



Update on 2022 Ebola Outbreak in Uganda

Clinician Outreach and Communication Activity (COCA) Call

Wednesday, October 12, 2022

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 - Submit your question
- If you are a patient, please refer your question to your healthcare provider.
- If you are a member of the media, please direct your questions to CDC Media Relations at 404-639-3286 or email media@cdc.gov.

Today's Presenters

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National Center for Emerging and Zoonotic Diseases

Centers for Disease Control and Prevention

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Medical Officer

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Update on Ebola 2022 Outbreak in Uganda

Trevor Shoemaker, PhD, MPH

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CDC Clinician Outreach and Communication Activity (COCA) Call

October 12, 2022, 3:00 PM

2022 Uganda Sudan Virus Outbreak Epidemiology (Oct 11)

- The first confirmed case of EVD was a 25-year-old man who lived in Mubende District
- The case was quickly identified as a suspect VHF and a sample was sent to the Uganda Virus Research Institute (UVRI) and confirmed by rRT-PCR on Sept 19
- An outbreak of EVD due to Sudan virus (species *Sudan ebolavirus*) was declared by the Uganda MOH on Sep 20, 2022 in Mubende District, Central Uganda.
- Investigations identified suspicious cases and clusters of deaths occurring Mubende district up to 1 month prior
- Confirmed case had possible contact with probable EVD cases in health clinic

Current Outbreak Update

Total cases: 74 (54 confirmed, 20 probable)

Total deaths: 39 (19 confirmed, 20 probable)

