NEW YORK STATE | Department of Health | Wadsworth Center

NYSDOH Biodefense Newsletter

June 2022-December 2022

Diphtheria Antitoxin Laboratory on Yates Street from the early 1900s

Welcome

The Wadsworth Center would like to welcome you to our new biannual Laboratory Response Network (LRN) newsletter. The goal of this newsletter is to provide information to clinical laboratories across New York State, including updates related to emerging infectious diseases and biothreat agents, current outbreaks, upcoming trainings, and much more.

This newsletter is a tool for the biodefense department to communicate with you, so please do not hesitate to let us know what you would like to hear more about, resources you think would be helpful, questions, and anything else that is important for preparedness and response, laboratory-related activities. We appreciate all feedback and look forward to hearing from you soon!

Updates

- Ebola
- Mpox
- Burkholderia pseudomallei

Upcoming Trainings

- Packaging and Shipping of Hazardous Materials

New Staff/Biosafety

- Introduction to Syadatun Ahana and Morgan Thorne
- BSC or No BSC: That is the Question

Distribution

- Please distribute this newsletter to all microbiology laboratory staff. This newsletter is meant to be a communication tool to let us know where trainings and refreshers are wanted or needed.

Current Outbreaks:

Ebola

In September 2022, an outbreak of Sudan ebolavirus was declared by the Ugandan Ministry of Health in the Mubende District of Western Uganda. This outbreak was discovered after a 25-year-old man arrived at the Mubende Regional Referral Hospital presenting symptoms of a viral hemorrhagic fever (VHF). The patient was isolated, and a specimen was sent to the VHF laboratory at the Uganda Virus Research Institute. The VHF laboratory confirmed the patient had Ebola, specifically the Sudan strain. This is the sixth time an Ebola outbreak has originated in Uganda, and the fifth time the outbreak has been caused by the Sudan strain (1).

As of November 30, 2022, the outbreak has spread to eight other districts, including Bunyangabu, Jinja, Kagadi, Kampala, Kassanda, Kyegegwas, Masaka City, and Wakiso. At this time, the Uganda Ebola Outbreak has not spread outside of Uganda. However, due to travel and trade routes, there is a concern that the Sudan ebolavirus outbreak could spread to other countries (2).

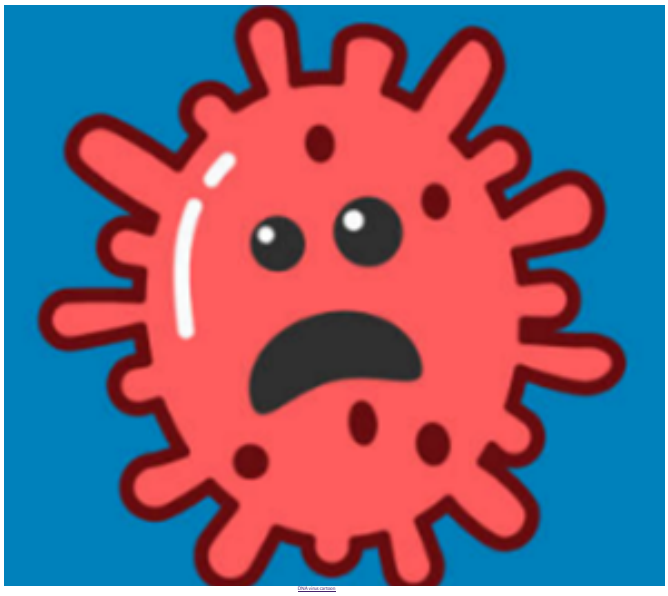
Currently, there is not an effective vaccine for the Sudan ebolavirus strain. The ERVEBO vaccine developed during the 2014-2016 Zaire ebolavirus outbreak will provide protection only against the Zaire strain (3).

