

EMS HIERARCHY OF CONTROLS



Southern Regional Disaster
Response System

HHS Region 4

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EMORY
UNIVERSITY

CEPAR

Office of Critical
Event Preparedness
and Response

Learners will be able to:

- Describe current high consequence infectious disease threats and risk of exposure
- Use identify, isolate and inform for Marburg Virus Disease
- Implement procedures for safety of EMS responders
- Understand the importance of a regional transportation CONOPS

Pathogens of Concern

The bottom of the slide features a decorative graphic consisting of several overlapping, semi-transparent geometric shapes. On the left, there is a dark blue triangle pointing downwards. In the center, there is a purple triangle pointing upwards. On the right, there is a light blue triangle pointing downwards. These shapes overlap to create a layered, abstract design.

New Marburg Outbreaks in Africa Raise Alarm About the Deadly Virus's Spread

Graphics: CDC



February 13, 2023



March 21, 2023

Drug resistant candida auris cases are on the rise

This fungus is spreading through the U.S., and it's becoming a health threat

- Standard + contact precautions
 - ABHS when hands not visibly soiled
- Products with EPA-registered claims for *C. auris* (List P)



An 'unprecedented pandemic of avian flu' is wreaking havoc on the U.S. poultry industry. Humans may be at risk too, experts warn

The H5N1 strain of avian flu responsible for the deaths of tens of millions of birds in the U.S. in recent months—and countless more worldwide—...





- EMS CALLED TO A HOTEL FOR ALTERED MENTAL STATUS

- HOTEL GUEST FOUND CONFUSED IN BED
- EVIDENCE OF BLOODY DIARRHEA IN BATHROOM
- PATIENT HOT TO THE TOUCH
- HR 140, BP 70/P, RR 28 POX 98%

LOOKING FOR ID AND MEDICATIONS YOU FIND THE PATIENT'S PASSPORT

HE IS FROM TANZANIA

WHAT ARE YOU GOING TO DO NEXT?

DO YOU ATTEMPT TO RESUSCITATE?

DO YOU TRANSPORT?

Identify, Isolate and Inform

- Assess for risk
- Implement measures to protect responders and to transport and manage the patient safely
- Communicate with system partners

> [West J Emerg Med](#). 2015 Sep;16(5):619-24. doi: 10.5811/westjem.2015.7.27915.
Epub 2015 Oct 20.

Identify-Isolate-Inform: A Modified Tool for Initial Detection and Management of Middle East Respiratory Syndrome Patients in the Emergency Department

[Kristi L Koenig](#)¹

Monkeypox 2022 Identify-Isolate-Inform: A 3I Tool for frontline clinicians for a zoonosis with escalating human community transmission

[Kristi L. Koenig](#)^{a, b}  , [Christian K. Bej](#)^a, [Aileen M. Marty](#)^c

Identify

Risk assessment:

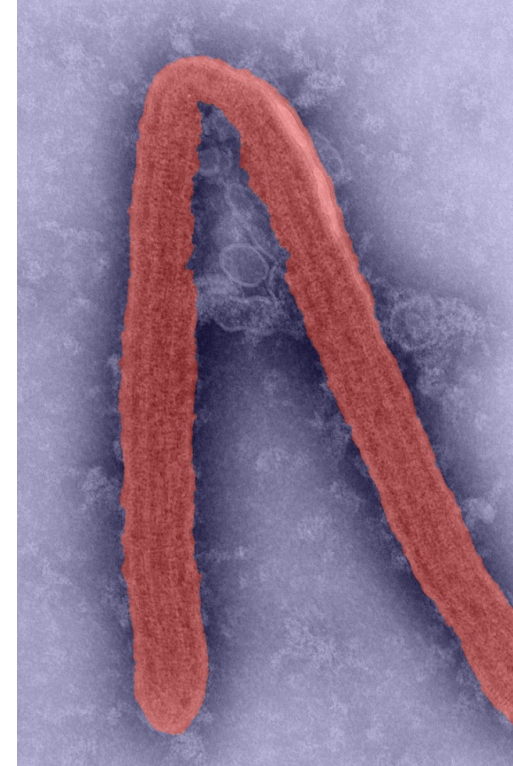
What is the likelihood that this patient has Marburg Virus Disease?