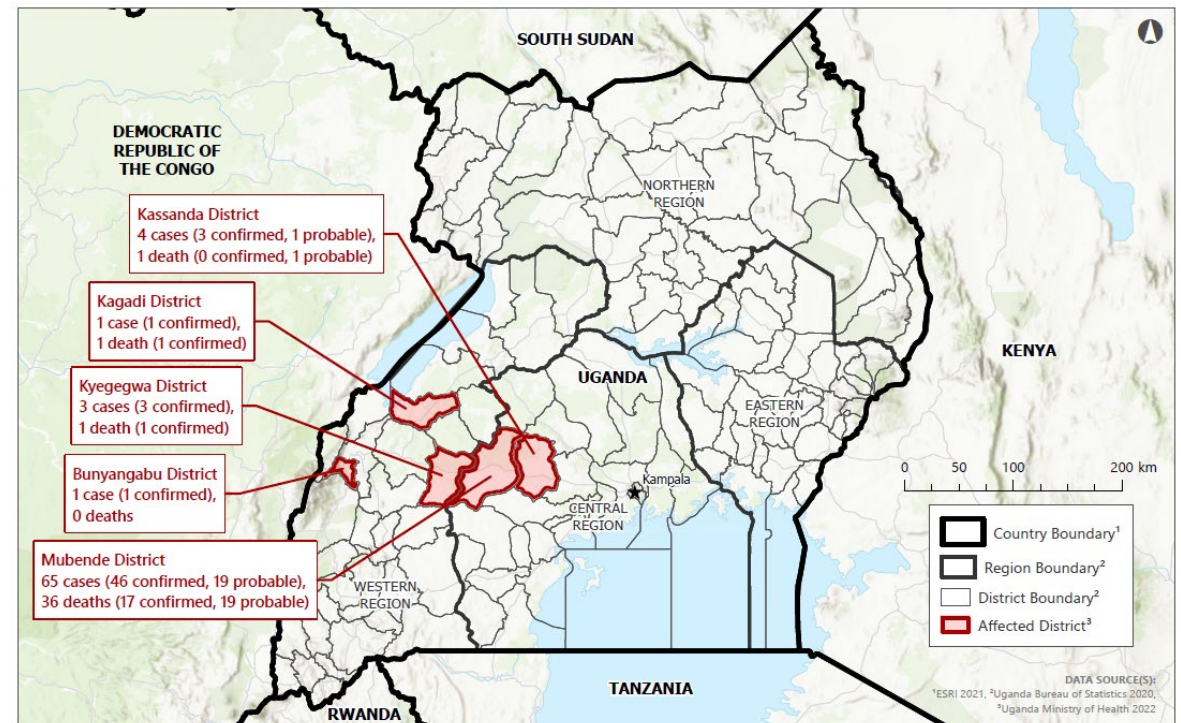
■ Case-Fatality Proportion: **52.7%**

Total recoveries: 14

Districts affected: 5

- Bunyangabu, Kagadi, Kassanda, Kyegegwa, Mubende

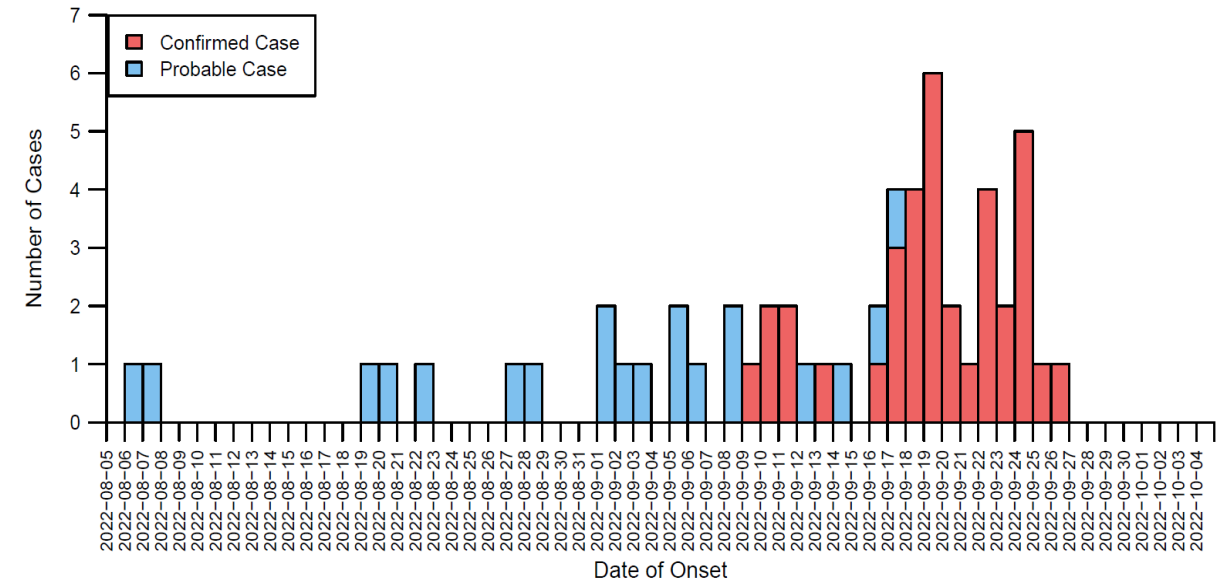
Total infections among HCWs: 10 (4 deaths)



2022 Uganda Sudan Virus Outbreak Laboratory and Contact Tracing (Oct 11)

Laboratory:

- 407 samples received and tested by UVRI/CDC
 - 54 samples PCR positive for Sudan virus
- 100+ samples tested in Mubende field lab
- Test positivity rate: 10.7%
- 6 complete SUD genomes sequenced
- 3 samples PCR positive for CCHF (2 fatal)



