



UNIVERSITY OF WISCONSIN-MADISON POLICY FOR THE MANAGEMENT OF B VIRUS (MACACINE HERPESVIRUS 1) EXPOSURES

- 1.0 Purpose:** To provide guidelines for the consistent management of employees potentially exposed to B virus (Macacine herpesvirus 1 or formerly Herpesvirus simiae, Herpes B) through biohazardous injuries and other potential exposures.
- 2.0 Scope:** All personnel, students and guests working with macaques or their tissues or fluids at UW-Madison.
- 3.0 Related Documents:** All Campus Policy 1997-002 "Personal Protective Equipment (PPE) for University of Wisconsin-Madison Faculty/Staff/Students Working with Non-Human Primates"

Reference:

Cohen J.I., Davenport D.S., Stewart J.A., Deitchman S., Hilliard J.K., Chapman L.E., and the B Virus Working Group; *Recommendations for Prevention of and Therapy for Exposure to B Virus*. CID 2002; 35: 1191-1203.

- 4.0 Background:** B virus was first isolated by Sabin and Wright in 1932 from the brain and spinal cord of a researcher who died of meningoencephalitis following a bite from a macaque monkey. The virus has since been recognized to be endemic among Old World Macaca genus monkeys (macaques) and to cause minimal morbidity in its natural host. No other Old World and no New World monkeys are known to naturally harbor B virus. The prevalence rate of B virus infection is low among immature animals but approaches 80-90% in natural adult populations. Chronically infected macaques actively shed virus only intermittently (estimate prevalence rates 2-3%). Macaques are more likely to shed B virus when they are ill, under stress, immunocompromised, or during breeding season.

In humans, however, B virus infection can result in a fatal encephalomyelitis. B virus disease in humans is extremely rare, but often fatal -- an estimated 80% of untreated patients die of complications associated with the infection. Persons at greatest risk for B virus infection include veterinarians, laboratory workers, and others who have close contact with Old World macaques or their tissues. Infection is typically caused by animal bites, scratches, or exposure to the tissues or secretions of macaques.

In late 1997, a worker at a primate center died from B virus infection that developed after biologic material from a monkey was splashed into the patient's eye. In response to this case, CDC formed a working group to reassess the existing recommendations for the prevention, evaluation, and treatment of B virus infection in humans.

- 5.0 What Should be Considered an Exposure:** Any time the tissues or fluids from a macaque, or any liquids and surfaces that have been exposed to macaques, come in contact with a mucous membrane or make it past the primary barrier of the skin, i.e.



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- a.) Bites
 - b.) Eye splashes
 - c.) Scratches
 - d.) Oral or nasal contact
 - e.) Needle-sticks (a clean needle stick through a soiled glove is also considered an exposure)
 - f.) Skin lesions or any other break in the skin
 - g.) Scratches/lacerations from equipment or facilities behind the barrier, including surfaces expected to be clean (counter tops, door knobs, keyboards, telephones, etc.).

6.0 Forms: The injury and worker's compensation forms are appended and are available from departmental Human Resources staff and the Workers Compensation Office-21 N. Park St.:

Employee's Work Injury and Illness Report (OSLP-1) - completed by employee
Employer's First Report of Injury or Disease (WC-12) – completed by Human Resources
Supervisor's Accident Analysis & Prevention Report (WKC-SUP) – completed by supervisor
First Report of Biological Exposure or Release Event form (if the exposure involves an infected animal) – completed by Safety Coordinator or supervisor/PI

B virus identification and serologic testing form; used for both human and macaque samples.
Available online:

<http://www2.gsu.edu/~wwwvir/PDFs/2007%20Submission%20Form.pdf>

7.0 Role(s) and Responsibilities:

A. The Injured Employee's Role

1. **Prevention** of B virus infection must always be the first goal and can be achieved through the following measures:
 - a. All macaques and their tissue should be regarded as infected. Viral shedding is intermittent and can occur in the absence of visible lesions.
 - b. Handling of macaques should be minimized and should be done by trained personnel.
 - c. Transfer and squeeze-back cages should be used to move macaques whenever possible.



