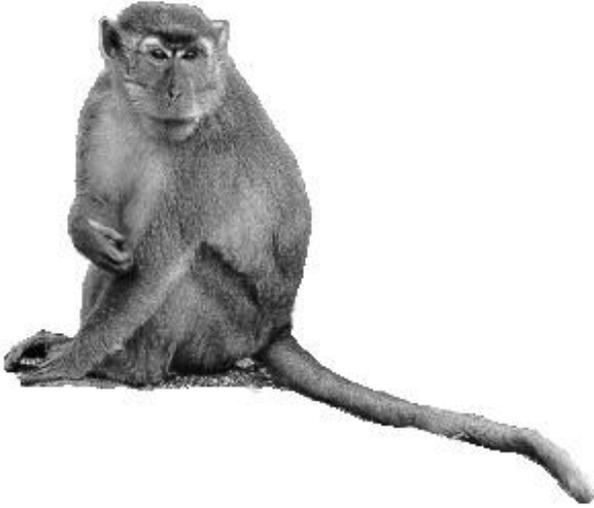


B-Virus And Safe Work Practices With Macaque Tissue



What is B-Virus?

Animal workers need to know about B-virus because it represents one of the greatest potential disease hazards from working with certain types of monkeys. You might see other names for this virus including Herpesvirus simiae, Cercopithecine herpesvirus or CHV-1 but for our purposes we will just call it B-virus. B-virus is a type of herpes virus that is closely related to herpes simplex, the viruses which cause cold sores, fever blisters, and genital herpes in human beings. B-virus occurs naturally in macaque monkeys of Asia (rhesus, longtailed (cynomolgus), pig-tailed, etc.) at least as frequently as herpes simplex occurs in human beings. Likewise, B-virus in macaque monkeys can on occasion produce oral, facial, ocular, genital, or more widespread blisters and ulcers, but in nearly all instances these monkeys have the virus without any outward evidence of infection to the observer. Infected monkeys shed B-virus in their saliva, tears, genital fluid, and sometimes other body fluids as well. Once infected, macaques harbor this virus for life as latent infections within their neurological tissues (just like herpes simplex does in people). These latent infections are capable of reactivating in monkeys at any time

and subsequently appearing in their body fluids without warning. In fact, most transmission of B-virus occurs via these “asymptomatic infections.” It is not possible at this time to predict exactly when macaques will or won’t be shedding infectious B-virus, but increased frequency of shedding has been found in conjunction with the occurrence of other illnesses, stress, breeding activities, and certain types of immunosuppression.

How is B-Virus spread?

Monkey-to-monkey transmission occurs primarily from biting, scratching, and breeding activities. B virus exposures in humans have resulted from animal bites and scratches, splashes, needle stick injuries, and other contact of mucous membranes or broken skin with infected body fluids from macaques or with wet, unfixed tissues or primary cell culture tissue material. Contaminated husbandry and research equipment can potentially spread B virus, although its viability is not expected to be prolonged (less than 24 hours in most cases); however, B virus may survive for longer periods when protected from environmental exposure in certain laboratory setting. Severity of injury has not correlated with likelihood of B virus infection.

Who is at risk for infection?

Those potentially at risk include animal technicians, veterinarians and veterinary technicians, laboratory personnel, students, faculty, or anyone who is exposed to macaque monkeys or their tissues. Persons who are immunosuppressed because of medication or underlying medical conditions may be at higher risk for infection. Although the actual risk of acquiring B-virus infections from macaques at any particular time is probably very low, it is essential that the highest safety standards be maintained at all times to prevent any additional human cases from occurring.

Is B-Virus infection serious?

Unless followed by immediate and thorough follow up with a series of appropriate actions, human B-virus infections are known to result in ascending encephalomyelitis and death or permanent neurological disability in most cases following exposure. Knowledge about the disease and its prevention in animal workers and laboratory staff, along with recent medical developments utilized in a timely fashion, have helped to provide a safety net which can reduce or eliminate the occurrence of any more human cases of B-virus disease. Interestingly, only about 50 actual human infections have been described since the virus was first described in 1934 and thousands of people have worked with these species. Although it seems that the actual every-day risk of exposure to animal workers is quite small, the severity of this disease forces us to maintain the highest standards at all times so that the safety net will always remain intact.

How can I protect myself?

Proper work practices greatly minimize any possibility of B-virus exposure.

- 1) Always presume that all macaque monkeys are shedding B-virus, and that their tissues are likewise contaminated, unless specifically proven otherwise.
- 2) Always wear appropriate personal protective equipment, such as protective eyewear, face-shields, lab jacket, and masks to cover your skin and mucous membranes of your eyes, mouth and nose.
- 3) Be trained in universal precautions and barrier protection before beginning work with tissues and body fluids from nonhuman primates.

- 4) Use engineering controls; such as biosafety cabinets and chemical fume hoods.
- 5) Comply with the Occupational Health Program requirements for your type of work. Call the Environmental Health & Safety (EH&S) Occupational Health Nurse at (206) 221-3025 if you have any questions about these requirements.

What is the proper response to an incident? You must take action after an exposure to macaque tissues.

- A) Splash or splatter to mucous membranes (eyes, nose, or mouth) by macaque tissue, cells, or body fluids.
 - Irrigation or flushing for 15 minutes with water or sterile saline solution. Never use detergent or disinfectants in the eye.
- B) Contamination of an open wound or break in the skin by macaque tissues, cells, or body fluids. Needlestick involving macaque tissues, cells, or body fluids.
 - Irrigation and scrubbing with soap or detergent solution and a high volume of water for 15 minutes. Use a detergent solution (such as chlorhexidine or povidone-iodine) if immediately available.
- C) After performing first aid measures, go to the UWMC Emergency Department (located on the second floor).
- D) Notify your supervisor of the incident as soon as feasible.
- E) Notify the EH&S Occupational Health Nurse at (206) 221-3025.
- F) Complete an incident report on the University of Washington On-line Accident Reporting System (OARS).

What are the signs of B-Virus infection?

In humans, the B-virus related disease is characterized by a variety of signs and symptoms that have typically occurred within one month of exposure. These include:

- ✓ Vesicular (small blister) skin lesions at or near the site of injury.
- ✓ Severe pain, numbness, or itching at the exposure site.
- ✓ Swelling of the regional lymph nodes.
- ✓ Flu-like aches and pains, fatigue.
- ✓ Fever and chills, headaches lasting more than 24 hours.
- ✓ Muscle weakness or paralysis in the exposed extremity.
- ✓ Muscular incoordination and/or shortness of breath.
- ✓ Conjunctivitis.
- ✓ Persistent hiccups.
- ✓ Sinusitis.
- ✓ Neck stiffness.
- ✓ Nausea and vomiting.
- ✓ Other signs compatible with viral encephalitis or neurological impairment.

Symptoms suggestive of B-virus infection should be reported and treated immediately. The progression of B-virus disease can be avoided if appropriate therapy is started early during the course of infection, so prompt diagnosis is an essential part of the safety net.

For assistance or further information: Call the EH&S Occupational Health Nurse at (206) 221-3025.

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