As of December 1, 2022, there are 29 public health laboratories in the US that can perform the Sudan ebolavirus testing on PUI's: two of these laboratories include the Wadsworth Center and the NYC Public Health Laboratory. At Wadsworth, we have the capability to test for both the Zaire species, via the CDC Ebolavirus Assay, and Sudan species using the BioFire FilmArray NGDS Warrior Panel. As this outbreak continues to be monitored, please visit the NYSDOH Ebola webpage here for any questions on how to handle PUI's, PPE, decontamination, shipping specimens to your LRN reference lab, and much more.

Did you know?

Only four ebolaviruses (Ebola, Sudan, Taï Forest, and Bundibugyo viruses) have caused disease in people (4).

Current Outbreaks:



Mpox Virus

Monkeypox (now referred to as mpox), is a zoonotic disease that was discovered in 1958 when a colony of monkeys being studied for research developed a "pox-like" virus. Due to the virus being recognized first in monkeys, the virus was given the name monkeypox. Even though the virus was named monkeypox, researchers and scientists do not believe monkeys are the true host of the disease. It is theorized that either African Rodents or other non-human primates might be a host for mpox (5).

Since 1958, two different clades have been designated for mpox. The two clades are clade I (formerly known as the Congo Basin/ Central African clade) and clade II (formerly known as the West African clade). The clade I strain is a more severe strain, with a high mortality and virulence rate. The clade II strain, on the other hand, is much less severe and is generally self-limiting. Mpox clade II is the causative agent of the outbreak that is currently circulating throughout the world. Both clades are endemic to Africa and have been affiliated with various outbreaks in the past (6).

In May 2022, the CDC and WHO announced an incidence of mpox clade II in the UK after there were multiple confirmed cases of mpox clade II in people without travel history to an endemic area (7). Unfortunately, the rate of infection continued to increase and an outbreak of mpox clade II was declared. This was the first time that an outbreak of mpox was declared outside of a region where mpox is known to be endemic (8).

According to the CDC, as of November 25, 2022, there have been a total of 80,850 confirmed mpox cases worldwide. Out of the 80,850 confirmed cases, 29,248 of those cases occurred in the US, and 14 deaths have been reported. New York State has seen a total of 4,156 confirmed cases. At Wadsworth Center, we have tested a total of 464 suspected cases, with 143 of those cases being confirmed (excluding New York City).

At this time, the spread of mpox has slowed in the US and the emergency declaration of mpox in NYS and NYC has ended. It is important for laboratories to consider mpox in their risk assessments if performing STD or additional testing for which mpox may be present in a specimen.

Did you know?

Mpox is similar to its cousin smallpox, with less severe symptoms. Currently, the FDA approved JYNNEOS vaccine is being administered to help lessen the spread of mpox. In addition to mpox, the JYNNEOS vaccine can also be used to vaccinate against smallpox as well (9).

New and Noteworthy:

Burkholderia pseudomallei Endemic to the United States

Melioidosis is a rare infection caused by the organism *Burkholderia pseudomallei (B. pseudomallei)*. *B. pseudomallei* is endemic to tropical regions of the eastern hemisphere, primarily in the Asian tropics. However, due to climate change, and the increased frequency and intensity of storms (i.e., tropical storms, hurricanes, and tornadoes), *B. pseudomallei* is now becoming an emerging disease in the Americas (10).

B. pseudomallei is found in the soil of these endemic areas and it is easily aerosolized. The majority of cases of melioidosis are due to inhalation of the organism while performing duties, such as farming, gardening, or any task that disrupts the soil. The ability to easily aerosolize *B. pseudomallei,* and the difficulty of treating Melioidosis infections, are the reasons why *B. pseudomallei* is on the Tier 1 Select Agent List.

In 2021, the US witnessed the aerosolization capability of *B. pseudomallei* when it caused infections in four people who used a Better Homes and Gardens spray. This spray was manufactured in India, where *B. pseudomallei* is endemic, and it was ultimately determined that the *B. pseudomallei* present was due to environmental contamination. Unfortunately, due to the difficulty of treating the infection, two of the four people died, and two survivors developed a form of paralysis from the infection (10).