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- d. Ketamine may be used to remove macaques from cages, particularly large or difficult animals.
 - e. Use appropriate personal protective equipment when handling animals or cleaning cages.
 - f. Do not recap needles or sharps!
 - g. Dispose of sharps (scalpel blades, contaminated sharp glass or needles) immediately after use in a designated, conveniently located puncture resistant sharps container.
 - h. Surfaces in contact with macaques or their fluids or tissues should be disinfected after every use.
 - i. Cages/equipment with potential for contamination from macaque fluids should be inspected for sharp edges that may cause injury to workers.
 - j. Always practice appropriate handwashing technique.
 - k. Always report potential exposures immediately.
2. **First Aid** - if a potential exposure occurs, risk of infection can be reduced by providing immediate first aid. (note- if the injury is severe proceed directly to UWHC-ED)
- a. Thoroughly cleanse/scrub/irrigate the wound with soap or topical antimicrobial agent (povidone iodine or chlorohexidine) for 15 minutes+. If eyes, mouth, nose or other mucous membranes have been exposed, irrigate the site for 15 minutes+ with sterile saline or rapidly flowing water.
 - b. After cleansing the exposure site, cover it (if possible) and proceed to the UWHC Emergency Department (UWHC-ED) after hours (262-2398) and on weekends and holidays or University Health Services (UHS) (608) 265-5610 between the hours of 8:30am and 4:30pm Monday- Friday.
 - c. Keep all follow-up appointments with UHS and/or the Infectious Disease Clinic (UWHC-ID) or other medical clinic as instructed.
 1. Make an appointment to have a follow-up serology drawn 3 weeks after the exposure if antivirals were not prescribed.
 2. If antivirals were prescribed, make an appointment to have follow-up serology drawn 4 weeks after completing antiviral therapy.



3. **Report** all potential exposures to Workers Compensation on the Employee's Work Injury and Illness Report (OSLP-1).
 - a. As soon as practical, report the potential exposure to your supervisor. If applicable, report the identification number of the involved animal(s).
 - b. You or your supervisor should contact the veterinarian responsible for the care of the involved animal(s) and report the potential exposure. The veterinarian will examine the animal(s) identified and take cultures.
4. **Injury Follow-Up** - know early signs and symptoms suggesting B virus infection and report as soon as possible to UHS or the UWHC-ID for evaluation if any of the following signs or symptoms occur:
 - b. Vesicular lesions near injury site
 - c. Localized numbness, itching, pain, tingling
 - d. Regional lymph node enlargement
 - e. Fever
 - f. Muscle weakness
 - g. Conjunctivitis
 - h. Stiff neck, headache, nausea, blurred vision

B. The Role of the Supervisor/PI:

1. **Prevention** - Ensure employees have received appropriate training on the risk of B virus infection, the methods of preventing B virus infection, the need to clean wounds immediately, the location of bite kits, and the importance of reporting injuries and/or symptoms to supervisors prior to any macaque contact.
2. **First Aid** - if present at the time of the injury, assist the injured employee with cleansing the wound. If wound is bleeding, take care not to directly contact employee's blood using Universal Precautions.
3. **Transportation** – Provide the employee with a means of transportation to the appropriate medical facility.
4. **Reporting** - if applicable, identify the animal(s) involved in the potential exposure and notify the staff veterinarian to review the animals' record(s), examine the animal(s) and collect specimens on the animal(s) for appropriate laboratory tests.

Complete the Supervisor's Accident Analysis & Prevention Report (WKC-SUP). If the exposure involves an infected animal the First Report of Biological Exposure or Release Event form must also be completed. If your worksite/department does not have a designated Safety Coordinator and you are unfamiliar with the form, the Occupational Health Program-U.W. Safety Department (265-5000) should be contacted to complete the Biological Exposure form.

C. The Role of the Medical Practitioner

1. Provide additional first aid. The exposed area should again be washed for 15 minutes. Provide additional first aid as medically warranted.
2. Provide initial evaluation and documentation.
3. Obtain initial serum sample and fill out B virus identification and serologic testing form. Courier the sample to UWHC lab for packaging and shipment to National B Virus Resource Center for testing.
3. Determine if prophylaxis for B virus should be administered.
4. If prophylaxis is indicated, administer appropriate prophylaxis and appropriate prescription.
5. Educate employee as to the signs and symptoms of B virus infection, as well as the significance of the exposure.
6. Advise the employee as to the appropriate follow-up frequency and procedure.
7. Upon receiving the results of the employee's and animals' diagnostic tests, inform the employee and advise follow up if necessary.