Data as of 04 October 2022

Contact Tracing: 668 active, 94% followed last 24 hrs

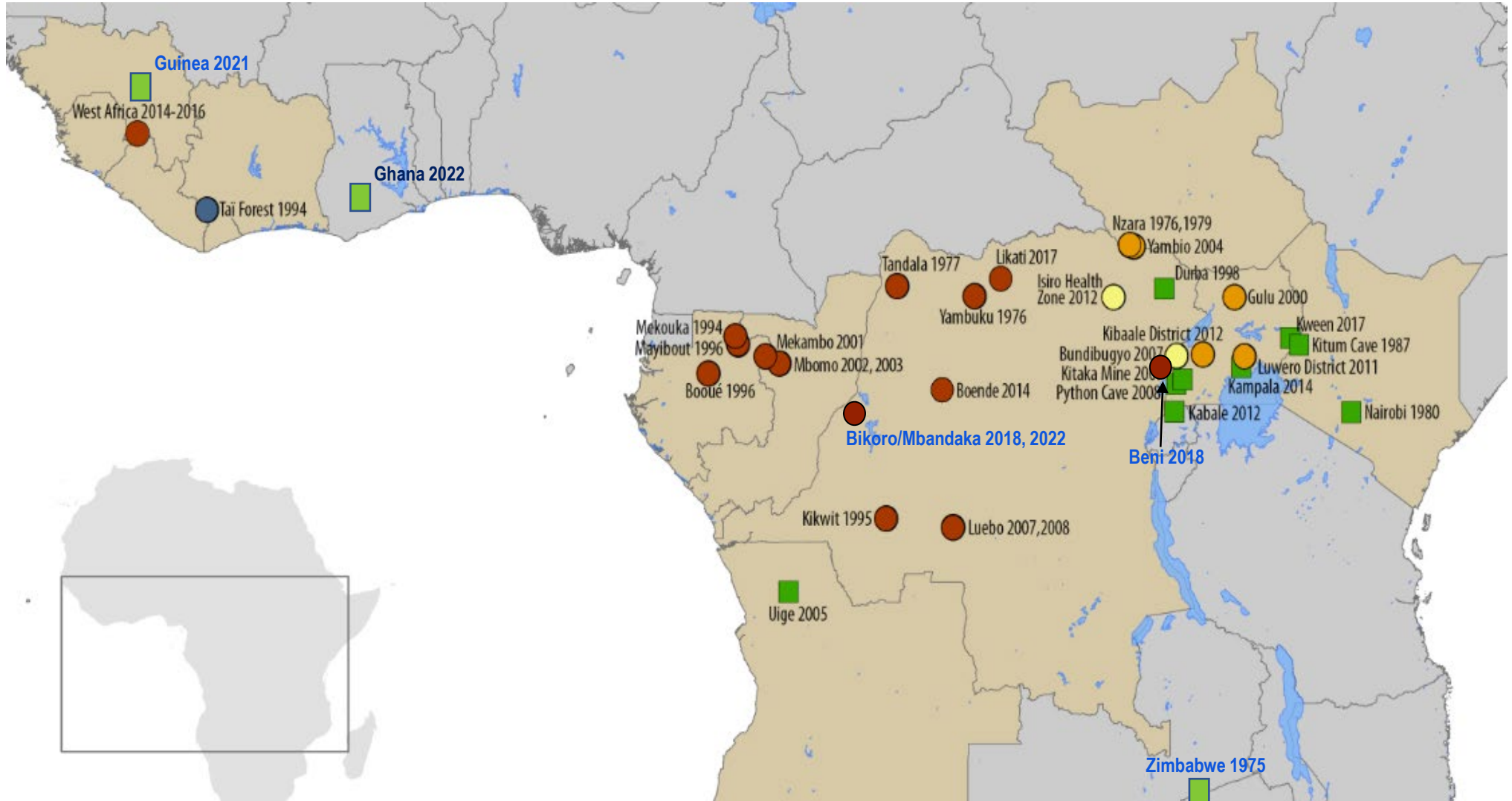
Ebola Virus Disease: Previous Outbreaks

About Ebola Virus Disease (EVD)

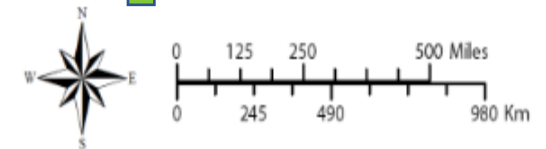
Ebola virus disease in humans is caused by infection with one of 4 viruses within the genus *Ebolavirus*, family *Filoviridae*