- Travel history/Exposure history
- Signs and symptoms

EMD screening and field screening

Marburg Virus Disease - Identify

- Signs and symptoms
 - Fever, chills, headache, and myalgia
 - Possible maculopapular rash
 - Diarrhea, nausea, vomiting, abdominal pain
 - More severe
 - Internal and external bleeding, mental status changes, multi-system organ failure, shock
- Travel to a country with ongoing Marburg Virus Disease outbreak in the last 21 days

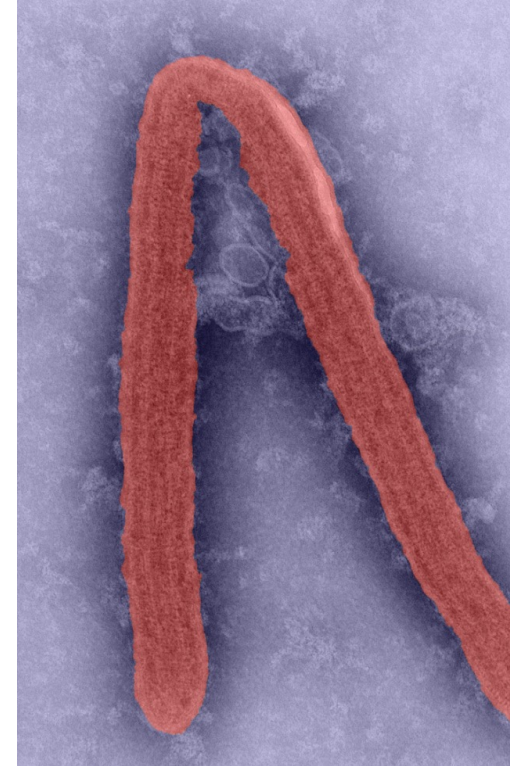


CDC/Fredrick Murphy

Marburg Virus Disease - Isolate

- Transmission
 - Exposure of mucous membranes or broken skin to infectious bodily fluids
- Incubation
 - 2-21 days
- Infection control posture
 - **Standard + Contact + Droplet + Eye Protection**
 - + Airborne if performing an aerosol generating procedure

Asymptomatic patients are not contagious



CDC/Fredrick Murphy

PPE – SUSPECTED Marburg Virus Disease

- Fluid resistant gown or coverall
- Full face shield
- Facemask
- Double gloves with extended cuffs
- Impermeable gown or coverall
- Full face shield and N-95 respirator or PAPR
- Double gloves with extended cuffs
- Boot covers
- Apron



Photo/Wade Miles

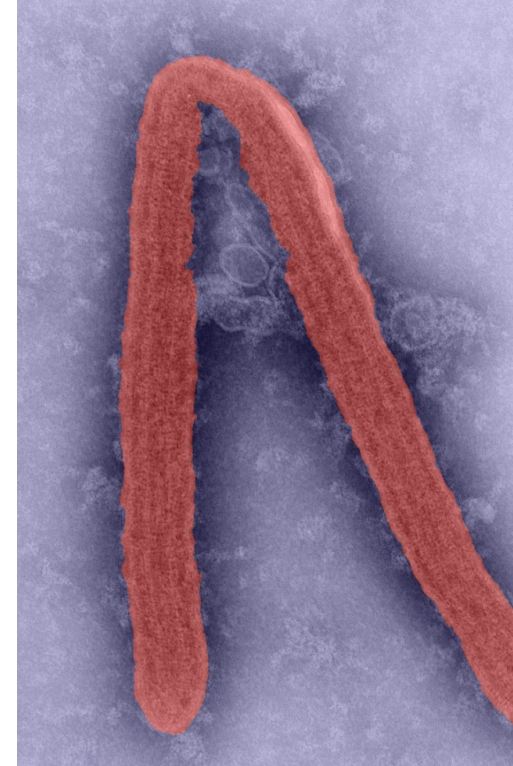
*USE PROVEN CHECKLISTS
and TRAINED OBSERVER*



Photo/Alex Isakov

Marburg Virus Disease - Inform

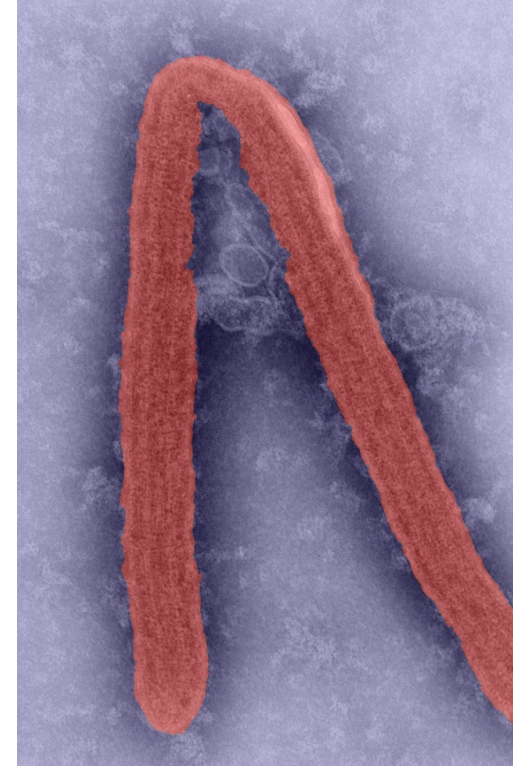
- Other responding personnel
- **Local and state public health authorities who may initiate special pathogen transport protocols**
- Supervisory personnel
- Receiving facility, so that space is made available to properly isolate the patient on arrival (airborne isolation room if available) and that receiving healthcare personnel are in appropriate PPE



