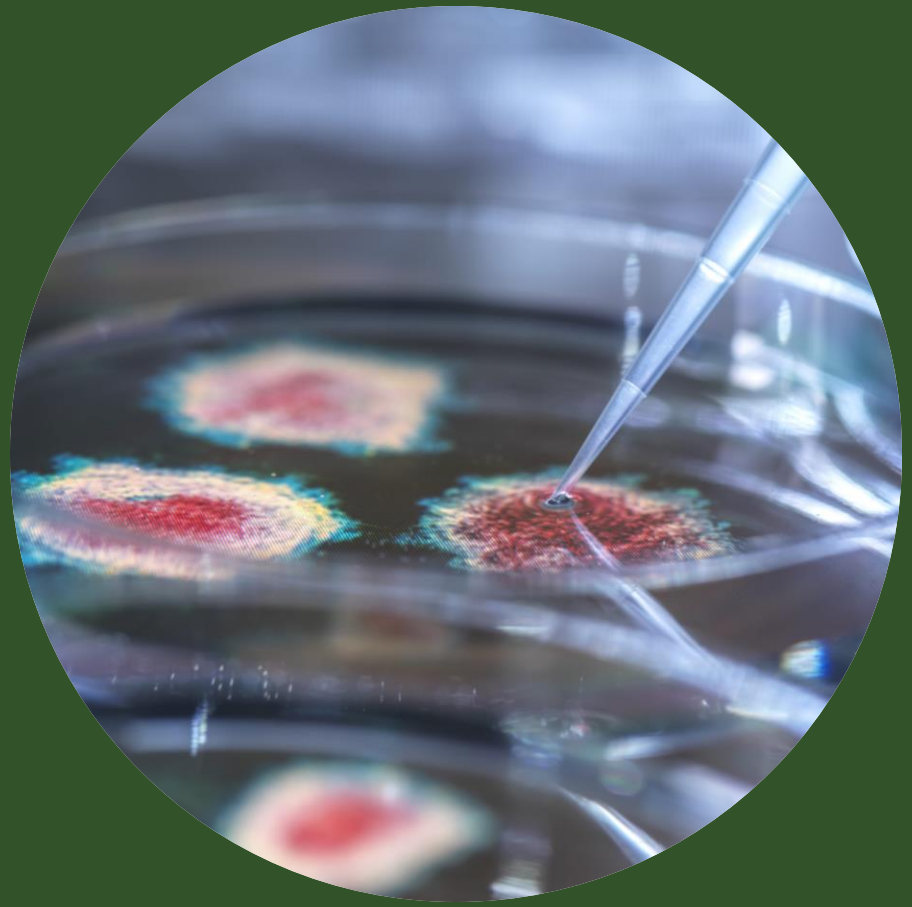


IDSA/ASM Clinician Call: Key Updates on Hantavirus & Ebola

May 28, 2026

- Began in 2020 as a forum for information sharing for frontline clinicians during the COVID-19 pandemic.

- This webinar is being recorded and can be found online at www.idsociety.org/cliniciancalls.

IDSA/ASM Clinician Call: Key Updates on Hantavirus & Ebola

Topic	Presenter
1. Welcome & Introductions	**Jeanne Marrazzo, MD, M.P.H.** CEO, Infectious Disease Society of America
2. Hantavirus Update: Diagnostics & Laboratory Preparedness	**Jana Broadhurst, MD, PhD, DTM&H** Associate Professor, UNMC Department of Pathology, Microbiology and Immunology Director, Infectious Diseases Diagnostics & Biopreparedness Council Director, U.S. Region 7 Emerging Pathogens Laboratory & Nebraska Biocontainment Unit Laboratory
3. Hantavirus Update: Clinical Management & Infection Prevention Considerations	**Lindsay Busch, MD** Assistant Professor, Medicine, Emory University School of Medicine, Department of Medicine
4. Ebola Update: Epidemiology & Current Situation	**Nahid Bhadelia, MD, MALD** Founding Director, CEID; Founding Director, BEACON Associate Professor, Infectious Diseases, Boston University School of Medicine Adjunct Associate Professor, Global Health Security, Boston University Frederick S. Pardee School of Global Studies
5. Ebola Update: Clinical Management & Infection Prevention	**Tara Palmore, MD** Adjunct Professor of Medicine, The George Washington University School of Medicine and Health Sciences Adjunct Professor of Epidemiology, The George Washington University- Milken Institute School of Public Health Associate Editor, Infection Control & Hospital Epidemiology Journal
8. Q&A/Discussion	**All**

Introduction

Jeanne Marrazzo, MD, M.P.H.
CEO, Infectious Disease Society of America
Prior Director, NIAID

Hantavirus Update

Jana Broadhurst, MD, PhD, DTM&H
Associate Professor, UNMC Department of Pathology, Microbiology and Immunology
Director, Infectious Diseases Diagnostics & Biopreparedness Council
Director, U.S. Region 7 Emerging Pathogens Laboratory & Nebraska Biocontainment Unit Laboratory
Director, Microbiology-Parasitology Service

Lindsay Busch, MD
Assistant Professor, Medicine, Emory University School of Medicine, Department of Medicine

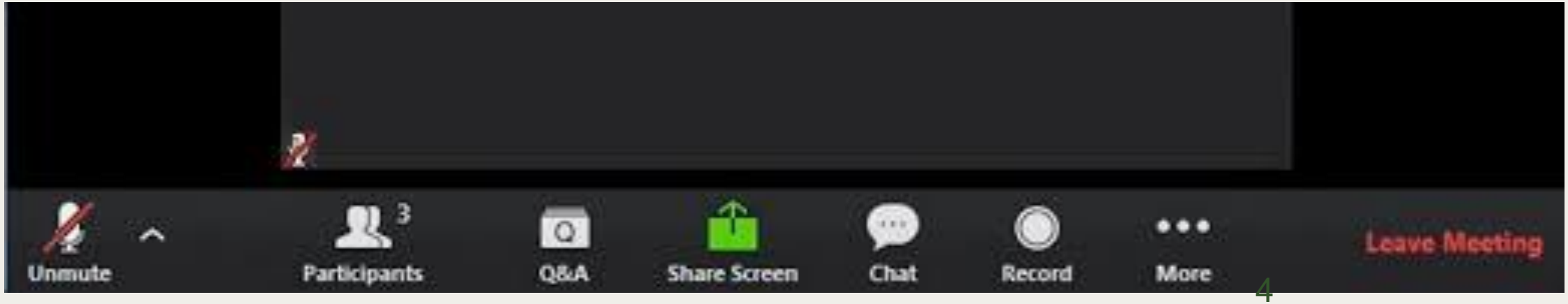
Ebola Update: Current Global Situation & Preparedness Implications

Nahid Bhadelia, MD, MALD
Founding Director, CEID; Founding Director, BEACON; Associate Professor, Infectious Diseases, Boston University School of Medicine; Adjunct Associate Professor, Global Health Security, Boston University Frederick S. Pardee School of Global Studies

Tara Palmore, MD
Adjunct Professor of Medicine, The George Washington University School of Medicine and Health Sciences
Adjunct Professor of Epidemiology, The George Washington University- Milken Institute School of Public Health
Associate Editor, Infection Control & Hospital Epidemiology Journal

Question?
Use the “Q&A” Button

Comment?
Use the “Chat” Button



Andes virus update: Diagnostics & Laboratory Preparedness

IDSA/ASM Clinician Call
May 28th, 2026

Jana Broadhurst, MD, PhD, DTM&H
Clinical laboratory director, National Quarantine Unit and Region 7 Special Pathogens Treatment Center
Associate Professor, Department of Pathology, Microbiology, & Immunology
University of Nebraska Medical Center

University of Nebraska Medical Center℠

Outline

1. Andes virus diagnostic testing
2. Clinical laboratory support for Andes virus-exposed individuals
3. Clinical laboratory support for Andes virus disease patients

Nebraska context

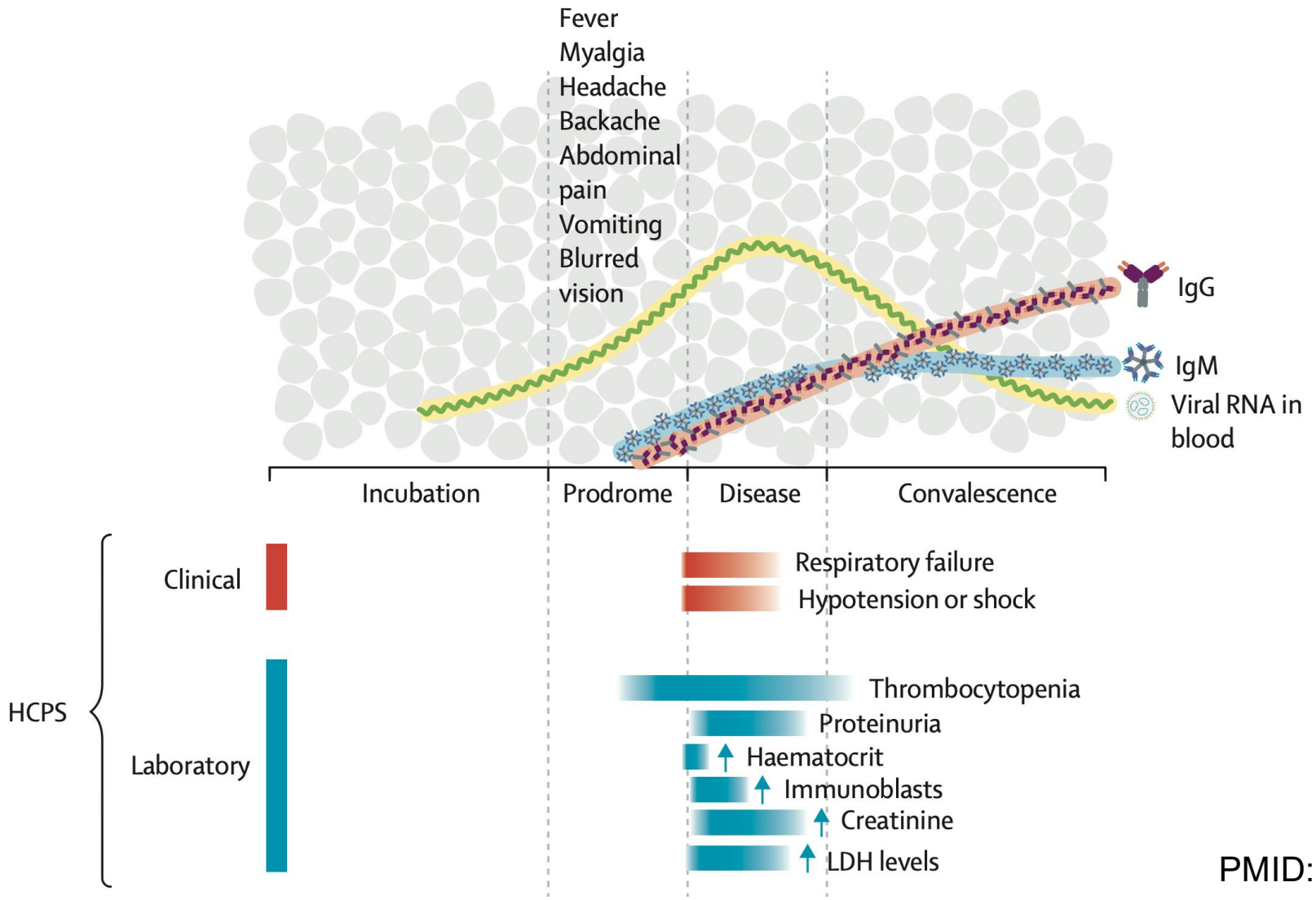
NETEC NSPS

National Quarantine Unit

Region 7 Special Pathogens Treatment Center

- ANDV diagnostic testing supported by the Nebraska Public Health Laboratory
- Clinical laboratory testing supported by the Nebraska Medicine Biocontainment and Core Laboratories