- Ebola virus (species *Zaire ebolavirus*)
 - Multiple outbreaks (Zaire/DRC, Gabon, Republic of the Congo, Guinea)
 - 70-90% fatality
- Bundibugyo virus (species *Bundibugyo ebolavirus*)
 - 2007 Uganda and 2012 DRC outbreaks
 - 40% fatality
- Tai Forest virus (species *Tai Forest ebolavirus*)
 - One human case (survived)
- Sudan virus (species *Sudan ebolavirus*)
 - Multiple outbreaks (Sudan, Uganda)
 - ~50% fatality

Filovirus Outbreaks in Africa — 1976-2022



● Ebola virus ● Sudan virus ● Taï Forest ● Bundibugyo virus ■ Marburg virus



Prior outbreaks of Sudan Virus

1976 Sudan: Nzara, Maridi, and surrounding areas

- 284 cases, 151 deaths (CFR=53%)

1979 Sudan: Nzara and Yambio

- 34 cases, 25 deaths (CFR=65%)

2000 Uganda: Gulu

- 425 cases, 224 deaths (CFR=53%)

2004 Sudan: Yambio

- 17 cases, 7 deaths (CFR=41%)

2011 Uganda: Nakisimata, Luwero District

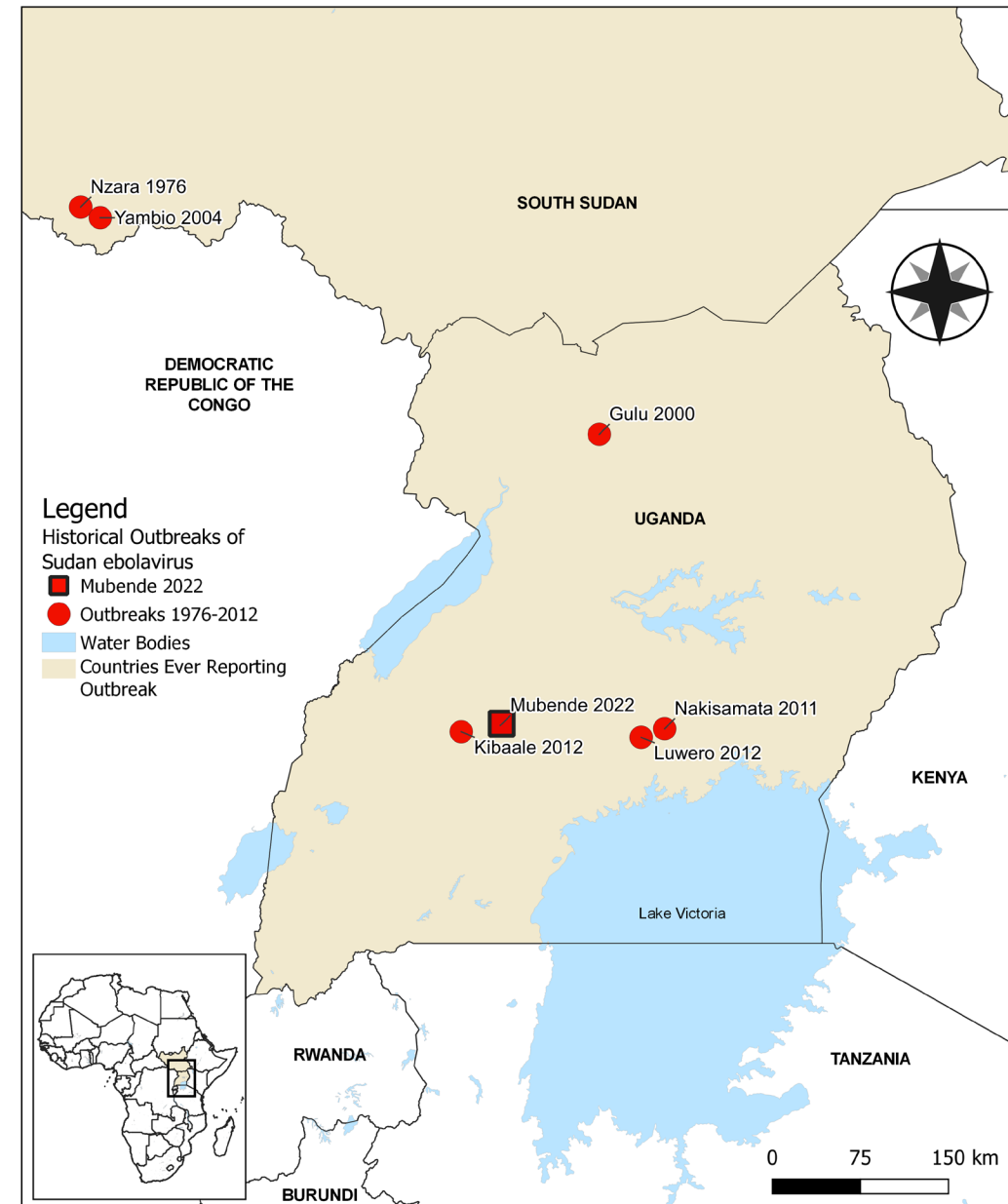
- 1 cases, 1 death (CFR=100%)