CDC/Fredrick Murphy

Marburg Virus Disease – Medical countermeasures

- Vaccine
 - Early trials
- Treatment
 - Supportive therapy
 - Fluid and electrolytes
 - BP and oxygenation
 - Management of other infections
 - Experimental
 - Monoclonal antibodies and antivirals
 - No human data



CDC/Fredrick Murphy

Hierarchy of Controls

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Environmental

- Separate driver compartment from patient compartment
- Adjust air handling to introduce fresh air in both compartments
- Turn exhaust fan on high in patient compartment
- Consider draping interior of ambulance to protect environmental surfaces for confirmed or “wet” cases



Work practices

- Patient prep
 - Apply surgical mask to patient
 - Consider applying impervious suit or impervious sheet
 - Consider undergarment to collect diarrhea
 - Leak proof container for emesis
 - Treat nausea to prevent emesis

Work practices

- Personnel
 - Avoid unprotected exposure
 - Consider application of 6-foot rule
 - Limit exposure to minimum number of personnel
 - Driver should not make patient contact



Work practices

- Clinical care
 - Limit use of sharps
 - Limit aerosol generating procedures



Photos/CDC

Ambulance Cleaning/Disinfection Waste Management

- Cleaning and disinfection with an EPA registered hospital grade disinfectant
- **Category A waste is highly regulated**
 - Hazardous Materials Regulations (HMR, 49 C.F.R., Parts 171-180)
 - Best practice may be to leave waste with receiving facility



Photo/Alex Isakov

Post-mission Medical Surveillance

- Observe crews for signs and symptoms of disease until confirmatory testing of the patient is available or one incubation cycle
- Coordinate with public health



Photo/CDC



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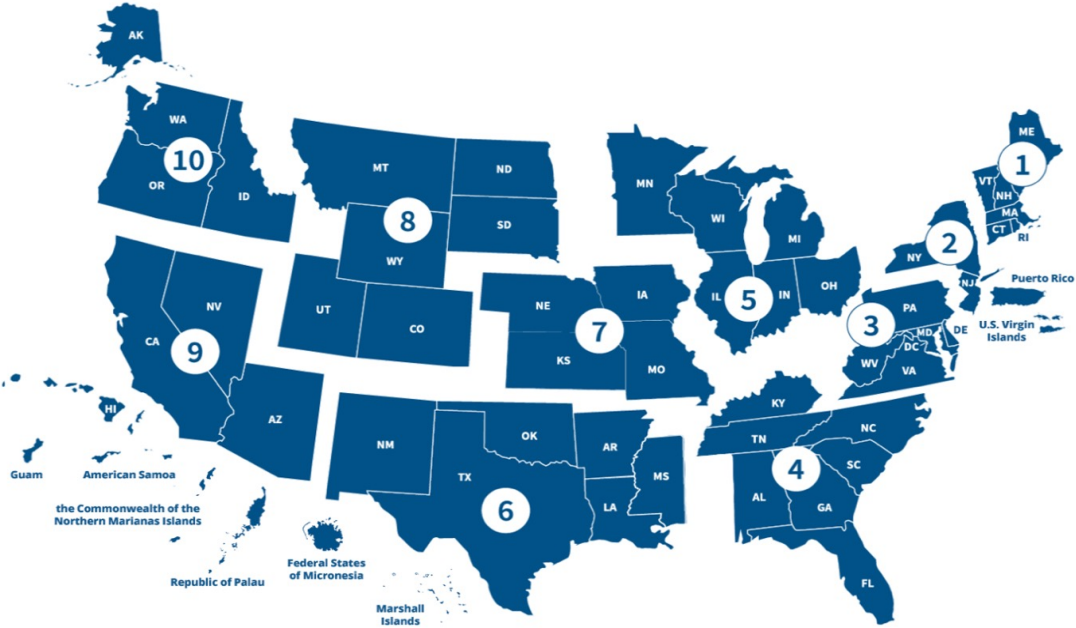


