolavirus (EBOV), a randomized clinical trial has demonstrated reduced mortality in patients with EVD treated with REGN-EB3 and mAb114 (PALM trial)
- For other Ebolaviruses including *Sudan ebolavirus* (SUDV), *Bundibugyo ebolavirus* (BUDV), there are no proven specific therapies currently
- For Marburg viruses, there are no proven specific therapies currently
- For all EVD patients, the foundation of all therapy is optimised supportive care
- Without EARLY diagnosis and high-quality clinical care, case fatality rates will remain high.

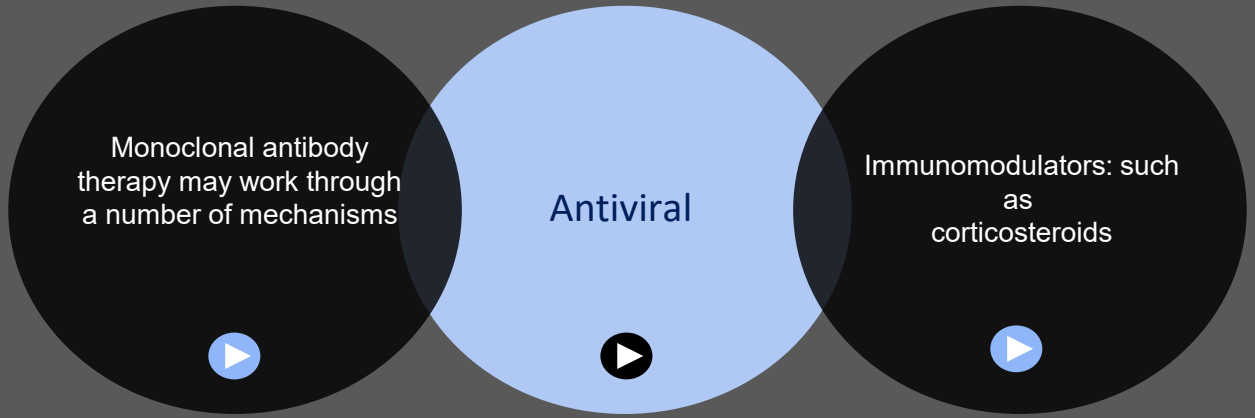
When there are not proven therapies

- We deserve treatments that are effective!
- The best way of determining if an intervention is effective is through Randomized Controlled Trials that evaluates the safety and efficacy of an intervention
  - ***this is how we have effective therapies for Zaire ebolavirus***

- When there is not sufficient evidence, some interventions can be used within a MEURI framework (Monitored Emergency Use of Unregistered Interventions)
- MEURI may be used to allow patients access to promising treatments before ethically approved RCTs are able to start.
- This type of monitored use has many other names: ***compassionate use; emergency use outside clinical trials; expanded access protocol.***

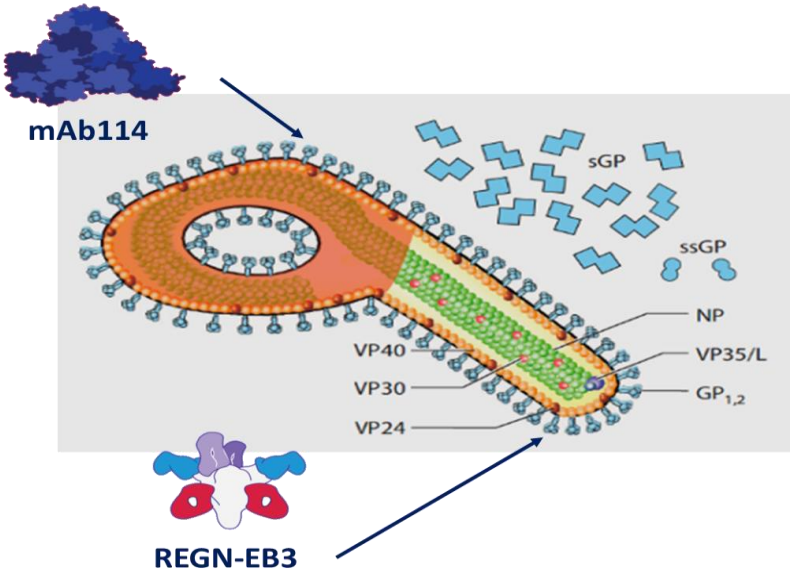
Ref: Emergency use of unproven clinical interventions outside clinical trials: ethical considerations. WHO. 2022.