2012 Uganda: Kagadi, Kibaale

- 24 cases, 17 deaths (CFR=70.8%)

2012 Uganda: Bombo, Luwero District

- 7 cases, 4 deaths (CFR=54.1%)



Outbreaks of Ebola Virus Disease

- Since 1976, there have been 33 outbreaks due to Ebola virus (species *Zaire ebolavirus*)
 - >31,000 infected; >12,000 deaths
- Prior to 2022, there have been 7 outbreaks due to Sudan virus (Uganda and Sudan)
 - 792 cases, 426 deaths
- Most of our knowledge of EVD comes from outbreaks caused by the Ebola Zaire, we anticipate lessons learned from recent Ebola Zaire outbreaks to be applicable to this outbreak

Risk of Ebola Virus Disease Spread

- Currently, at regional and global levels, the risk of EVD spread has been assessed as low by the World Health Organization
- Risk of importation into the U.S. is currently assessed as low
 - Low number of travelers and no direct flights to the United States
 - Exit screening of air passengers is being conducted in Uganda
 - Uganda has experience in responding to Ebola virus disease including outbreaks of Sudan virus

Domestic Preparedness Activities

- CDC has activated its emergency response structure
- Stand up multi-disciplinary CDC Ebola Response Teams (CERT)
- Updating guidance on the management of patients with suspected EVD]
- Outlining a process to access experimental Sudan virus therapeutic

Domestic Preparedness Activities

- Coordinating with the 10 Regional Special Pathogens Treatment Centers
 - Specialized high-level isolation units equipped with infrastructure, laboratory capabilities, staff to care for patients with highly hazardous communicable diseases
- Expanding testing capabilities to:
 - 28 Laboratory Response Network laboratories
 - 10 Regional Emerging Special Pathogens Treatment Centers
- Outreach to public health departments, public health laboratories, healthcare workers
 - Health alert network (HAN) health advisory released October 6, 2022

Ebola Virus Disease: Clinical Manifestations

Ebola Virus Disease

- Serious illness, often fatal in humans
- Without treatment EVD has a high mortality rate
- Based on evidence and the nature of other similar viruses, we believe that Ebola is animal-borne (zoonotic) and that bats are the most likely reservoir

Person-to-Person-Transmission

- In infected individuals, the virus can be found in all body fluids:
 - Blood
 - Feces/Vomit
 - Urine
 - Tears
 - Saliva
 - Breast milk
 - Amniotic fluid
 - Vaginal secretions
 - Sweat
 - Semen
- Contact (through broken skin or mucous membranes) with the body fluids of a person that is sick or has died of EVD
- EVD is not spread through airborne transmission