- EMS IDENTIFIES SUSPECTED MARBURG VIRUS DISEASE
- EMS PERSONNEL DON APPROPRIATE PPE TO MAKE PATIENT CONTACT
- IV NORMAL SALINE INFUSION STARTED
- EMS INFORMS PUBLIC HEALTH OF SUSPECTED MARBURG AND REQUESTS GUIDANCE REGARDING SPECIALTY TEAM
- REPEAT VITAL SIGNS P140 BP 80/P
- EMS DETERMINES PATIENT REQUIRES EMERGENT TRANSPORT FROM SCENE TO NEAREST CAPABLE FACILITY
- SPECIAL PATHOGEN TREATMENT CENTER IS LOCATED IN THE COMMUNITY AND CAN RECEIVE THE PATIENT
- PATIENT TRANSPORTED AND CARE TRANSITIONED TO TEAM IN ED
- PATIENT IS STABILIZED WITH IVF
- AWAKE, ALERT BP 110/70 HR 110 RR 14
- TESTING
 - MARBURG NEGATIVE
 - MALARIA POSITIVE

DISCUSSION



Regional Transport Plans



Resources



National Emerging Special Pathogens Training and Education Center

Working together to increase the capability of the U.S. public health and health care systems to safely and effectively manage special pathogens.

→ [About NETEC](#)

What We Offer



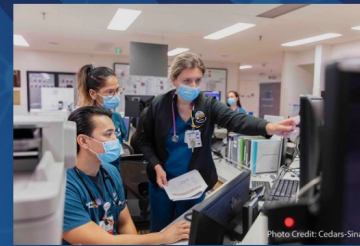
[Educational Materials, Courses & Training](#)



[Consultations & Support Services](#)



[Research Policies & Procedures](#)



[Ask Our Experts](#)

Your organization can submit any





EMS Guidelines for Marburg Virus Disease

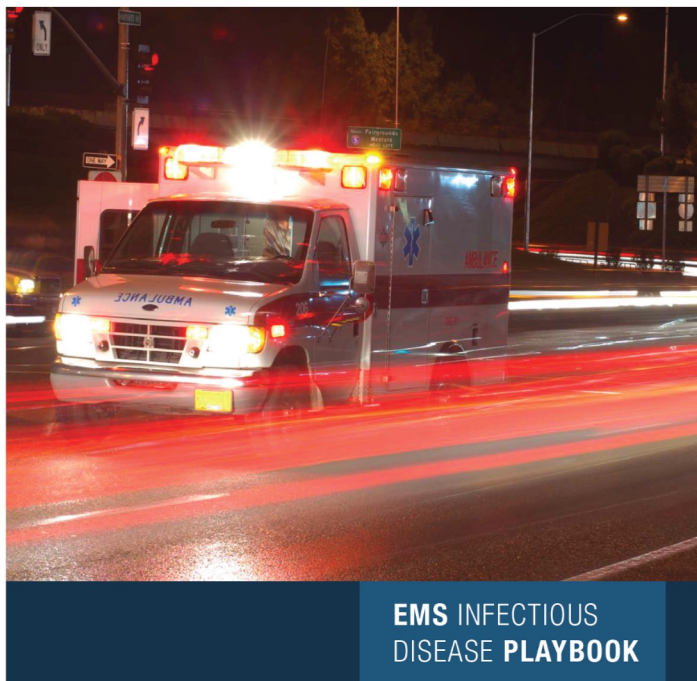
March 9, 2023



Start Your Emergency Medical Services (EMS) Readiness Self-Assessment

- Call taking and dispatch
- Infection prevention/hierarchy of controls
- Safety equipment/PPE
- Communications and Coordination
- Patient Management/Clinical Care
- Hospital/Clinic interface
- Cleaning, disinfection and waste management
- Health monitoring
- Emergency procedures





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Centers for Disease Control and Prevention

CDC 24/7: Saving Lives, Protecting People™

Interim Guidance for Emergency Medical Services (EMS)
Systems and 9-1-1 Emergency Communications
Centers/Public Safety Answering Points (ECC/PSAPs) for
Management of Patients Under Investigation (PUIs) for
Ebola Virus Disease (EVD) in the United States



REGION IV SPECIAL PATHOGENS TRAINING COURSE



<- May 30, 2023 – Columbia, SC

June 9, 2023 – Atlanta, GA ->



FREE

EMS Biosafety Transport for Operators