Andes virus diagnostic testing



PMID: 37105214

Andes virus diagnostic testing

Detection of viremia prior to onset of symptoms

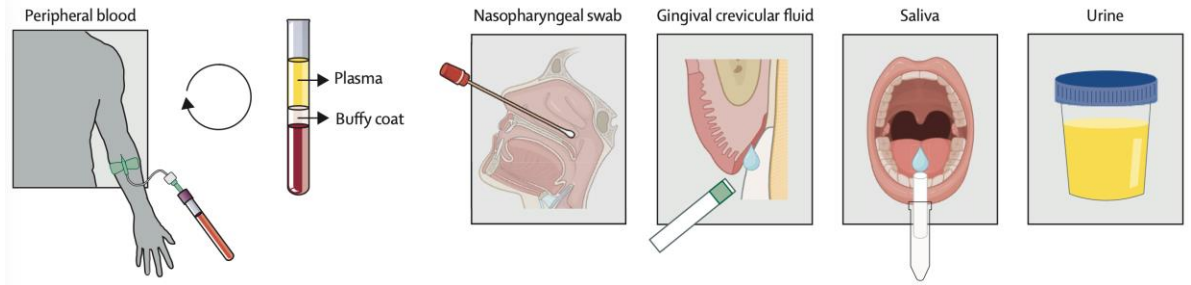
Table 5. Detection of Andes virus (ANDV) RNA by reverse-transcription polymerase chain reaction (RT-PCR) in peripheral blood cells obtained from household contacts who were asymptomatic and seronegative at study entry.

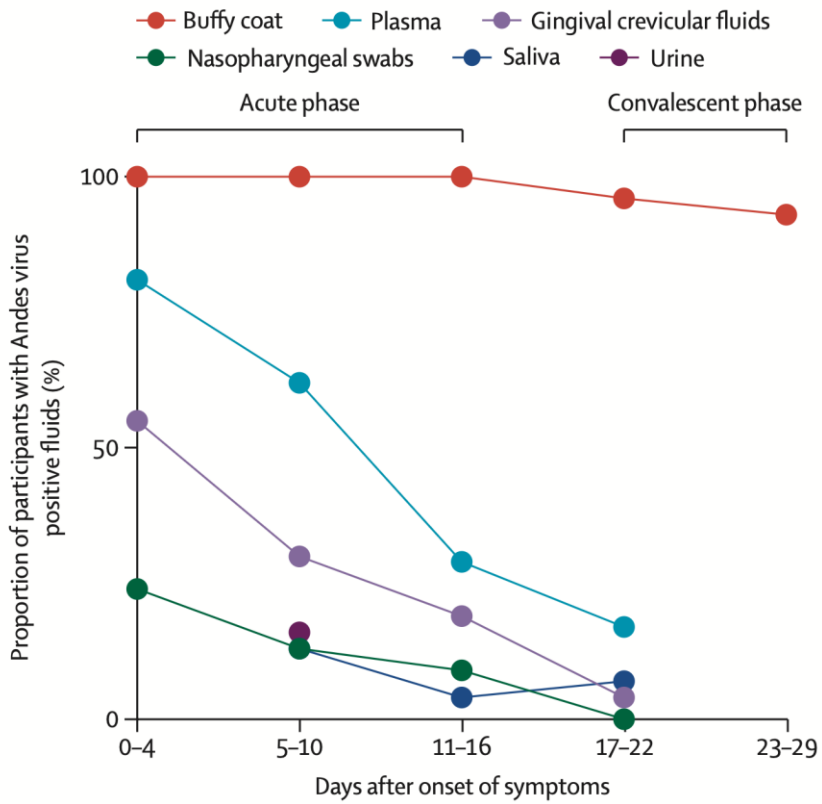
Additional household case patient no. from table 3 (sex, age in years)	Viral level in first positive sample, ANDV copies/mL of sedimented peripheral blood cells	Days from first positive RT-PCR to		Days from onset of symptoms in index case patient to positive RT-PCR in contact
		Onset of prodromal symptoms	Onset of cardiopulmonary phase	
16 (M, 47)	**28,244**	**14**	**18**	**18**
15 (M, 34)	33,000	15	18	15
13 (F, 48)	**18,342**	**7**	**10**	**18**
10 (F, 2)	1,181,551	NA[a]	12	~14[b]
14 (M, 50)	**116,754**	**5**	**8**	**22**
9 (F, 47)	3882	NA[c]	7	19

PMID: 17471425

Andes virus diagnostic testing

Detection of virus in blood and body fluids following symptom onset





PMID: 38582089

Andes virus diagnostic testing

Current guidance

New World hantavirus IgM and IgG

- Available at CDC, Quest, some state public health laboratories
- Detects antibodies targeting nucleocapsid; high cross-reactivity between SNV and ANDV
- If negative test <72 hours from symptom onset, retest once >72 hours
- No evidence of seroconversion prior to symptom onset

Andes virus-specific rRT-PCR

- Available at Nebraska Public Health Laboratory (whole blood)
- Viremia may decline and become undetectable >7 days from symptom onset

Clinical laboratory support for Andes virus-exposed individuals

Long incubation period + Pre-symptomatic viremia = special considerations and biosafety risk assessment for specimen handling to support clinical management during monitoring

- Management of chronic and coincident health issues
- Safety monitoring labs for post-exposure prophylaxis

Clinical laboratory support for Andes virus disease patients

Prodromal phase → Cardiopulmonary phase → ARDS/Shock

- Progressive pathophysiology reflected in laboratory abnormalities:
  - Thrombocytopenia
  - Hemoconcentration
  - Leukocytosis (left shift, atypical lymphocytes)
  - Elevated Cr
  - Elevated liver transaminases

- Laboratory support for isolation care with ECMO management

Thank you for your attention

References:

Vial PA et al. Hantavirus in humans: a review of clinical aspects and management. Lancet Infect Dis. 2023 Sep;23(9):e371-e382. doi: 10.1016/S1473-3099(23)00128-7. PMID: 37105214.

Ferres M et al. J Infect Dis. 2007 Jun 1;195(11):1563-71. doi: 10.1086/516786. PMID: 17471425.

Ferrés M et al. Viral shedding and viraemia of Andes virus during acute hantavirus infection: a prospective study. Lancet Infect Dis. 2024 Jul;24(7):775-782. doi: 10.1016/S1473-3099(24)00142-7. PMID: 38582089.

Serious Communicable Diseases Unit

LINDSAY M BUSCH, MD
ASSOCIATE MEDICAL DIRECTOR, EMORY SCDU
ASSISTANT PROFESSOR, EMORY UNIVERSITY SCHOOL OF MEDICINE

IDSA/ASM Clinician Call 5/28/2026

Disclosures

- I have no financial conflicts of interest

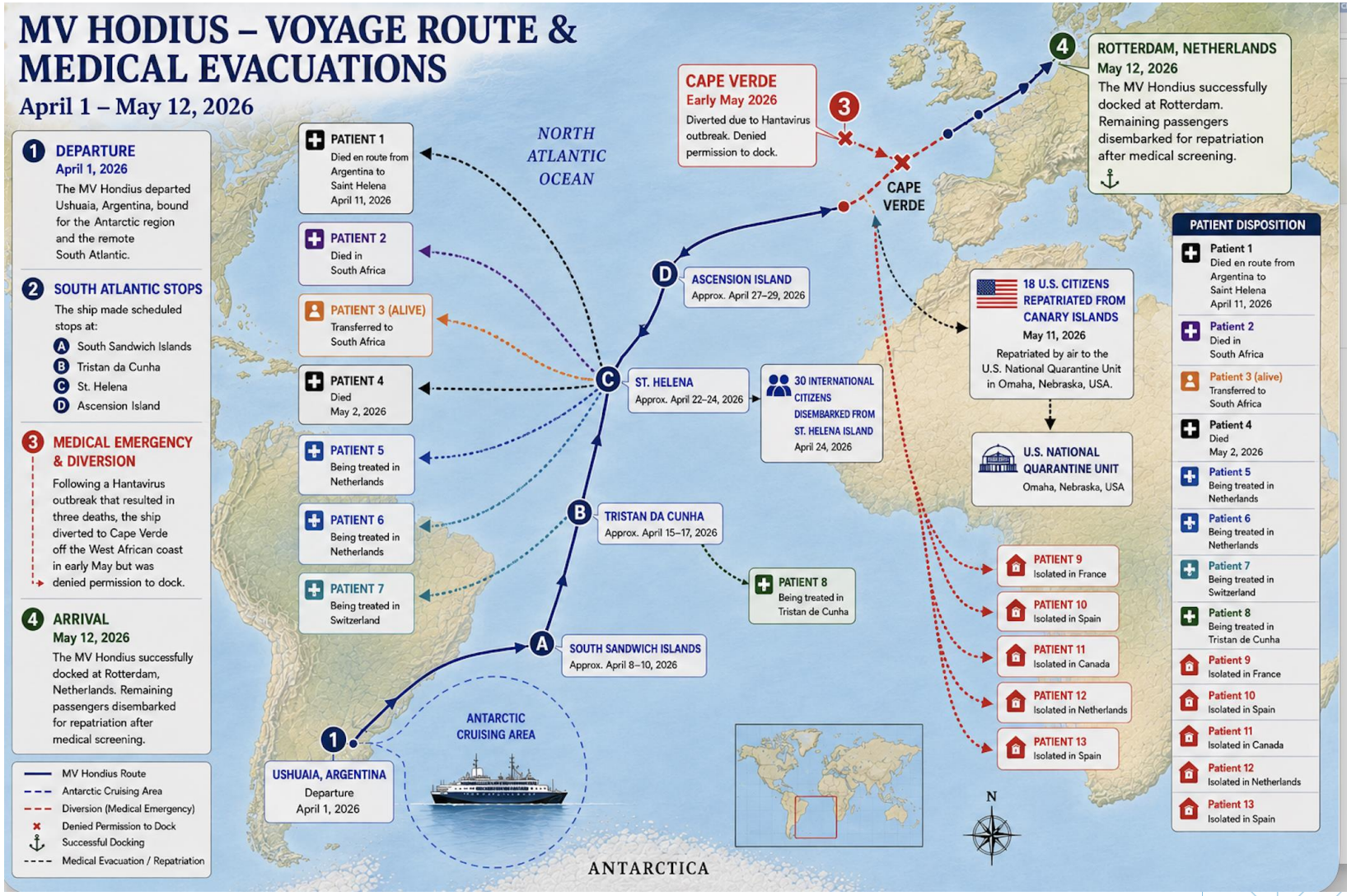
Andes virus: Clinical Management & Infection Prevention Considerations