D. The Role of the Veterinarian- when specific animal(s) are involved in the exposure.

1. Initial Exam- to be performed within 12 hours of exposure
 - a. Safely restrain the animal(s) with ketamine hydrochloride. Maintain appropriate ketamine sedation throughout the exam.
 - b. Perform a physical examination on the animal(s) using the appropriate personal protective equipment. Make special note as to whether there are any vesicular lesions on the animal's genitalia, oral or ocular regions. Also note if the animal is exhibiting signs of stress.
 - c. Collect swabs from the area where the human exposure occurred, e.g. if the person was bitten, collect the swab from the animals oral cavity. Collect swabs from both ocular regions, oral and genital areas. If any vesicular



lesions are noted collect swabs directly from the lesions as well. Swabs can be obtained from the diagnostic laboratory at the Research Animal Resource Center (RARC) or in the case of Primate Center facilities in designated rooms in WNPRC, WIMR or Charmany.

- d. Place each swab in a separate, labeled vial and refrigerate swabs at 4 C.
 - e. Draw 3.5 ml of whole blood into a serum tube (red top or clot tube). Remove the serum from the clot, label the sample.
 - f. Fill out the B virus identification and serologic testing form(s) and send all the samples (swabs and serum) with the form(s) to the RARC for frozen storage at -20 C in the RARC clinical laboratory freezer, or in the case of Primate Center facilities, in their clinical pathology laboratory storage. Note all samples are to be handled and transported in an appropriate BSL-2 manner.
 - g. WNPRC or RARC staff will send the frozen samples to the diagnostic laboratory by overnight mail the same day they are taken, or the next working day if the potential exposure occurs on a weekend or holiday.
 - h. Contact UHS with the laboratory results.
2. Two weeks later, again perform another exam as outlined in a through h. Swabs should also be taken again at the two week point if the animal is exhibiting vesicular lesions.
 3. Inform UHS of the results of all diagnostics. UHS will follow up with the employee as necessary.

8.0 Policy: A minimum of Biosafety Level 2 practices, containment equipment and facilities are recommended for all activities involving the use of macaques or their tissues, body fluids and primary tissue cultures. All personnel working with macaques or entering rooms housing these animals should wear appropriate personal protective equipment as indicated in all campus policy 1997-002- dedicated clothing or coverage of street clothing by lab coats or coveralls, gloves, face masks, face shields or safety glasses, hair covering and dedicated shoes or shoe covers. When performing activities that generate significant aerosols, additional eye protection is also required.

All personnel who work with non-human primates (NHP) must complete the [Primate Orientation class](#) provided by the Primate Center (Wisconsin National Primate Research Center, WNPRC) or equivalent training that provides them with the information on the dangers of B virus infection, including recognition of the modes of transmission, methods of protection from exposure, post-exposure follow-up, and symptoms of B virus infection. The



[Primate Behavior class](#) is also recommended for all personnel with NHP contact. Personnel can register online for the classes by following the above links (NetID required).

The University of Wisconsin University Health Services (UHS), the University of Wisconsin Hospitals and Clinics Emergency Department (UWHC-ED), and the University of Wisconsin Hospitals and Clinics Infectious Disease Clinic (UWHC-ID Clinic) in conjunction with the University of Wisconsin-Madison Occupational Health Program shall be responsible for the appropriate assessment, treatment, and follow-up of potentially exposed employees. A Wisconsin National Primate Research Center (WNPRC) or Research Animal Resource Center (RARC) staff veterinarian shall be responsible for the assessment and follow-up of the involved macaque.

Immediately after the potential B virus exposure has occurred and initial first aid has been completed employees who have potentially been exposed must go to the UHS University Health Services at 333 East Campus Mall during business hours or the UWHC-Emergency Department before 8:30 A.M. or after 4:30 P.M. on weekdays, and on weekends and holidays. For severe injuries (excessive bleeding, etc.) employees should proceed directly to the UWHC-ED. The involved animal(s) should be inspected by a staff veterinarian for herpes lesions and appropriate laboratories studies ordered within 12 hours of the employee's potential exposure.

9.0 Document Revision:

| Revision History | | |
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| Revision Number | Revision Date | Description of Revision |
| 1 | | |
| 2 | | |