In July 2022, the CDC released CDC Health Advisory 00470 notifying the public that *B. pseudomallei* had been discovered in the soil and water of the gulf region in Mississippi. This discovery was made after two people with no travel history, and who live 10 miles apart from each other, developed melioidosis. This was the first time that *B. pseudomallei* was noted to be endemic to the gulf-bordering states. As result, the CDC is planning on studying other states throughout the gulf region to determine if *B. pseudomallei* is also present in those areas. At this time, it is unclear how long *B. pseudomallei* has been endemic to the US.

If a provider is suspecting melioidosis, they should notify laboratory personnel prior to submitting a specimen. The best way to determine if a patient has melioidosis is by submitting blood, sputum, and urine cultures, along with all other relevant sites (i.e., if the patient was potentially exposed from an open wound) (10).

Due to the characteristics of *B. pseudomallei*, isolating the organism can be difficult. Selective media such as PC agar is commercially available to help identify *B. pseudomallei*. There have been incidences where the MALDI-TOF MS and various automated identification systems have misidentified the organism. Most commonly, these systems have identified the organism as *Burkholderia cepacia* or *Burkholderia thailandensis*, but *Chromobacterium anthropic, Pseudomonas sp., Acinetobacter sp.*, and *Aeromonas sp.* are also possible identifications as well. If the provider is suspecting melioidosis, and any of these organisms come up, notify the NYSDOH for further guidance on the proper steps to take. The Wadsworth Center Biodefense Lab can perform a range of tests for the detection of this pathogen which is a select agent. Further assistance is available for guidance on select agent forms and documentation and laboratory exposures (10).

Biosafety Awareness:

Class II Biosafety Cabinet

BSC or No BSC: That is the Question

Biological safety cabinets (BSC), or biosafety cabinets, are staples in microbiological and biomedical laboratories and when used correctly are designed to protect users and the environment from biological agents and protect the research materials from contamination. The BSC is considered a primary engineering control, which is meant to isolate the worker from biohazardous or infectious material and should be prioritized over the use of PPE alone to protect against aerosol-transmitted pathogens in NIOSH's Hierarchy of Controls (11).

When deciding on whether or not a BSC is needed in your workflow, the likelihood and consequences of the various exposure risks associated with your diagnostic testing should be examined. The likelihood of exposure to a biological agent depends on agent-specific factors, such as the potential routes of transmission, the exposure opportunities associated with the lab and testing environment in which the diagnostic testing is performed, as well as the effectiveness of existing administrative controls such as the procedural policies (e.g., use of standard precautions) and training and competency assessment methods that are in place.

The potential routes of exposure to always look for in your procedures include, opportunities for direct mucosal contact, inhalation, ingestion, and accidental injection, but it is the potential for droplet and aerosol generation that primarily drives the need for performing a particular procedure within a BSC. The potential consequences to consider as you perform your risk assessment and assess the need for using a BSC will depend on the biological agent factors associated with both the known and unknown pathogens you're testing for, such as virulence, communicability, and infectious dose.

If a risk assessment has been previously done for the procedures you currently conduct, it is required to revisit them annually, and any time agent-specific factors such as virulence, pathogenicity, and vaccine and treatment availability are altered. Any time procedures have the potential to produce droplets and/or aerosols or involve sharps hazards, additional biosafety controls, such as the use of a BSC or safe needle devices should be seriously considered. In the case of slow growing organisms such as *Neisseria meningitidis*, "triggers" should be put in place and documented in your lab's biological risk assessment to ensure that these gram-negative cultures are identified early in the testing process and handled within a BSC until they are ruled out for high-risk and high-consequence aerosol-transmitted pathogens like *N. meningitidis* (12). This can be done within your lab, but also in collaboration with your Safety staff. To learn more about the proper use of a BSC, please visit the Wadsworth Center's training video here (13).

Saf-T Pak Training

In March 2022, NYSDOH Wadsworth partnered with Inmark to offer a free packing-and-shipping training program for those who ship hazardous materials. This program has been a great success with having more than 300 people register and complete the training. Thanks to feedback from the course participants, we have now designed a program that is much more friendly to the hospital laboratories.