Clinical presentation

Disease management

Preparedness

Operational workflows



Andes virus transmission

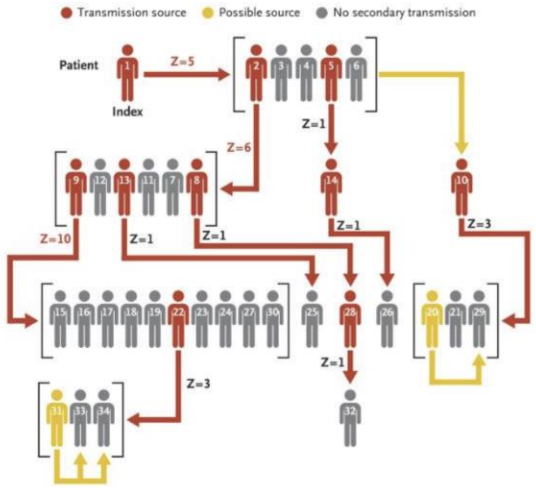
PRIMARY ENVIRONMENTAL EXPOSURE

- Exposure to infected rodent excrement
- Mechanisms: inhalation, contact to mucus membranes, rodent bites/scratches, food contamination

Long-tailed pygmy rice rat

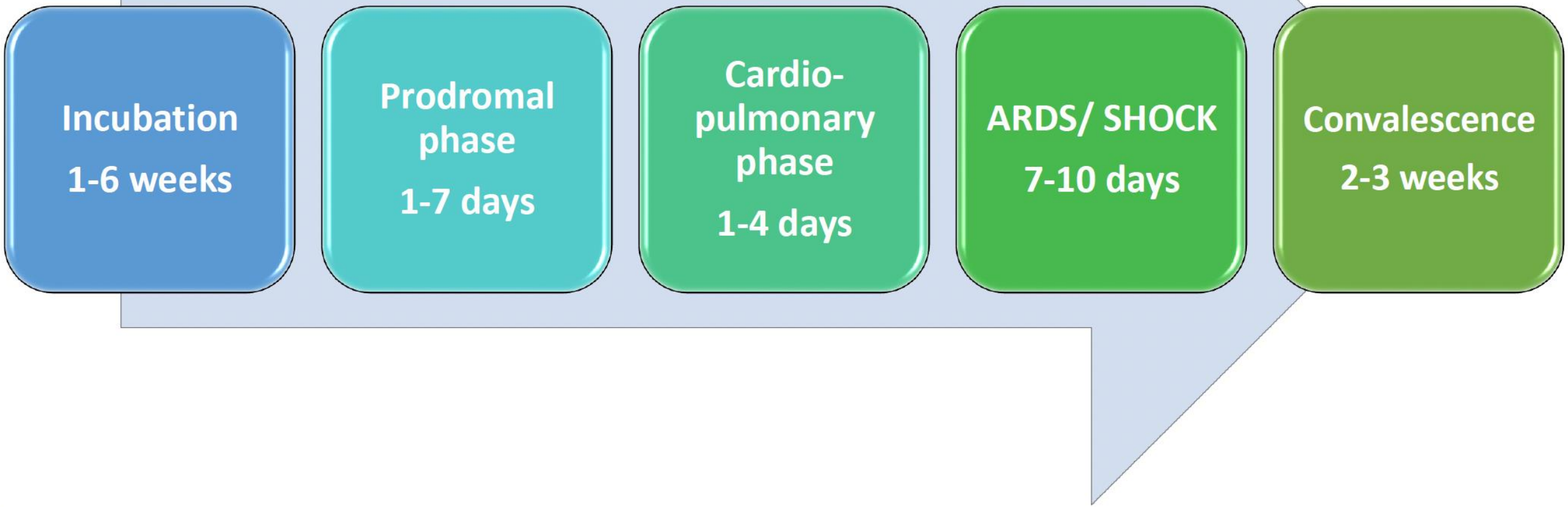
PERSON TO PERSON SPREAD

- Close, prolonged contact with infected person
- Mechanisms: shared household, sexual contacts, caregiving, healthcare, crowded social events



N Engl J Med 2020;383:2230-2241 DOI: 10.1056/NEJMoa2009040

Hantavirus Pulmonary Syndrome: Clinical phases



HPS Disease management

SUPPORTIVE CARE

- Early access to critical care
- Consider VA ECMO
  - Ulloa-Morrison R, et al. Critical care management of hantavirus cardiopulmonary syndrome. A narrative review. J Crit Care 2024(84). doi.org/10.1016/j.jcrc.2024.154867.
  - Crowley MR, et al. Successful treatment of adults with severe hantavirus pulmonary syndrome with extracorporeal membrane oxygenation. Crit Care Med 1998;26:409–14. doi.org/10.1097/00003246-199802000-00047.

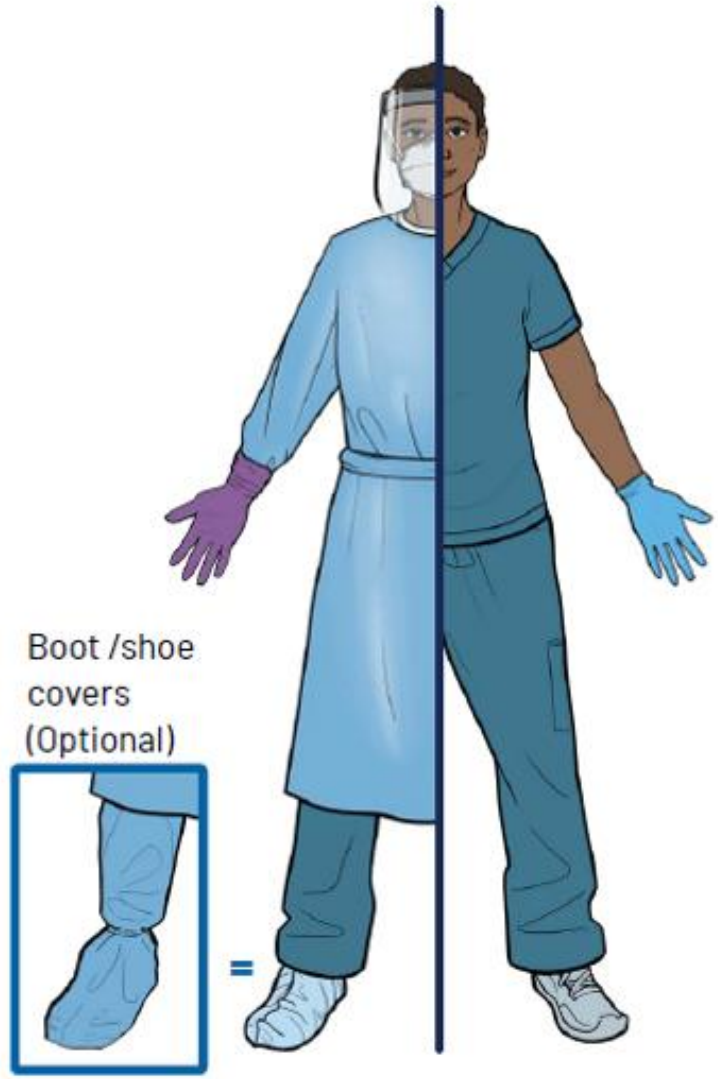
MEDICAL COUNTERMEASURES

- None approved
- Antivirals
  - Favipiravir > Ribavirin, Baloxavir
- Immune modulators
  - Tocilizumab (anti-IL-6)
  - Icatibant (bradykinin inhibitor)
- Monoclonal antibodies
  - SAB-163 awaiting phase 1 trials

Andes virus preparedness

- Infection Prevention and Control
  - Isolation: Airborne Infection Isolation Room (AIIR)
  - PPE: enhanced respiratory precautions
    - **Eye protection**: Full face shield, shield of powered air purifying respirator (PAPR), or tight-fitting goggles
    - **Nose and mouth protection**: Respiratory protection with a NIOSH-approved N95, elastomeric, or powered air-purifying respirator
    - **Torso/Body coverage**: AAMI Level 3 or 4 fluid-resistant gown
    - **Gloves**: Double gloves (with an extended-cuff outer pair) are preferred if consistent with institutional training and protocols
    - **Shoe covers**: Preferred
- Waste handling: Category B designation
- Potentially enhanced laboratory precautions

NETEC/CDC Recommended PPE



Andes virus operational workflows

SPACE - STAFF - STUFF

- Dedicated versus shared unit
- Cohorted versus shared staff
- Staff assessment and monitoring considerations: OHS, IPC
- Specialty care protocols and staffing (eg, ECMO)
- Care partners and ancillary services: hospital leadership, PIOs, EVS, pharmacy/IDS, FSAP

POINT OF ENTRY VS REPATRIATION

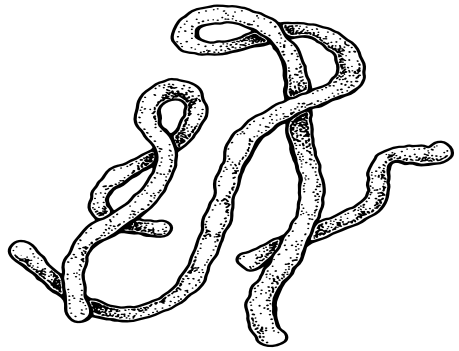
- Emergency department PPE supplies, protocols, and training
- Direct admission transport partners, PPE protocols, and routes
- Level and duration of care capabilities at your facility and/or transfer options (plug: get to know your RESPETC!)

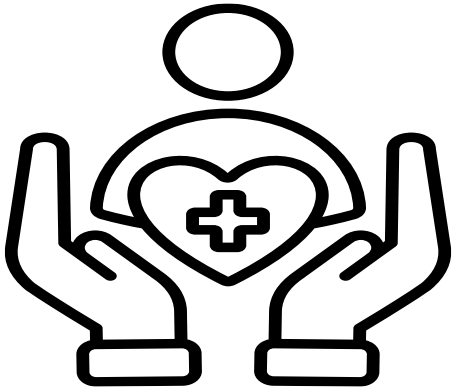
Serious Communicable Diseases Unit

Thank you!