Signs and Symptoms

- Signs and symptoms of EVD include:
 - Fever
 - Headache
 - Fatigue
 - Muscle pain/Joint pain
 - Anorexia
 - Sore throat
 - Abdominal pain
 - Rash
 - Diarrhea
 - Vomiting
 - Conjunctivitis
 - Unexplained bleeding/bruising*
- Fever is not universally present
- Bleeding/bruising is not universally present

* Includes bleeding from the gums, mouth, nose, bloody vomit, bloody stools, bleeding from injection sites, vaginal bleeding outside of a menstrual cycle

INFECTION

Infection occurs after exposure to a person who is sick or has died of Ebola.



NOT
CONTAGIOUS

•
**EXPOSURE TO
THE VIRUS**

INFECTION

Infection occurs after exposure to a person who is sick or has died of Ebola.



INCUBATION PERIOD

- It can last from 2-21 days (usually 4-17 days)
- Person feels well and has no symptoms
- **The person cannot transmit the virus**



NOT
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DRY PHASE

Common signs and symptoms are

- Fever
- Fatigue
- Headache
- Joint pain
- Muscle pain
- Back pain
- Sore throat



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EXPOSURE TO
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DAY 0
OF THE DISEASE

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WET PHASE

- Common signs and symptoms are
- Diarrhea
 - Nausea/vomiting
 - Bleeding occurs in some cases
 - Hiccups
 - Eye redness



NOT
CONTAGIOUS

CONTAGIOUS

EVEN MORE
CONTAGIOUS

EXPOSURE TO
THE VIRUS

DAY 0
OF THE DISEASE

DAY 4
OF THE DISEASE

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- The patient becomes more contagious as the disease progresses.
- In fatal cases, death occurs on average 7 to 10 days after the onset of symptoms.
- The amount of Ebola virus is highest at the time of death.



EXPOSURE TO THE VIRUS

NOT CONTAGIOUS



DAY 0 OF THE DISEASE

CONTAGIOUS



DAY 4 OF THE DISEASE

EVEN MORE CONTAGIOUS



DAY 7-10 OF THE DISEASE

THE MOST CONTAGIOUS

Diagnostic Testing: Sudan Virus

- Biofire FilmArray NGDS Warrior Panel is an FDA 510(k)-cleared assay
- Panel can detect the following:
 - Sudan virus
 - Ebola virus
 - Tai forest virus
 - Bundibugyo virus
 - Reston virus
- Currently, 9 laboratories within the Laboratory Response Network (LRN) are able to test under CLIA using the Warrior Panel

Requests for Diagnostic Testing

- Prior consultation with CDC is required prior to shipping a specimen to CDC for Sudan virus testing
- All specimens collected from patients with suspected EVD must be shipped Category A as a non-select agent

Diagnostic Testing Considerations

- A negative RT-PCR test result from a blood specimen collected **less than 72 hours** after onset of symptoms does not rule out Ebola virus infection
- A negative RT-PCR test result from a blood specimen collected from a symptomatic patient **more than 72 hours after symptom onset** rules out EVD
- Positive RT-PCR results are considered preliminary until confirmatory testing at CDC

Treatment: Sudan Virus

- There is no FDA-licensed treatment for Sudan virus
- MBP134
 - Experimental two antibody cocktail therapy
 - Demonstrated efficacy in preventing mortality due to infection with Sudan virus, Ebola virus, and Bundibugyo virus in non-human primates
- Supportive treatment can improve chances of survival when provided early
 - Intravenous fluids/electrolytes
 - Symptomatic treatment for vomiting, diarrhea

Vaccine: Sudan Virus

- There is no FDA-licensed vaccine for Sudan virus
- Two experimental vaccine candidates undergoing evaluation
- Based on available evidence, Ervebo — the FDA-licensed vaccine against the Zaire strain — will not provide cross-protection against Sudan virus infection

