Vaccinia Virus Exposure Medical Response Guidance for the University of Wisconsin-Madison

1.0 Instructions: Information in this guidance is meant to inform both laboratory staff and health professionals about the risks and treatment in the event of an infectious agent exposure. In using this guidance, please consider that multiple routes of exposure may occur in a lab and that organism strains will sometimes be genetically modified to incorporate traits such as antimicrobial resistance. Research protocols and other available guidance such as Health Canada material safety data sheets will be provided as supporting information when available. It should be assumed that when exposures do occur, that the healthcare provider will be provided with information about the specific organism and strain involved, route of exposure, inoculum concentration, and victim vaccination and serological status, when available. This document was developed by UW Occupational Medicine in consultation with the UW Division of Infectious Disease. The information provided below is intended to provide guidance for treating physicians. Treatment and evaluation plans should be individualized to the patient based on the patient's symptoms, exposure risk, and underlying health status.

If there are any questions about this document, please contact University Health Services, Occupational Medicine at 265-5610.

2.0 Signs and Symptoms of Infection- Describe signs and symptoms associated with the agent.

The family of orthopoxviruses includes Vaccinia, Variola (smallpox) and Monkeypox. An attenuated strain of vaccinia virus is used to inoculate against smallpox and monkeypox infection. This strain varies from other attenuated vaccinia strains used in laboratory research. Laboratory cases of vaccinia virus infection have occurred with exposure to vaccinia virus, attenuated vaccinia virus and recombinant vaccinia virus. (The **highly** attenuated poxvirus strain Vaccinia Ankara does not cause human infection and this guidance is not applicable to this strain.)

Vaccinia virus is primarily associated with infection of the skin, particularly the hands and digits. Lesions seen include nodules, vesicles, ulcers, scabs, erythema, induration, swelling, and pain occurring at the site of exposure. Systemic signs such as fever or malaise are also common.

Individuals who have eczema or who are immunocompromised are at increased risk of complications from exposure to vaccinia virus.

Significant complications can include encephalitis, progressive vaccinia, or fetal vaccinia.

Minor complications can include regional lymph node swelling and tenderness, generalized vaccinia with multiple lesions or secondary infection.

3.0 Infectivity- Describe infective dose, relevant exposure routes (considering laboratory use), incubation period and potential severity of infection.

Routes of exposure include skin exposure via puncture or injection; bite from an animal infected with or recently vaccinated by vaccinia; exposure to non-intact skin; mucous membrane exposure of eyes, nose or mouth.

Sources of infection include lesion fluids or crusts, scabs, respiratory secretions, and tissues of infected hosts.

The infective dose is unknown.

Vaccinia virus can remain stable when dried onto surfaces or objects, reportedly up to 2 weeks

4.0 Description of First Aid - Provide an overview of first aid treatment of exposures considering that multiple routes of exposure could occur (needlestick, aerosol, eye, skin and ingestion).

For skin exposure, immediately and thoroughly wash exposed skin surfaces with the antibiotic scrub approved for the laboratory for 15 minutes; for splash to the eyes or mucous membranes, flush, preferably in an eyewash station for 15 minutes.

5.0 Urgency of Medical Care- Describe how soon medical attention should be sought, i.e. is an ER visit necessary, a visit to University Health Services, or simply schedule a visit with a personal physician.

Report to the emergency department for additional wound care if needed.

Verify that individual exposed has previously received the smallpox (vaccinia) vaccine.

Report incident and discuss additional measures and guidance with UHS occupational medicine 608-262-0955.

6.0 Description of Medical Response- Provide an overview for clinical treatment of exposures to the agent considering that multiple routes of exposure could occur (needlestick, aerosol, eye, skin and ingestion) and that strains of agents will vary and sometimes include antimicrobial resistance.

Initial wound cleansing, verification of smallpox (vaccinia) vaccine status, and further discussion with UHS occupational medicine.

For any skin lesions which occur, viral culture and further assessment will be managed by UW Infectious Disease.

For complications, additional treatment measures such as vaccinia immune globulin or antiviral agents may be of value and will be managed further by UW infectious disease along with the CDC.

7.0 Description of Medical Surveillance- Describe the advisability of medical surveillance strategies (in particular baseline and annual serology) for those working with the agent. If doing so would likely improve the identification, diagnosis or treatment of exposures, please indicate so.

No medical surveillance is available.

Pre-exposure vaccination with smallpox vaccine is recommended for individuals directly handling vaccinia virus or cultures and for individuals handling research animals infected with vaccinia viruses including recently immunized animals. CDC recommends evidence of satisfactory vaccine take within the preceding 10 years for work with vaccinia virus.

8.0 Considerations for Infection Control-Describe any special precautions required to prevent the further spread of infection. Include precautions for the healthcare, workplace, and home setting.

The incubation period is one week. During this time the patient is to be advised that vaccinia is communicable to unvaccinated contacts. Patient to watch for any signs of infection (vesicle, pustule, scab, ulcer, erythema or induration at exposure site) and to report these immediately to UHS occupational medicine if any occur.

Exposed individuals should be restricted from exposure to any individuals with eczema, atopic dermatitis, immunocompromised individuals, or pregnant women.

9.0 Reporting-Describe any public health or federal regulatory reporting requirements. Include the timing and mechanism for reporting.

Public Health: None

Other: There is no national formal surveillance system for laboratory acquired vaccinia infection. Voluntary reporting is to the CDC Clinician Information Line at 800-232-4636 (CDC info). This CDC resource can also provide additional information.

10.0 References:

11.0 Document Revisions

Revision History		
Revision Number	**Date**	**Description of Revision**
Initial Approval	**5/10/12**	**ASW Original**
1	**12/2/13**	**Changed to new format**
2		