LINDSAY.MARGOLES.BUSCH@EMORY.EDU

Bundibugyo ebolavirus disease outbreak, Democratic Republic of Congo, Uganda, 2026





Nahid Bhadelia, MD, MALD

Associate Professor, Infectious Diseases, Chobanian & Avedisian Boston University School of Medicine

Founding Director, CEID

Founding Director, Biothreats Emergence, Analysis and Communications Network (BEACON)

BU Center on Emerging Infectious Diseases

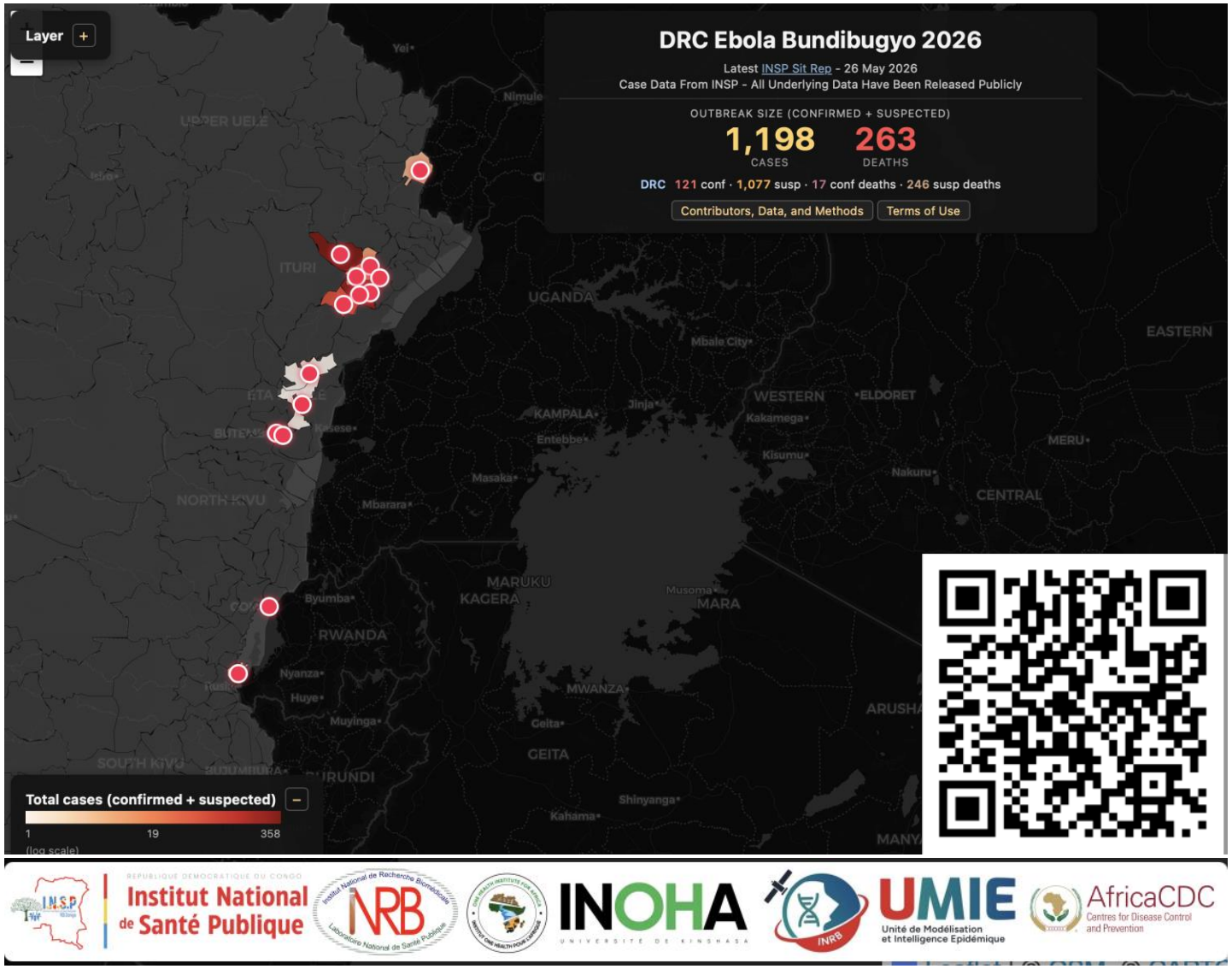
Objectives

- Outline current the status Bundibugyo ebolavirus disease outbreak in DRC and Uganda, discuss operational challenges
- Discuss supportive clinical care aspects, particularly in resource limited settings

No disclosures to share.

Images are mine unless otherwise stated.

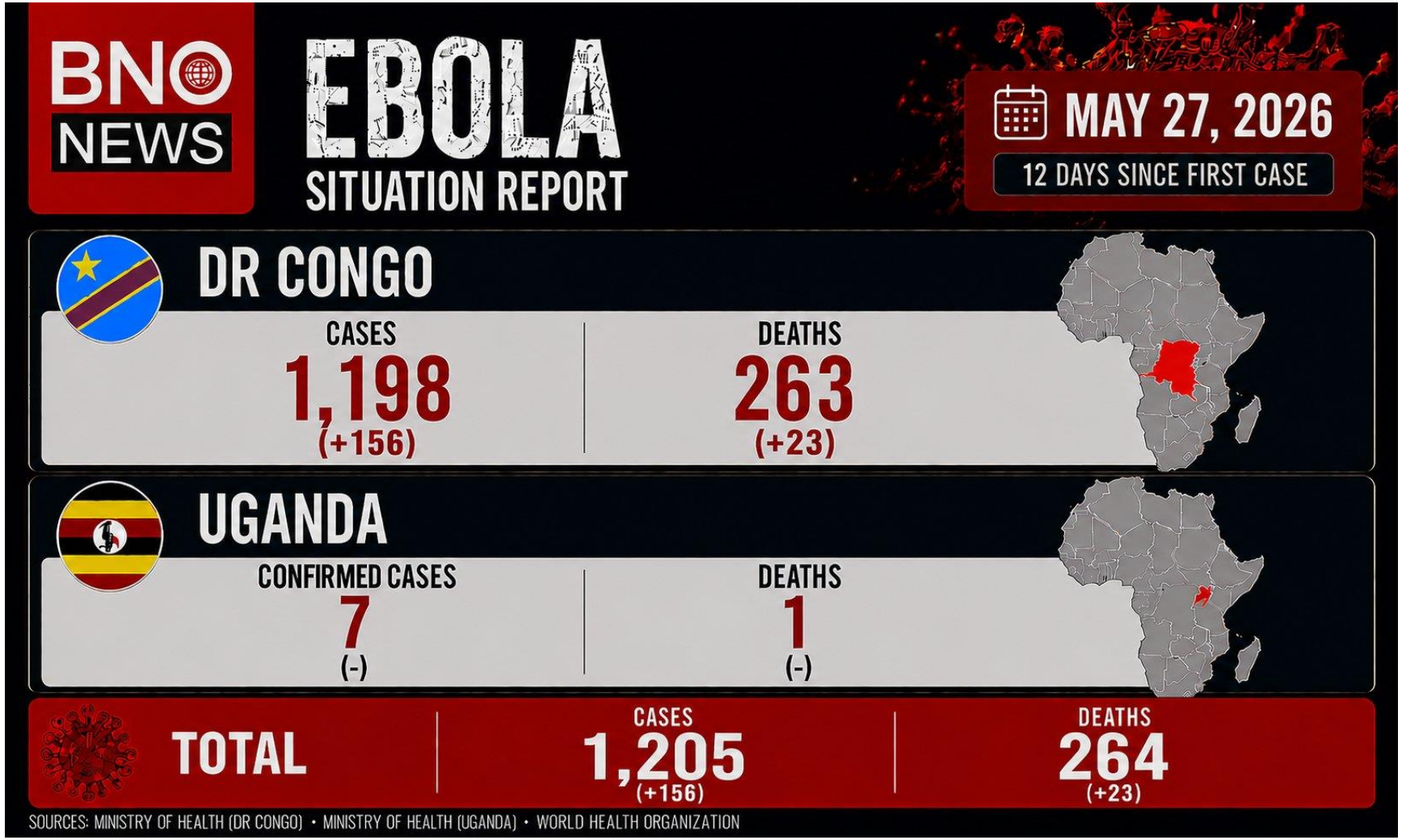
Bundibugyo ebolavirus outbreak , DRC and Uganda, 26 May 2026



- **Total cases:** 1,198
- **Total Deaths:** 263
- **Confirmed cases:** 121
- **Confirmed deaths:** 17
- **Suspected cases:** 1,077
- **Suspected deaths:** 246
- 3 provinces & 11 heatlh zones affected
- Heavy affected areas (Ituri): Rwampara, Bunia, Mongbalu

BU Center on Emerging Infectious Diseases

Media reported totals



Challenges to Outbreak Response

- Delayed identification
- Multiple epicenters
- Mismatch between resources and needs
- Conflict
- Absence of proven medical countermeasures
- Community distrust
- Recent cuts to global aid
- Impact on general health delivery
- Border closures

Silver linings

DRC & region has significant experience with Ebola virus diseases outbreaks

There is advanced diagnostic and phylogenetic capacity, particularly in Kinhasa

Engaged & responsive central government

Despite lack of vaccines & therapeutics, disease has familiar features, same principles in control and supportive treatment

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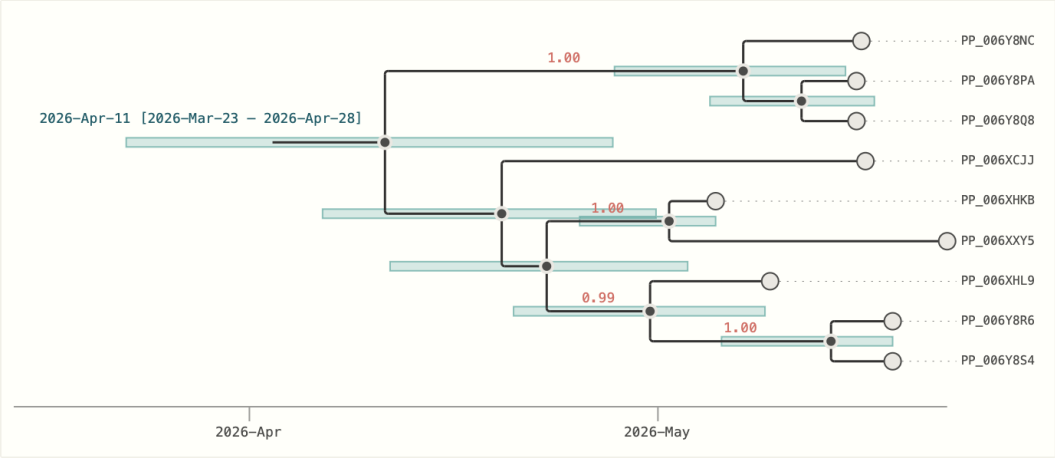
2026-05-21 Update - Temporal Tree Estimate

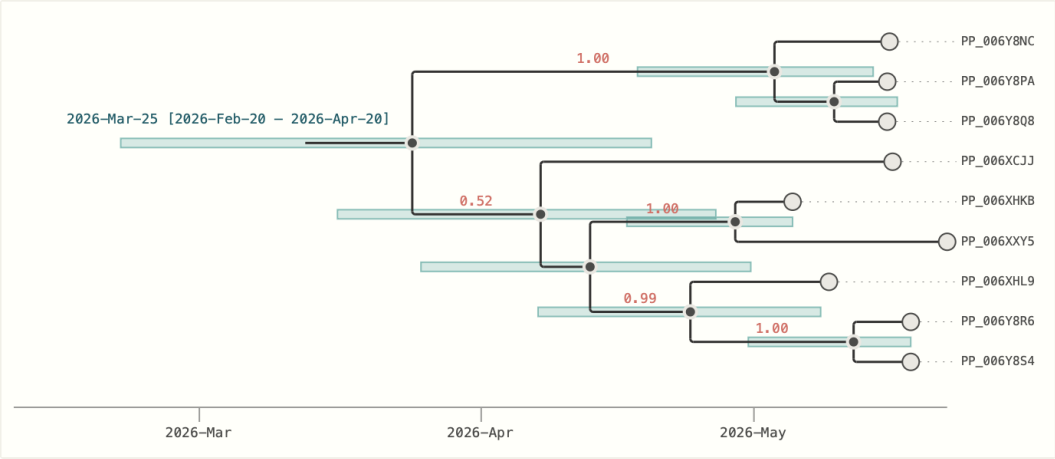
See the top post for authors, collaborators and acknowledgments.

