

Laboratory Biosafety Guidelines for Michigan Laboratories Handling And Processing Specimens Associated with Influenza

Key Messages

Information is subject to modification.

Check <http://www.michigan.gov/mdchlab> for most recent updates.

- Oropharyngeal swab specimens and lower respiratory tract specimens (e.g., bronchoalveolar lavage or tracheal aspirates) are preferred specimens for Influenza H5 testing. Bronchoalveolar lavage is considered to be a high-risk aerosol-generating procedure. Therefore, infection control precautions should include the use of gloves, gown, goggles or face shield, and a fit-tested respirator with an N-95 or higher rated filter. A loose-fitting powered air-purifying respirator (PAPR) may be used if fit-testing is not possible.
- Laboratories performing routine hematology and clinical chemistry studies should handle specimens from potential pandemic/novel flu cases similarly specimens containing other blood borne pathogens (e.g., hepatitis or HIV, see specific biosafety guidelines at <http://www.cdc.gov/biosafety/publications/bmbl5/index.htm>. Use Standard Precautions/Universal Precautions, wear PPE (lab coat & gloves) PLUS goggles and a face shield or mask and avoid creating or contain aerosols.
 - **Any procedure with potential to generate aerosols should be performed in biological safety cabinets (BSCs). When centrifuging samples, use sealed centrifuge rotors or sample cups. Rotors and cups need to be loaded and unloaded in BSC.**
 - Laboratories performing serology or RT-PCR testing should handle potential flu specimens using Standard Precautions (previously Universal Precautions, wear PPE [lab coat & gloves], avoid creating or contain aerosols).
 - A detailed description of recommended facilities, practices, and protective equipment for the various laboratory biosafety levels (BSLs), can be found in the CDC/NIH Biosafety in Microbiological and Biomedical Laboratories (BMBL) Manual at <http://www.cdc.gov/biosafety/publications/bmbl5/index.htm>.
- **Use BSL-2 with standard BSL-2 work practices* for:**
 - 1) Routine examination of bacterial and mycotic cultures;
 - 2) Routine staining and microscopic analysis of fixed smears;
 - 3) Final packaging of specimens to transport to diagnostic laboratories for additional testing; (Specimens should already be in a sealed, decontaminated primary container.)
 - 4) Molecular analysis of extracted nucleic acid preparations;
 - 5) Electron microscopic studies with glutaraldehyde-fixed grids;
 - 6) Rapid (membrane-bound EIA) Influenza tests;
 - 7) Pathologic examination and processing of formalin-fixed or otherwise inactivated tissues.
- **Use BSL-2 practices within Class II BSC for:**

1) Aliquoting and/or diluting specimens other than blood and urine; 2) Inoculation of bacterial or mycological culture media Performing diagnostic tests that don't involve propagation of viral agents invitro or in-vivo; 3) Nucleic acid extraction procedures involving untreated specimens; 4) Preparation and chemical or heat-fixing of smears for microscopic analysis.

- **Use BSL 3 facility with BSL-3 work practices with shower out facilities (BSL3+) for:**

1) Highly pathogenic avian influenza (HPAI) A culture, (e.g. H5N1, with specific BSL3+ conditions) which include controlled access double door entry with changing room and shower-out facilities. 2) Laboratories working with live H5N1 influenza virus or other HPAI cultures must also be certified by the USDA Restricted Animal Pathogen Program.

Therefore, respiratory virus cultures of patients suspected of having H5N1 infection must not be offered or performed in laboratories without BSL3+ facilities.

*See BMBL for explanation of BSL practices/facilities.

It is recommended that testing be performed by PCR assays only.

For more information, visit <http://www.cdc.gov/flu/professionals/diagnosis/> or call the CDC public response hotline in English: (800) 232-2522 Español: (800) 2320233; TTY: (800) 243-7889 Clinician Hotline English: (877) 554-4625.

For information specific to Michigan response, call MDCH Bureau of Epidemiology at 517-335-8165 or the Virology Section Manager at 517-335-8099.

Resources:

<http://www.michigan.gov/mdch>

<http://www.michigan.gov/flu> <http://www.cdc.gov>

<http://www.cdc.gov/flu> <http://www.cdc.gov/flu/avian>

http://www.who.int/csr/disease/avian_influenza/en/