Types of medication



Types of medication - Antibodies

- Monoclonal antibody therapy may work through a number of mechanisms.
- Both recommended antibodies to treat EBOD caused by *Zaire ebolavirus* target the outer coat of the virus: the glycoprotein
- For EBOD, caused by Zaire ebolavirus, WHO recommends two that target the outer coat of the virus: the glycoprotein



Types of medication

- **Antivirals:**
- NOT currently recommended for treatment of filovirus disease
- Multiple effects across the immune system (generally dampening responses)

- **Immunomodulators:**
- NOT currently recommended for treatment of filovirus disease
- Remdesivir, is a nucleotide analogue that inhibits the viral RNA polymerase (broad spectrum antiviral). ***While animal studies suggest remdesivir may be effective against EBOV, it did not demonstrate improved efficacy compared with ZMAPP in the PALM study***

WHO Antiviral Recommendations for EVD

- Recommendation for mAb114 and REGN-EB3: *Strong recommendation for*

We recommend treatment with either mAb114 or REGN-EB3 for patients with RT-PCR confirmed EVD and for neonates of unconfirmed EVD status, 7 days or younger, born to mothers with confirmed EVD (strong recommendation for).

- **mAb114 and REGN-EB3 should not be given together, and should be viewed as alternatives. The choice of whether to use mAb114 and REGN-EB3 depends on availability.**

REMARKS

- **mAb114: absolute mortality benefit 229 to 383 per 1000 patients**
- **REGN-EB3:** absolute mortality benefit 237 to 396 per 1000 patients

WHO Recommendation for remdesivir and ZMapp

- WHO suggest against treatment with remdesivir for patients with RT-PCR confirmed EVD ***(conditional recommendation against).***

- WHO suggest against treatment with ZMapp for patients with RT-PCR confirmed EVD ***(conditional recommendation against).***

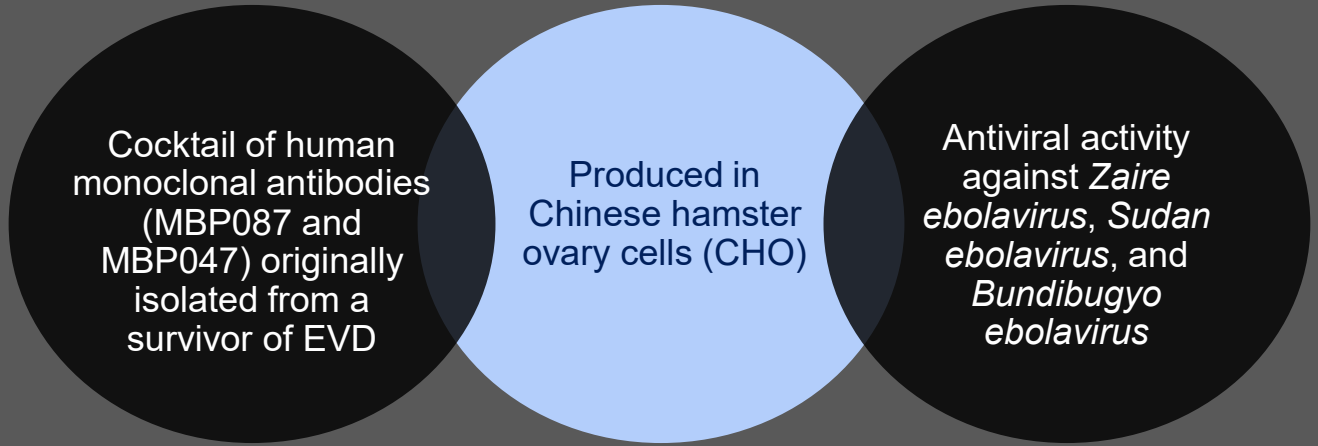
Remark: This recommendation only applies to EVD caused by Ebola virus (EBOV; Zaire ebolavirus