A)



Show in PearTree 13

B)



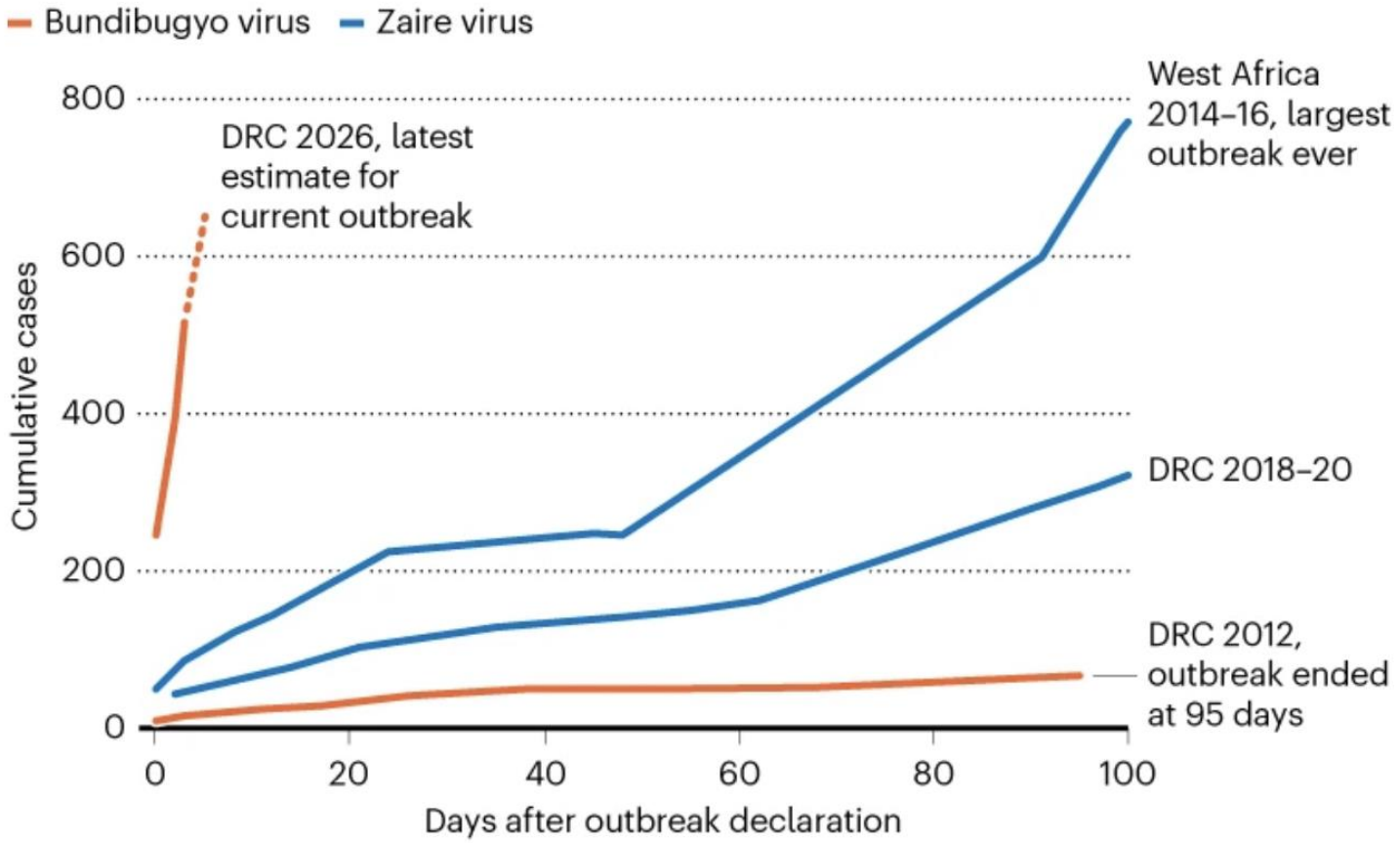
Outbreak duration unknown

- Duration of outbreak
  - Assumed to have been transmitted for at least 1.5 months given latest phylogenetic analysis and epi signals
- True scope of current cases remains unclear due to testing and case identification challenges

Rambaut, Andrew. Virological. May 18, 2026. https://virological.org/t/initial-genomes-from-may-2026-bundibugyo-virus-disease-outbreak-in-the-democratic-republic-of-the-congo-and-uganda/1032/5

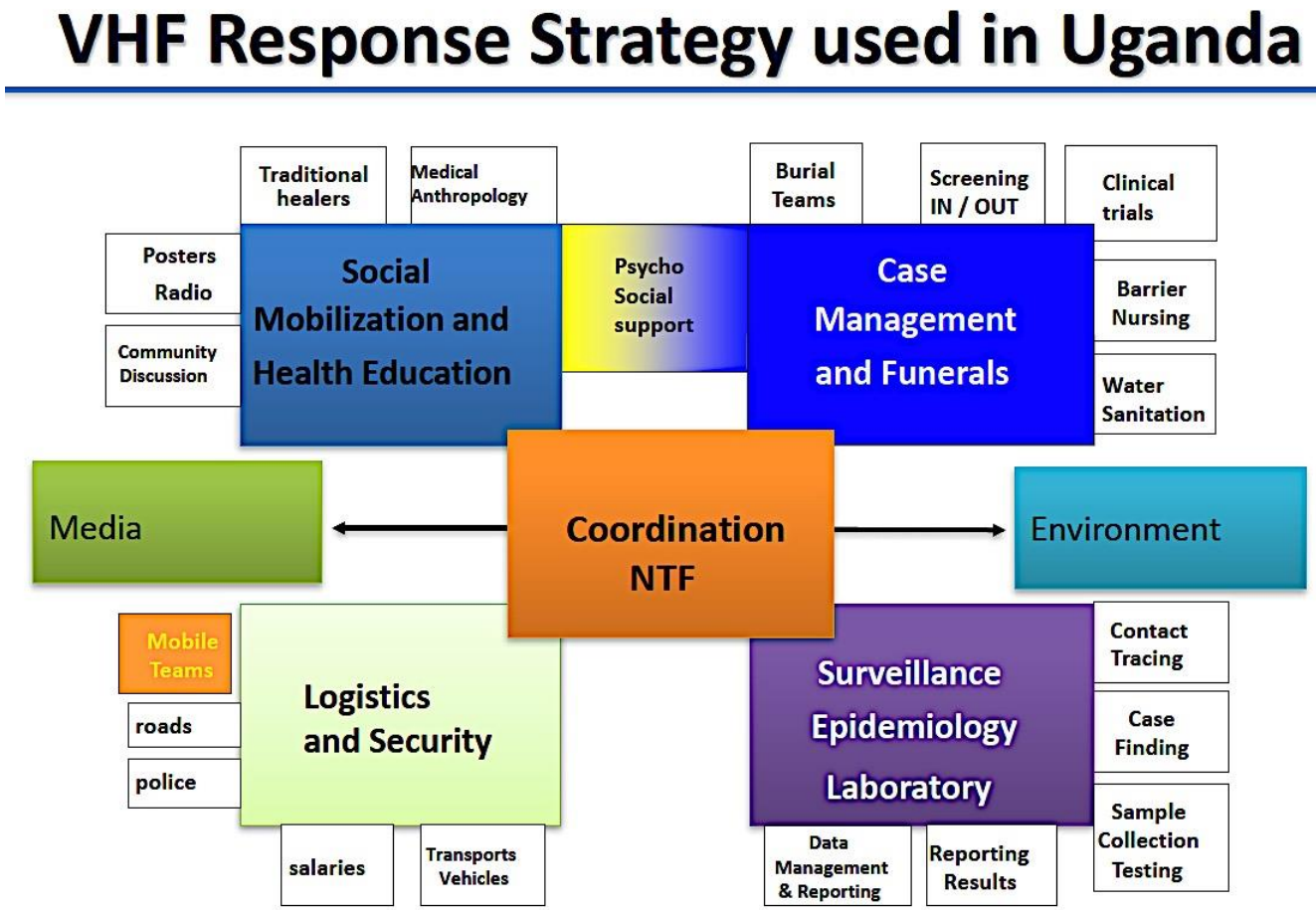
Alarming trajectory or new discovery of existing cases?

- How many of the new cases are discovery vs actual growth curve?
- Is there further spread in neighboring countries ?