Recommendations for Clinicians

Recommendations for Clinicians: Travel History

- Collect travel history for ill patients presenting with a clinical picture suggestive of an infectious etiology
- For ill travelers recently arrived from Uganda:
 - Where did they travel ? Were they in the districts currently affected by the outbreak?
 - Why did they travel? For work? To visit family?
 - What activities did they take part in during the 21 days before illness onset? Attend or participate in a funeral? Care for anyone who was sick or died?
 - Did they travel with others? If yes, are their travel companions ill?
 - Did they have contact with anyone who was diagnosed with Ebola? Anyone suspected of having Ebola?

Recommendations for Clinicians: Differential Diagnosis

- Include EVD in the differential diagnosis for ill travelers recently arrived from Uganda
- Malaria is the most common cause of undifferentiated fever after travel to sub-Saharan Africa
 - Nearly all the signs and symptoms of EVD can also be seen in malaria
 - Malaria, especially *P. falciparum* can progress rapidly; early diagnosis and treatment is key to survival — Malaria testing **should not** be delayed
 - Ask about malarial prophylaxis and adherence
 - History of taking malaria prophylaxis does not exclude the possibility of malaria
- Test for malaria in any febrile traveler recently arrived from Uganda

Recommendations for Clinicians: Infection Control

- Place suspect EVD patients in a private room (with the door closed)
- Follow CDC guidance on PPE selection and wear, including donning/doffing
- Where possible, use dedicated (and disposable) medical equipment, limiting use of needles and other sharps
- Procedures that can increase environmental contamination with infectious material or create aerosols should be minimized
- If performing aerosol-generating procedures, follow guidance to reduce exposures (e.g., limit to essential personnel, utilize an airborne infection isolation room (AIIR) if available)

Recommendations for Clinicians: Notification

- If you are concerned your patient may have EVD, first contact your state/local, tribal, or territorial health department and follow jurisdictional protocols for patient assessment
 - Identify points of contact and contact information for your state/local health departments, including on-call information
 - CDC Emergency Operation Center (770-488-7100) can also assist in finding contact information for state and large jurisdictional health departments
- As a resource for public health departments, CDC's Viral Special Pathogens Branch is available 24/7 for consultations by calling CDC Emergency Operations Center (770-488-7100)

Initial CDC Consultation

- Connected with SMEs at CDC
- Discuss the patient's travel history, epidemiologic risk factors, clinical course, diagnostic tests performed, infection control measures in place
- Make a collective decision as to whether testing is recommended
- Work with the hospital/state health department to arrange for shipment and testing of the specimen