In August, a self-paced version of the program was made available to allow more time to complete the training. With this being said, we are still offering a live version of the program for those who have the ability and wish to attend. In addition to the self-paced module, we are now offering a refresher course for those who need to take the course again to retain their certificate.

We have received additional funding to keep this program going through August 2023. We hope to continue to be able to offer this free program to all the clinical and public health laboratories across New York State for years to come.

Register!

To register for this training course, please use the link below!

Training Webinar Sign-Up Survey (surveymonkey.com)

New Staff:

Syadatun Ahana

I'm Ahana and I am an APHL-CDC biorisk management fellow at the Wadsworth Center. During my time here, I will be at the Safety Office working on integrating applicable biorisk officer requirements (outlined in each CLEP-regulated clinical/diagnostic laboratory-specific safety plan) into existing SOP-specific training and competency assessment methods required by the quality management system. I will also be conducting research on occupational exposure and biosecurity.

I have a background in public health with previous lab experience performing cell culture.

Fun facts about me!

1. I have a 9-month-old kitten named Mishti, which translates to "sweet" in Bengali

2. My first lab job was at a GLP facility, so documentation has since been my strong suit

3. I love picking up new hobbies, especially anything with crafting or DIY

Reach out!

- What would you like to hear more about?
- What kind of guidance would be helpful?
- In which areas would you like to receive more training and outreach on?
- Email: Morgan.thorne@health.ny.gov
- **To subscribe, follow the link below** https://www.surveymonkey.com/r/P5WS5BQ

Morgan Thorne

My name is Morgan Thorne, and I am pleased to introduce myself as your new clinical outreach and laboratory training coordinator for biothreats and emerging infectious diseases. Since you will most likely be seeing other communications from me in the future, I want to take this opportunity to share a little bit about myself.

I am an ASCP Board-certified Licensed Medical Technologist. Prior to working at NYSDOH in the Biodefense Laboratory, I was the microbiology lead technologist at a local hospital.

Like all of you, I was extensively involved in the COVID-19 outbreak testing efforts, as our laboratory was responsible for performing a majority of the COVID-19 testing for the hospital itself and our partnered outpatient facilities.

While my career path has taken me to my current position in Public Health at the Biodefense Laboratory, I still remain a practicing Med Tech working per diem to keep my hand in clinical microbiology.

Additionally, if you have any other clinical laboratory training and/or outreach questions, suggestions, or concerns, please do not hesitate to reach out! I will be glad to assist where I can and provide additional resources and contacts where applicable.

Feel free to reach me via email at morgan.thorne@health.ny.gov or by phone at 518-408-2331 Monday through Friday between 7AM and 3PM. I look forward to getting to know you!

Fun facts about me!

1. I have a golden retriever named Nala

2. My first job as a Med Tech was in oncology and blood disorders

3. If I didn't work in a science-related field, I would most likely be a baker and own a bakery

Citations:

References:

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3. Ebola Vaccine: Information about ERVEBO® | Clinicians | Ebola (Ebola Virus Disease) | CDC
4. History of Ebola Virus Disease | History | Ebola (Ebola Virus Disease) | CDC
5. About Monkeypox | Monkeypox | Poxvirus | CDC
6. Monkeypox Virus Detection in Different Clinical Specimen Types - Volume 28, Number 12—December 2022 - Emerging Infectious Diseases journal - CDC
7. Monkeypox (who.int)
8. 2022 Outbreak Cases and Data | Monkeypox | Poxvirus | CDC
9. JYNNEOS Vaccine | Monkeypox | Poxvirus | CDC
10. Webinar Thursday, October 13, 2022 - Melioidosis in the United States: What Clinicians Need to Know Following Newly Discovered Endemicity (cdc.gov)
11. Hierarchy of Controls | NIOSH | CDC
12. Laboratory-Acquired Meningococcal Disease --- United States, 2000 (cdc.gov)
13. https://www.wadsworth.org/programs/ed/biodefense/training