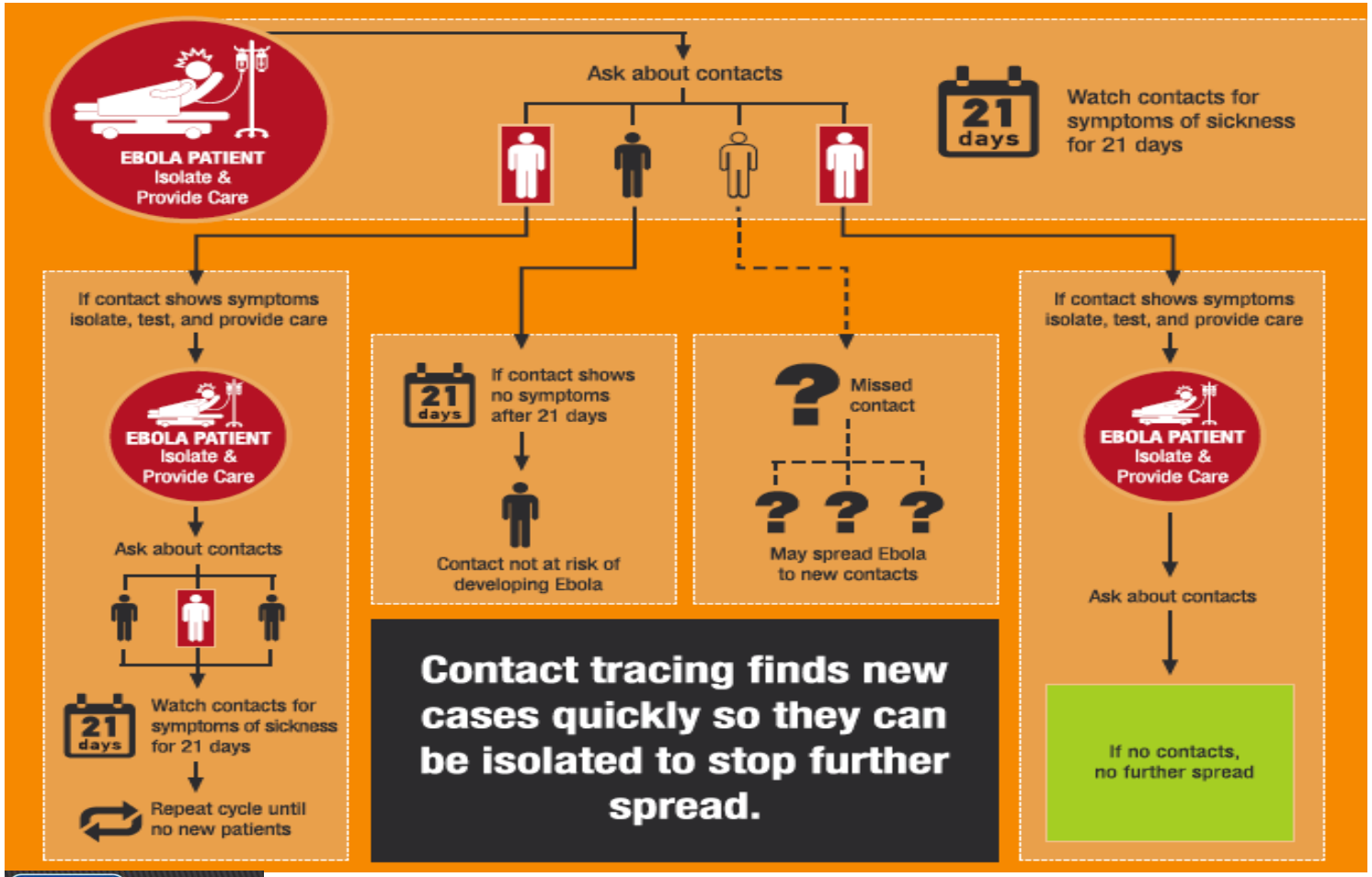
Callaway E, Lenharo M, Wolf L. Ebola outbreak: the data that show why researchers are so alarmed. Nature 2026.Callaway E, Lenharo M, Wolf L. Ebola outbreak: the data that show why researchers are so alarmed. Nature 2026.

What does it take to tackle an Ebola outbreak?



Source: Dr. Aceng Jane Ruth, Director General Health Services, Uganda

Principles of contact tracing

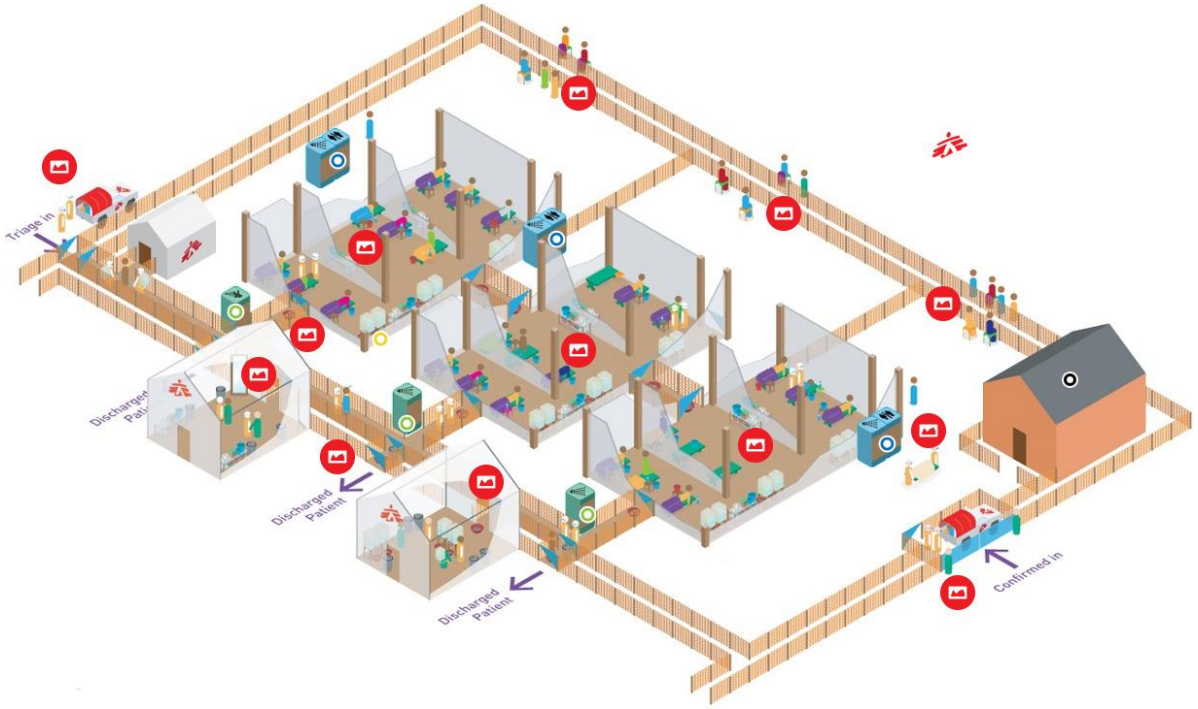


U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

- Recent data from Sudanvirus outbreak in Uganda, 2022, shows:
- 3844 contacts of 142 confirmed cases **(mean: 22 contacts/case)**
- Prior known contacts (PKC):
  - fewer median days from onset to isolation (4 vs 6; *P*<0.007) and laboratory confirmation (4 vs 7; *P*<0.001) vs not known.
  - Known contacts have an 84% reduced risk of transmitting Sudan ebolavirus.

Wanyana MW, Akunzirwe R, King P, et al. Performance and impact of contact tracing in the Sudan virus outbreak in Uganda, September 2022-January 2023. *Int J Infect Dis*. 2024;141:1069

Care in Ebola Treatment Units

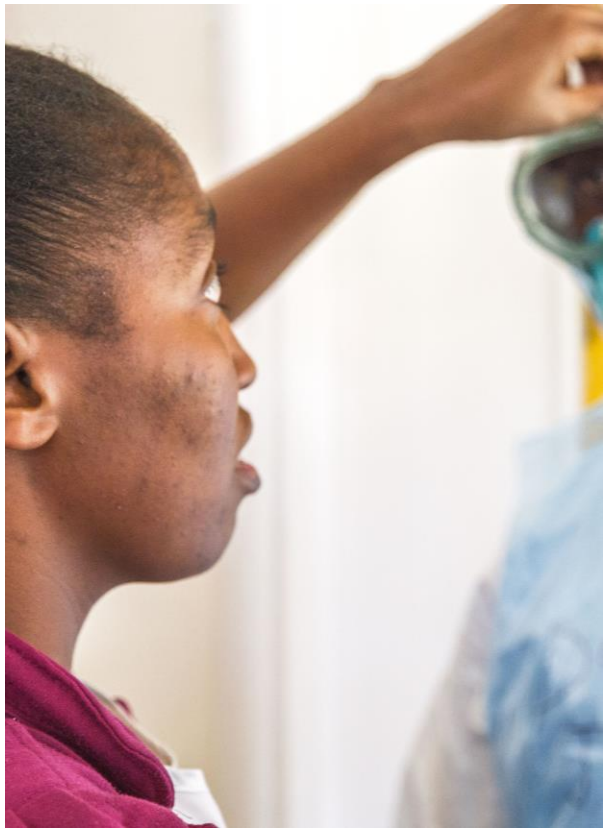
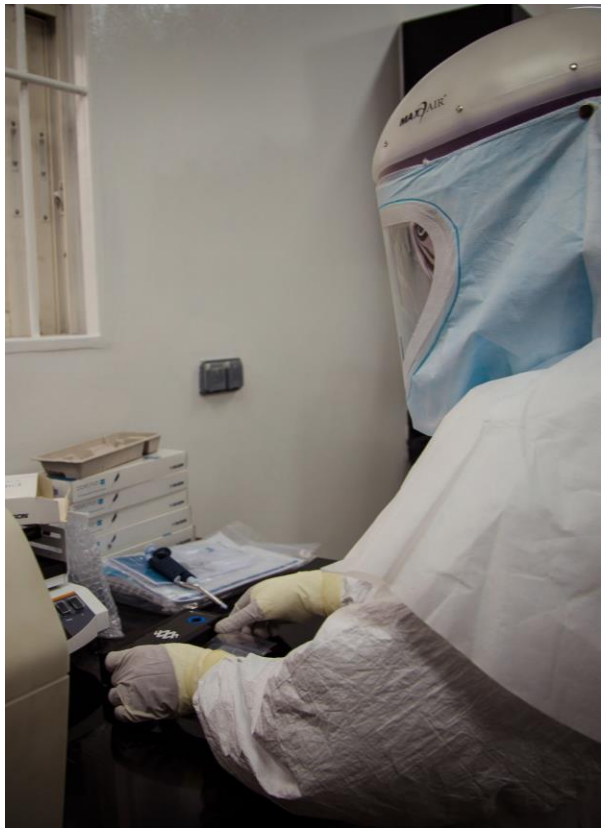


Sierra Leone, 2014-2015

BU Center on Emerging Infectious Diseases

Photo source: ALIMA

Improving Clinical Standard of Care


Joint Mobile Emerging Disease Intervention Clinical Capability (JMEDICC)

Fort Portal, Uganda

BU Center on Emerging Infectious Diseases

Clinical presentation

- Uganda, 2007–2008: Bundibugyo District outbreak with 93 putative cases, 56 laboratory-confirmed cases, and 37 deaths (CFR 25%)
- DRC, 2012: Province Orientale (Isiro) outbreak with 59 cases and 34 deaths (CFR 58%)

- Acute illness: Febrile illness with diarrhea and vomiting, with late hemorrhagic presentations (52%)
- Early illness can be confused with other etiologies
- Published case fatality rate: 25-58%
- Post infectious syndrome: up to 2 years after survival, ocular deficits, hearing loss, arthralgias, general constitutional

Clark DV, Kibuuka H, Millard M, et al. Long-term sequelae after Ebola virus disease in Bundibugyo, Uganda: a retrospective cohort study. *Lancet Infect Dis*. 2015;15(8):905-912. doi:10.1016/S1473-3099(15)70152-0

MacNeil A, Farnon EC, Wamala J, et al. Proportion of deaths and clinical features in Bundibugyo Ebola virus infection, Uganda. Emerg Infect Dis. 2010;16(12):1969-1972. doi:10.3201/eid1612.100627

