



Technical Bulletin

North Carolina State Laboratory of Public Health | Laboratory Improvement Unit

Is My Laboratory Prepared?

Health care professionals are exposed to patients from all situations. One of the most recent issues of concern involves the Zika virus. This is a good time to review the precautions those of us in the laboratory should be taking every day.

Standard Precautions

What exactly are standard precautions? Standard precautions assume that all blood, body fluids, secretions, excretions, non-intact skin and mucous membranes might contain transmissible infectious agents. Even seemingly healthy patients may have infections without typical symptoms. So ... play it safe. Treat all samples as if they are infectious.

Zika Testing

There has been a lot of discussion concerning safety measures with specimens being tested for the Zika virus. Patients infected with the Zika virus may present with an acute fever, rash, arthralgia and/or conjunctivitis. If they live in or traveled to an area where Zika virus is present, providers have been instructed to test for the Zika virus. Both dengue virus and chikungunya virus are found in the same geographic area and patients present with similar symptoms. For this reason, the Centers for Disease Control and Prevention (CDC) recommends that these patients be tested for all three viruses. Zika and dengue viruses are classified as biological safety level (BSL) 2, which means they

pose moderate threats to personnel and the environment. Standard precautions should be used for all activities, laboratory personnel should be trained to handle these agents, access to the laboratory should be restricted, and physical containment equipment should be used for any activities that may produce aerosols and/or splashes. Because chikungunya virus is a BSL 3 virus, these samples should also be handled in a biosafety cabinet, personal protective equipment should be used when performing tasks that may generate aerosols and/or splashes, and blood tubes requiring centrifugation should be placed in an O-ring-sealed safety cup. This is an area of great concern to facilities with limited access to safety equipment. To assess and minimize risk, a biological risk assessment should be performed.

Biological Risk Assessment

A biological risk assessment is a process used to identify the hazardous characteristics of a known or potentially infectious agent or material, the activities that can result in a person's exposure to an agent, the likelihood that such exposure will cause a laboratory-acquired infection, and the probable consequences of such an infection. Careful judgement is required when completing the assessment. If risks are underestimated, adverse consequences are more likely to occur. If risks are overestimated, unnecessary costs for equipment that's not appropriate may result. The

hazards present and put the necessary safeguards in place. If financial restrictions won't allow for the suggested equipment, less costly substitutions may be available. Below is a link to a worksheet to assist with a risk assessment. If you have questions about an assessment or would like assistance, please contact Dr. Kristin Long, Biosecurity Officer, North Carolina State Laboratory of Public Health at Kristin.long@dhhs.nc.gov.

<https://www.cdc.gov/biosafety/publications/biologicalriskassessmentworksheet.pdf>

Summary

Laboratorians have the potential to be exposed to all sorts of illnesses and infections. The best shield against laboratory-acquired infections is to use standard precautions when collecting, processing, and testing patient samples and enhanced precautions where indicated. Completing a risk assessment is an excellent way to evaluate available equipment, resources, and personnel to determine if your laboratory is prepared.

References:

Healthcare Exposure to Zika and Infection Control, <https://www.cdc.gov/zika/hc-providers/infection-control.html> accessed May 11, 2017

UNC Environment, Health, and Safety Biological Safety Manual, <http://ehs.unc.edu/manuals/biological/chapter-2/> accessed May 11, 2017

Memorandum from CDC, Division of Vector-Borne Diseases: Revised diagnostic testing for Zika, chikungunya, and dengue viruses in US Public Health Laboratories, Feb. 7, 2016.

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