Boston University Medical Campus

Community Liaison Committee (CLC)

National Emerging Infectious Diseases Laboratories (NEIDL)

MEETING NOTES

Tuesday, February 17, 2024

6:00 pm. *Zoom

Attending

Dr. Jean Lee, CLC; J. Kevin Fisher, CLC; Robert Timmerman, CLC; Norm Stembridge, CLC; Jim Keeney, CLC; Ola Akinwumi, CLC; Dr. Sullivan, Director NEIDL, Professor of Virology, Immunology & Microbiology BU Med School; Dr. Hume, Research Assistant Professor of Virology, Immunology & Microbiology, BU, NEIDL; Dr. Yun NEIDL; Adam Carter, Executive Director NEIDL; Elizabeth Leary, Executive Director, Government & Community Affairs; BU GCA; Valeda Britton, Executive Director, Community Relations/MED, BU; Fernando Fortin, Director, Community Outreach, MED,BU

Welcome

Ms. Britton opened the meeting with an icebreaker question, CLC members were asked to name their favorite cookies. Most replied chocolate chips.

NEIDL Director's Update:

Dr Sullivan started the meeting by discussing why the NEIDL does research on Lassa fever and its connection to measles. Lassa fever is a hemorrhagic virus that is studied at BSL-4 in the NEIDL. While Ebola rears its head occasionally and is usually a more contained outbreak, Lassa is more endemic. It is transmitted by mice feces and urine and causes approximately 10,000 or more deaths a year. It can be symptomatic or asymptomatic. It is called the most neglected of the neglected diseases. We do not have vaccines and therapeutics for Lassa fever. In 2018, there was an alarming outbreak in Nigeria that needed the declaration of a public health emergency. So why is the NEIDL studying this if the disease was first isolated in 1969? The answer is that we do not have therapeutics or vaccines for this disease yet.

Additionally, the risk of exposure to Lassa may expand substantially in the next several decades, especially in West Africa. There used to be four lineages in 2000. Now there are seven lineages.

The prediction is that by 2030, it will have spread to East Africa. Some predict that if nothing changes by 2070, it will be widespread in Central Africa
Moreover, when a virus spreads like this, there are more opportunities for people who are traveling to take it to a new location. Another risk is expansion of its reservoir from one type of mice to another type. Also, if there are elevated levels of replication, you can get mutations. These may cause either resistance to viruses and antibodies or more severe disease, including deafness and death.

Now, how are Lassa fever and measles connected, especially since we have an effective vaccine for measles? Measles is highly contagious. The virus was virtually eliminated in the U.S. in 2000, following an effective vaccination program. We know that after two injections for infants and then a booster between four and six years old, one can expect lifelong immunity. Yet, this is not always the case for unvaccinated or immunocompromised individuals. Like Covid, measles can be transmitted before the start of symptoms as well as easily spread through coughing, sneezing or touching infected surfaces. Of note, is that Florida has ended its vaccine program. This has resulted in a large population of unvaccinated individuals and a large outbreak of measles in Florida right now.

Meanwhile, in Switzerland, they have found a measles variant which was not detected by our usual diagnostics. It is not impacting vaccine efficacy. However, If you have expanded replication and the generation of variants, our vaccine may become less effective. This drives us to understand what is behind this evolution and make sure that we keep the immunity we have developed over many years.

Another worry for Dr. Sullivan is climate change. This has caused vectors of viruses to spread along with the diseases they carry. With viruses like dengue, zika and west nile, it is known that mosquitos are changing their geographic location. This creates a greater risk for spreading. Dr. Hume mentioned the “spillback effect” as a concern. This is when you have an infected traveler and they arrive in another country and transmitted the infection to a rodent there. If this occurs, there could be a new host species and then that disease would be endemic in a new area.

Dr. Sullivan then answered questions from the CLC.

If you have never been vaccinated, but had measles as a child, do you need to be vaccinated now? No, as an infection with measles should probably confer lifelong immunity.

Are vaccines safe for measles? Vaccines are pretty safe for measles. Millions of people have received measles vaccinations.

On the question of the outbreak of bubonic plague in Oregon earlier this month, Dr Sullivan noted that while there is no vaccine, she was not as concerned on its spread, for two reasons. First because of its reservoir, there is no person to person spread. Second, the disease is susceptible to antibiotics.

Presentation: Dr. Hume-NEIDL: Combatting New Viruses and known Viruses in New Places:

Dr. Hume started his presentation by discussing the Ebola outbreak in West Africa. Almost all of the previous Ebola virus outbreaks occurred in Central Africa, primarily in the Democratic Republic of Congo and Sudan. However, between 2014-2016, approximately 99.8% of the cases and deaths were centered in Guinea, Sierra Leone and Liberia. Dr. Hume volunteered in Sierra Leone with a group from the EU and Partners in Health. For six weeks, he processed over 400 blood samples for Ebola and the presence of malaria. Early symptoms for Ebola overlapped with early symptoms for malaria.

In March 2020, Dr. Hume and the NEIDL started work on SARS-CoV-2. At that time research was primarily done in the BSL-4 labs. His lab worked in collaboration with the BU Center for Regenerative Medicine (CREM). The CREM takes skin cells and reprograms them into stem cells. Later they are reprogrammed into cells in the liver, brain, lungs, and intestines. From there the cells were infected by the virus so research could show how the virus impacts the body and how cells respond to the inflammation. Ultimately, we want to discover whether there are drugs that can be used to fight the infection?

Dr. Hume said that no one is certain what new viruses will be uncovered and whether they will cause diseases in humans. Could it be one of the priority pathogens that the World Health Organization has put on its list? Included in this list are several viruses that the NEIDL is doing research on such as Covid- 19, Ebola, Lassa, Marburg, Nipah, Henipavirus, and Crimean-Congo hemorrhagic fever. To obtain an answer, the NEIDL is using comparative virology. However, questions remain about hosts, origins, transmissibility, and possible vaccines or therapeutics.

Government & Community Affairs (GCA) Updates:

Valeda Britton / Fernando Fortin gave an update about their community relations activities.

One of their goals is to ask how can BU be supportive and a good neighbor in the community. As a result, they are busy attending meetings, and other events. Recently, much of their efforts have been spent developing collaborations and sharing resources with Boston Public Schools. They delivered 54 excess microscopes in total to the Dearborn High School, O'Bryant High School, New Mission High School and Ellis Elementary schools.

A Speaker Series was launched and initiated for the O'Bryant Biomedical Pathways Program. Dr. Denise Ridiane was the first speaker. The Speaker Series continues with the Match School. It is an inspiring program to expose students to experienced professionals on both campuses. On the internship front, Dr Hailey Gordon, Director of STEM Pathways, will be hosting a few students from New Mission High School this Summer. Also, Community Relations had an opportunity to connect their colleagues at the BU School of Public Health with St. Stephens in the South End to create and implement a gun violence prevention program.

Other Topics

Next Meeting is April 17, 2024, at 6pm via Zoom.

Meeting adjourned