Principles of Supportive Care in General

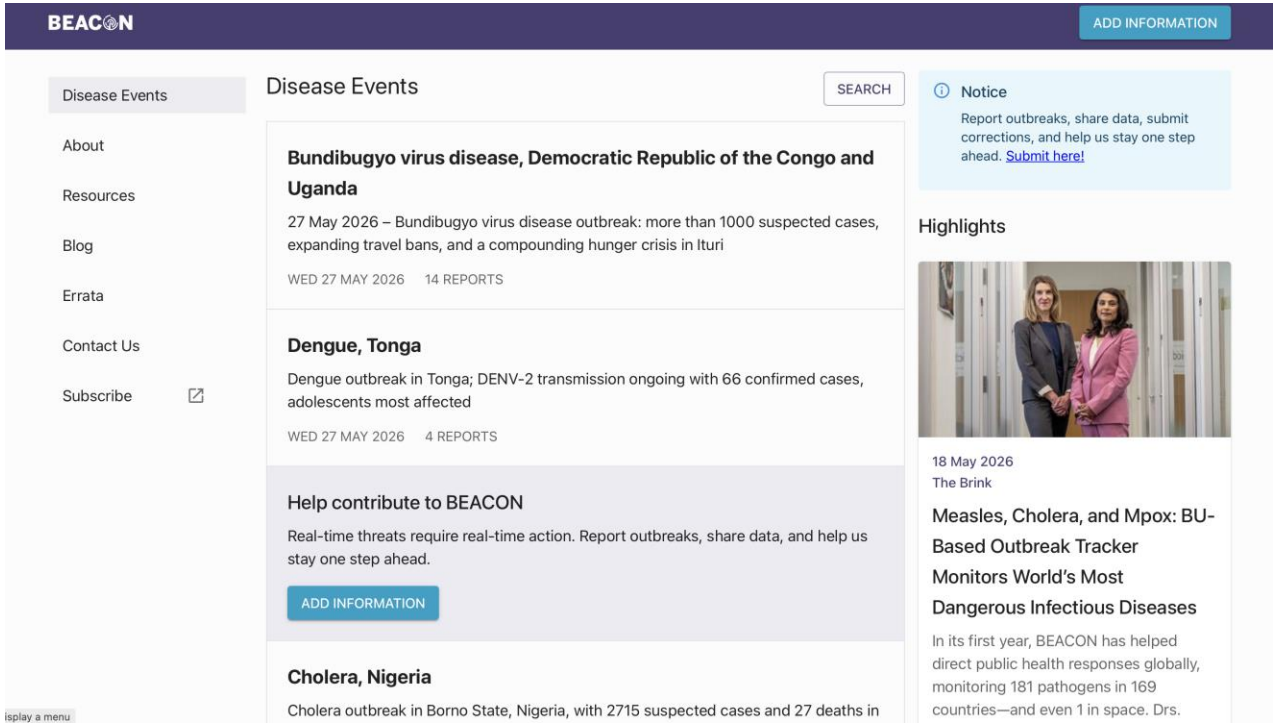
- Fluid resuscitation and electrolyte replenishment (100%)
- Anti-malarial treatment where appropriate
- Treatment of secondary bacterial infections (81%)
- Symptom management

- Shock and DIC management
- Renal replacement (19%)
- Noninvasive/mechanical ventilation (33%)
- Investigational therapies (85% received at least one)

Uyeki TM, Mehta AK, Davey RT Jr, et al. Clinical Management of Ebola Virus Disease in the United States and Europe. *N Engl J Med*. 2016;374(7):636-646. doi:10.1056/NEJMoa1504874

BEACON

Biothreats Emergence, Analysis, and Communications Network



@beaconbio.bsky.social

@beacon_bio

Biothreats Emergence, Analysis and Communications Network (BEACON)

Free Disease Surveillance Resource
Currently daily updates on BDBV outbreak

www.beaconbio.org

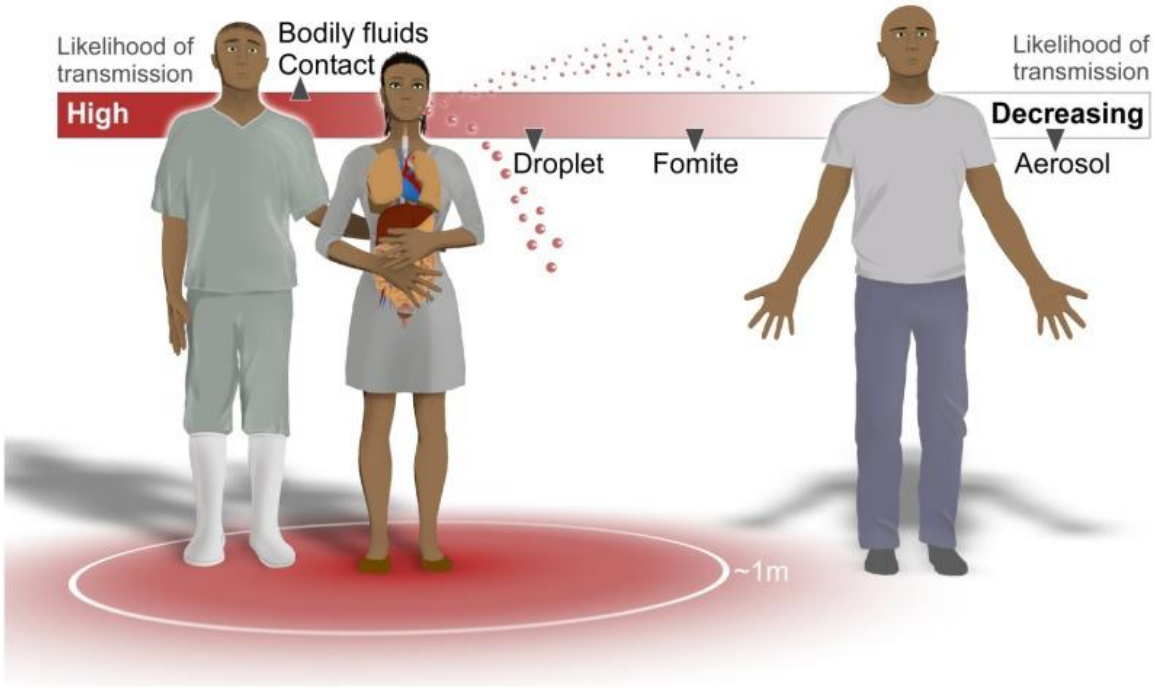
BU Center on Emerging Infectious Diseases

Thank you!

Contact email: nbhadeli@bu.edu

Transmission

- Direct contact with mucous membranes or through broken skin with infected blood or bodily fluids, contaminated objects such as needles, and contact with infected animals. (Majority)
- Some possible aerosol and fomite transmission (scenario dependent)
- Most outbreaks start with a spillover event. Transmission from Ebola virus disease survivors has been documented to call small cluster of cases.



Judson S, Prescott J, Munster V. Understanding ebola virus transmission. *Viruses*. 2015;7(2):511-521. Published 2015 Feb 3. doi:10.3390/v7020511

Bundibugyo Virus: Overview of Investigational Medical Countermeasures and Infection Prevention

Tara Palmore, M.D.

May 28, 2026

Medical Countermeasures for BDBV: Therapeutics

No approved therapeutics or vaccines for Bundibugyo virus

ANTIVIRAL AGENTS	
Remdesivir (Gilead)	Polymerase inhibitor; in vitro activity against BDBV; nonhuman primate efficacy against lethal infection with other ebolavirus species. **Potentially combined with other therapeutic agent for treatment.**
Obeldesivir (Gilead)	Oral prodrug of remdesivir; no data on BDBV; prevents lethal disease in NHP with EBOV. **Potential PEP.**
Molnupiravir (Merck/Ridgeback)	Prodrug of ribonucleoside analog targeting viral RNA polymerase; no data on BDBV; *in vitro* activity and preclinical efficacy against EBOV. **Potential a PEP.**
MONOCLONAL ANTIBODIES	
MBP134 (MappBio)	A cocktail of two broadly neutralizing human mAbs that is considered a candidate pan-ebolavirus therapeutic; protects NHPs against BDBV. **Treatment (and/or PEP).**
Maftivimab (Regeneron)	The most potent neutralizing component among the mAbs in Inmazebm; recognizes a glycoprotein site conserved across ebolaviruses; has broad *in vitro activity* against BDBV. **Treatment (and/or PEP).**
Inmazeb (Regeneron)	Cocktail of three mAbs licensed for treatment of EBOV in neonates through adults that also has activity in vitro against BDBV. **Treatment (and/or PEP).**
BDBV289-N (Vanderbilt)	Recombinant mAb derived from a BDBV survivor. Protected nonhuman primates from lethal infection with BDBV.

Medical Countermeasures for BDBV: Therapeutics

No approved therapeutics or vaccines for Bundibugyo virus

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Infection Control Precautions for Suspected Ebola Virus Disease

- Medical facilities should review and practice VHF policies and procedures, designate site managers, and refresh training for healthcare personnel
- Place individual with suspected EVD in a private room with bathroom, and arrange testing with laboratory and public health officials
  - Limit and track entries into the room
  - Designated areas should be used for PPE donning and doffing, with a trained observer present to coach through both procedures
  - All healthcare personnel who enter must be trained to use PPE
  - No visitors, with rare exceptions
  - Avoid patient movement outside the room unless absolutely necessary.

PPE for Suspected EVD and "DRY" Symptoms

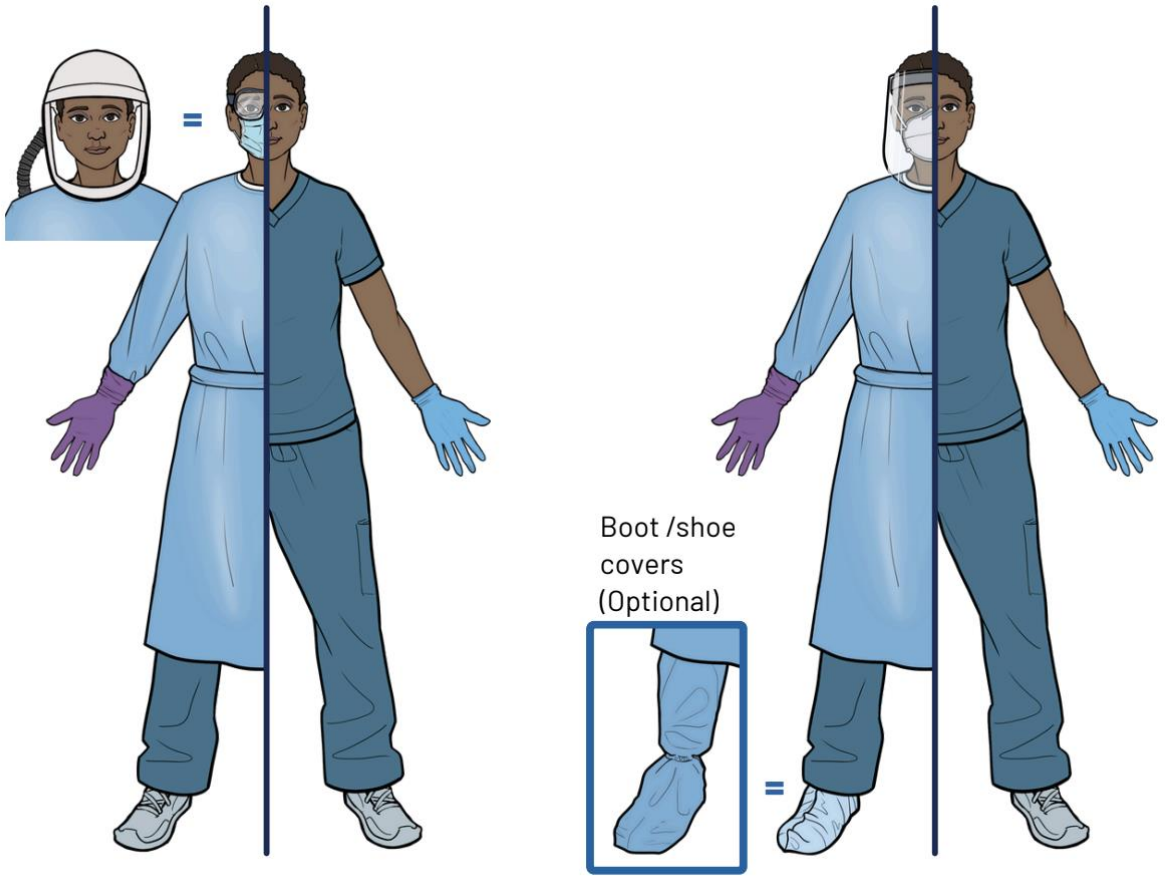
Prevailing principle: cover all skin, clothing, and mucous membranes