- ***Guideline is applicable to all adults, children, pregnant, breastfeeding persons, and older persons***

New antibodies and antivirals: Non- Registered

- Proposed clinical trial protocol summary is a three-arm, open-label, randomized trial to simultaneously evaluate virus-directed therapies ***(Remdesivir, MBP134 vs both)*** and host-directed therapies ***(low-dose corticosteroids vs no additional treatment)*** as a second randomization.
- Expanded access protocols under the MEURI framework developed.

MBP-134: Profile



General instructions for administering therapeutics for EVD Patients

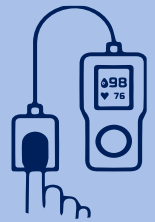
- PRIOR to the infusion; ensure that medications to manage side effects are ready and SpO2 and BP monitoring are available.

Look for these signs and symptoms before infusion:

- Pruritus (itching)
- Rash
- Unexplained bleeding or bruising
- Anorexia (loss of appetite)
- Diarrhoea
- Nausea
- Vomiting
- Constipation
- Headache

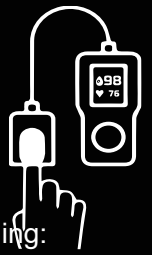
- Hypertension
- Hypotension
- Tachycardia
- Heart attack
- Angioedema
- Bronchospasm
- Fever
- Shortness of breath
- Others

Monitoring



What to observe for:

What to observe for:

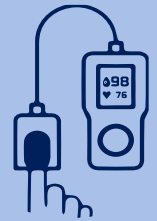


Monitor patient symptoms and vital signs including:

- heart rate, blood pressure, respiratory rate and oxygen saturation

How often to monitor:

Monitoring



What to observe for:

How often to monitor:

Requires good planning from human resources standpoint

- Before the infusion
- 15 minutes after the start of the infusion
- 1 hour during infusion
- At the end of infusion
- If clinical deterioration occurs during infusion: check vital signs more frequently and clinically assess the patient

What to observe for:
How often to monitor:

Monitoring

How to manage side-effects if present:

Monitoring

How to manage side-effects if present:

How to manage side-effects if present:

- For the most common adverse effects (incidence ≥ 20%): pyrexia, chills, tachycardia, tachypnoea and vomiting:
  - Slow down the infusion rate; or
  - discontinue if patient develops signs of infusion-related effects
- For signs or symptoms of clinically significant hypersensitivity reaction or anaphylaxis:
  - immediately discontinue the infusion; and
  - initiate appropriate medications, supportive therapy and airway management

Monitoring and recording

Patients should be observed intermittently for > 4 hours after completion of product administration

PCR samples should be collected 24–72 hours after infusion

Follow-up and limited medical examination 7 and 14 days after administration of the product

Follow-up 3 weeks after product administration or discharge from treatment centre (whichever comes later)

If there are any severe adverse reactions, these should be reported within 24 hours to:

- The manufacturer
- The sponsor of any trial

EVD DISCHARGE CRITERIA FROM THE ETU: *One negative PCR test.*

MUST meet all of the following criteria:

Three or more days without fever or any significant symptoms e.g., diarrhoea, vomiting, bleeding).

AND

Significant improvement in clinical condition

AND

Able to perform activities of daily living

Sample collected

Positive

Negative

Discharge

Repeat PCR after 48 hours.

Positive

Negative

ient can be discharged

Discharged Lactating mother

Do 01st breast milk PCR after 48 hours.

Negative

Do 02nd breast milk PCR after 48 hours.

Negative

Baby can resume breast milk

PCR can sometimes take several days to become undetectable despite resolution of symptoms

Lactating women who are discharged cured (after a negative blood PCR tests) and have an infant or young children who are Ebola-negative or non-suspected (asymptomatic) should not resume breastfeeding until two consecutive negatives breast milk PCR tests retested every 48 hours.

References

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QUESTIONS OR COMMENTS?

Thank you