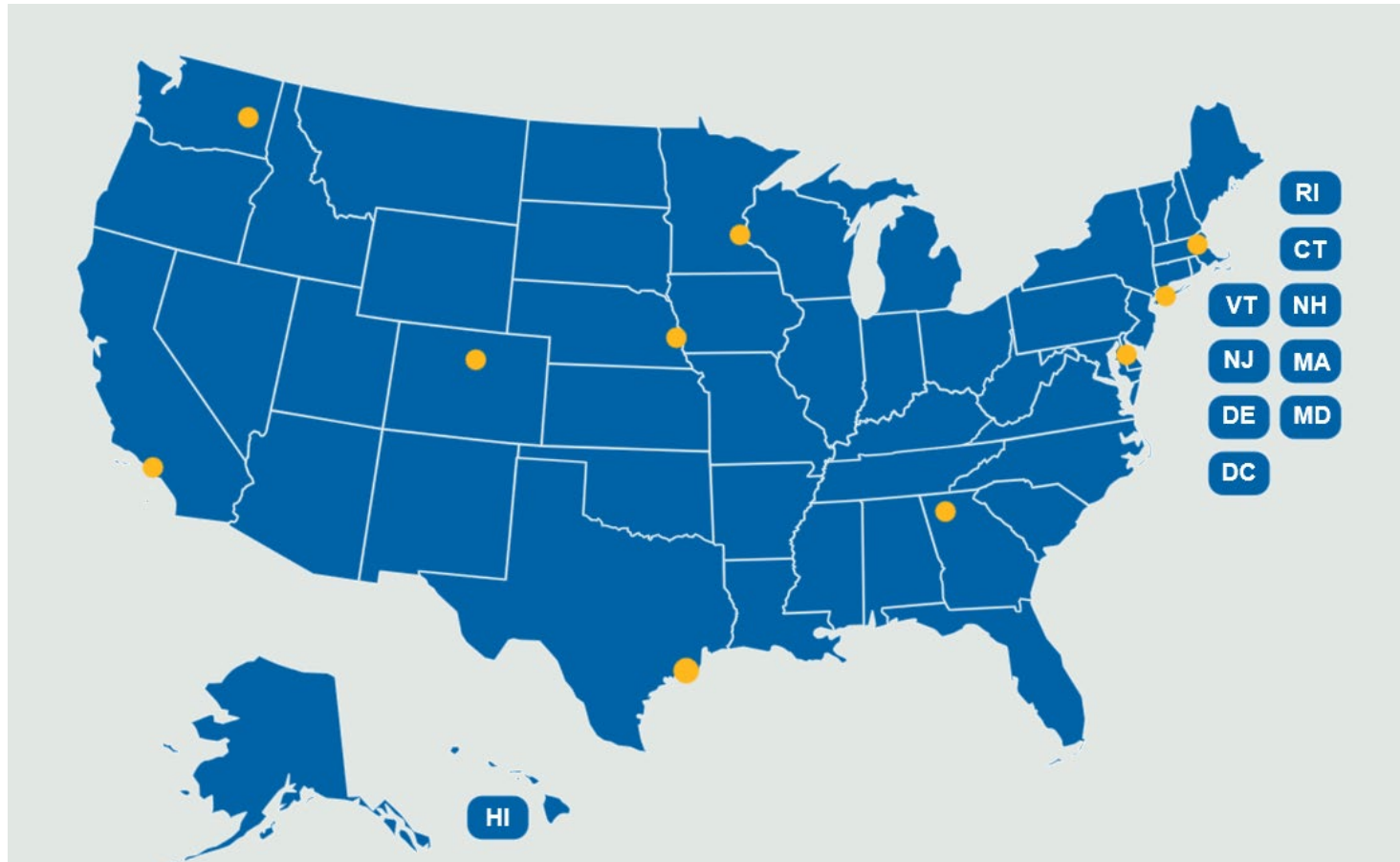
Questions?

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.



Regional Special Pathogens Treatment Centers



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Today's COCA Call Will Be Available to View On-Demand

- **When:** A few hours after the live call ends*
- **What:** Video recording
- **Where:** On the COCA Call webpage
https://emergency.cdc.gov/coca/calls/2022/callinfo_101222.asp

**A transcript and closed-captioned video will be available shortly after the original video recording posts at the above link.*

Next COCA Call

- **Topic:** Melioidosis in the United States: What Clinicians Need to Know Following Newly Discovered Endemicity
- **Date:** Thursday, October 13, 2022
- **Time:** 2:00–3:00 P.M. ET
- **Website:** https://emergency.cdc.gov/coca/calls/2022/callinfo_101322.asp

Additional Resources

- Subscribe to receive notifications about upcoming COCA calls and other COCA products and services at emergency.cdc.gov/coca/subscribe.asp.
- Share call announcements with colleagues.

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COCA
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October 31 at 1:18pm · 🌐
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Government Organization in Atlanta, Georgia
Community See All
21,420 people like this
21,217 people follow this
About See All
Map showing location in Atlanta, Georgia near Clifton Rd NE and Houston St.

Thank you for joining us today!



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