Diagnosis suspected AND "DRY"
(no vomiting, diarrhea, or bleeding)

AT MINIMUM:

Face mask
Full face shield
Double gloves
Fluid-resistant gown or coveralls

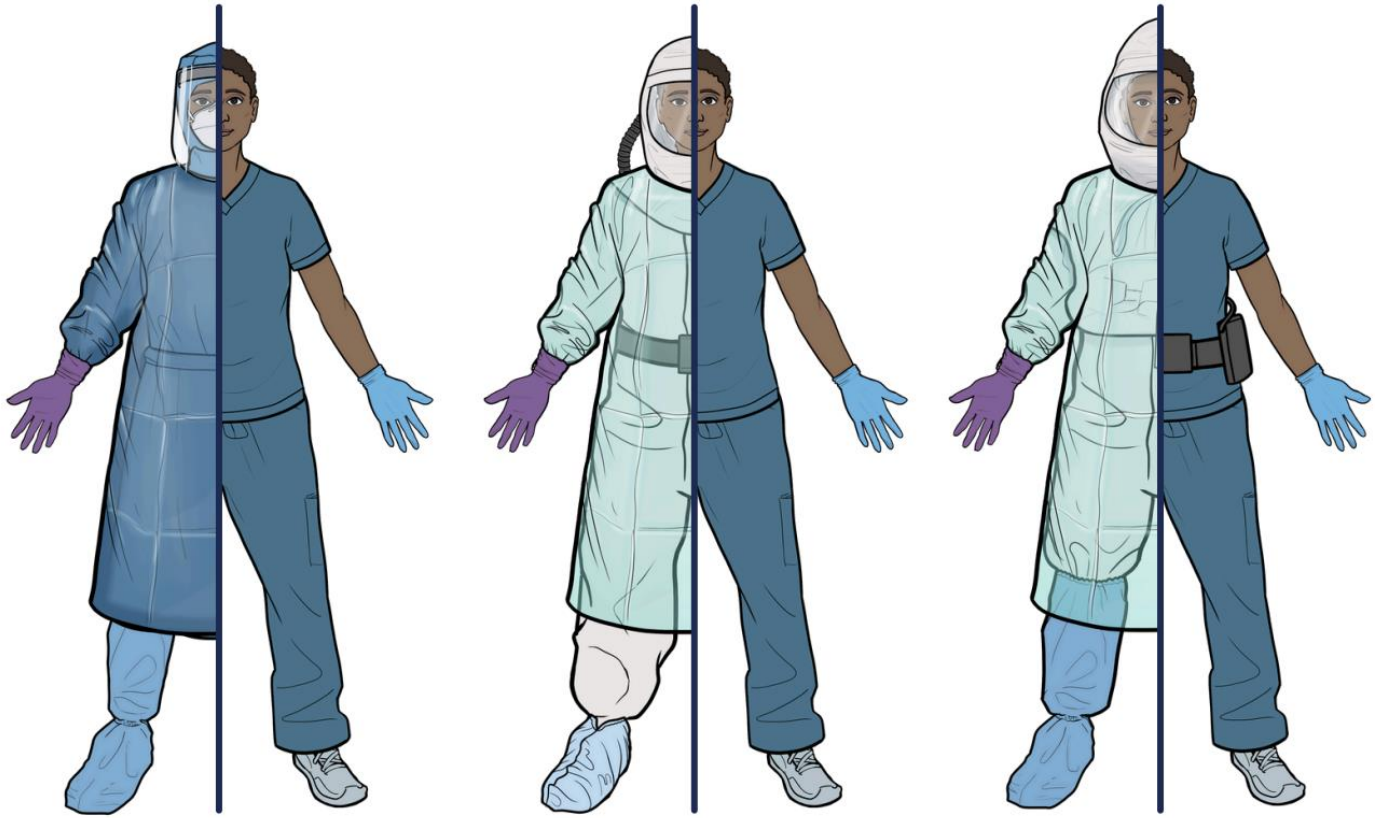
NOTE: If patient is clinically unstable, use higher level PPE



NETEC Resource Library: Know Your PPE
https://repository.netecweb.org/files/original/a975b10ddb2798a48b2f365a234ed648.pdf

PPE for Confirmed EVD and "WET" Symptoms

Prevailing principle: cover all skin, clothing, and mucous membranes



Confirmed infection <u>OR</u>
"WET" (vomiting, diarrhea, or bleeding)

<u>AT MINIMUM:</u>

PAPR* **<u>OR</u>**
N95 respirator, full face shield, and disposable hood that cover head and neck
Double gloves
Fluid-impermeable gown or coveralls
Boot covers

NETEC Resource Library: Know Your PPE
https://repository.netecweb.org/files/original/a975b10ddb2798a48b2f365a234ed648.pdf

Infection Control Precautions: PPE

- Frequent hand hygiene on gloved hands
- Minimize aerosol-generating procedures; place patient in AIIR if necessary
- Minimize use of sharps; carefully adhere to sharps precautions.

Guidance	URL
CDC viral hemorrhagic fever IPC guidelines	https://www.cdc.gov/viral-hemorrhagic-fevers/hcp/infection-control/index.html
CDC donning and doffing videos	https://www.cdc.gov/viral-hemorrhagic-fevers/hcp/guidance/ppe-clinically-stable-puis.html
WHO VHF IPC guidelines	https://www.who.int/publications/i/item/9789240111332

Environmental Infection Control Highlights

Linens, privacy curtains, and non-fluid-impermeable pillows or mattresses should be discarded as waste

Ebolaviruses are Category A infectious substances.

Any item contaminated *or suspected of being contaminated* with a Category A infectious substance and transported offsite for disposal must be packaged and transported in accordance with the U.S. Department of Transportation's (DOT) Hazardous Materials Regulations (HMR, 49 C.F.R., Parts 171-180).

Solid waste is double-bagged and removed via a dedicated process to be autoclaved/incinerated

Trained staff in PPE should clean and disinfect the patient care and donning/doffing areas frequently using disinfectants from EPA List Q (suspected EVD) or List L (confirmed EVD)

Discuss pretreatment of liquid waste with local authorities. Close lid before flushing. Clean frequently.

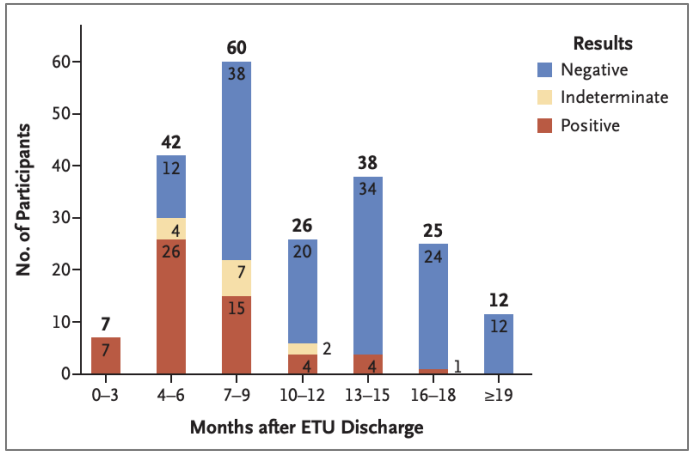
Infection Control Following Recovery

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Ebola RNA Persistence in Semen of Ebola Virus Disease Survivors — Final Report

GF Deen, et al., 2017

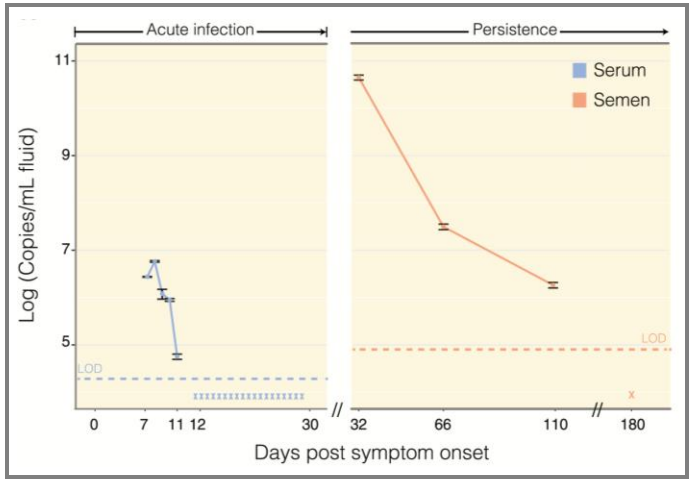


Clinical Infectious Diseases

BRIEF REPORT

Evidence of Ebola Virus Replication and High Concentration in Semen of a Patient During Recovery

K. G. Barnes, et al., 2017



- Many survivors long-term persistence of virus in semen, CSF, and ocular fluid among survivors requires additional precautions around relevant procedures.
- Convalescent persons who present with acute ocular or neurologic symptoms should be managed as suspect EVD with the PPE appropriate for their presentation.

Healthcare Personnel Monitoring and Exposures

- Healthcare facilities should have policies for tracking and monitoring personnel with potential exposure to patients with EVD and procedures for managing exposures.

- Asymptomatic personnel with high-risk exposures must quarantine for 21 days with active monitoring of temperature and other symptoms, avoiding commercial transportation.

- Personnel who provided care for a patient with EVD within 21 days and develop compatible symptoms *with or without* a known high-risk exposure should isolate, notify occupational health/supervisor and receive guidance for accessing medical care and testing.

Select References

Guidance	URL
WHO Technical Advisory Group on candidate vaccine prioritization: meeting report, 19 and 25 May 2026	https://www.who.int/publications/i/item/B09771
WHO Technical Advisory Group on therapeutics prioritization for Bundibugyo virus disease: meeting report, 20 and 26 May 2026	https://www.who.int/publications/i/item/B09767

Q&A/Discussion

We want to hear from you!

Please complete the post-call survey.

A recording of this call will be available at

www.idsociety.org/cliniciancalls

-- library of all past calls available --

Contact Us:

Kenza Bennani (kbennani@idsociety.org)

Resources mentioned on the call

- BEACON - https://beaconbio.org/en
- WHO Technical Advisory Group on therapeutics prioritization for Bundibugyo virus disease: meeting report, 20 and 26 May 2026 - https://www.who.int/publications/i/item/B09767