Macaque Monkey Bite, Scratch, Exposure Standard Operating Procedures

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1. Purpose

Herpes B virus is carried by monkeys in the genus *Macaca*, such as the rhesus (*Macaca mulatta*), cynomolgus (*M. fascicularis*), pigtail macaque (*M. nemestrina*) and other Asiatic macaque species. The virus can be transmitted from these monkeys to humans through exposure to the animal's saliva or other body fluids or tissues. Most infections have been contracted through skin injuries such as bites, scratches, needle sticks or lacerations or through splashes of body substances into mucous membranes like the conjunctiva of the eye. The stability of the virus on cage surfaces is not known but such contaminated surfaces must be considered as possible sources of infection.

Infected monkeys generally show no signs of illness or may have oral ulcers similar to "cold sores". It is nearly impossible to determine whether a particular monkey is carrying or shedding B virus. Therefore, all macaque monkeys should be treated as though infected and their bodily fluids and soiled cages should be handled as if they were contaminated.

2. Responsibility

1. **ULAM Personnel**: Responsible for monkey sample collection and submission, and then forwarding the results to UM Occupational Health Services/Emergency Room.
2. **Investigative Personnel**: Responsible for notifying veterinary personnel when a personnel injury has occurred involving a macaque monkey.
3. **UM Occupational Health Services**: Responsible for human sample collection and submission. In addition, UM Occupational Health Services is also responsible for coordination of post-exposure procedures with the Emergency Room.

3. Definitions

1. **IVAC**: In-Vivo Animal Core; a division of ULAM that includes the Animal Diagnostic Lab (ADL).

4. Procedures

1. Preventive measures
   1. University of Michigan personnel who come in contact with macaque monkeys, their bodily fluids, or their soiled cages must wear designated personal protective equipment (PPE). Refer to OSEH PPE charts.
   2. ULAM provides training on Herpes B infections and the use of Monkey Bite/Scratch Kits to all personnel working with monkeys. Training is mandatory for compliance with current animal care standards.

2. Criteria for determining whether an individual is at risk of infection

   1. The individual has sustained a bite or scratch wound, laceration, needle stick or eye splash.
   2. The wound was caused by a monkey or by soiled equipment.
   3. The non-human primate involved is a monkey in the genus *Macaca*, such as the rhesus (*Macaca mulatta*), cynomolgus (*M. fascicularis*), pigtail macaque (*M. nemestrina*) or other Asiatic macaque species.
   4. The wound is actually or potentially contaminated with saliva or other body fluids or tissues from a macaque monkey.

3. Procedures to be followed by an individual sustaining a potentially contaminated injury.

   1. Injuries during regular working hours are handled by UM Occupational Health Services.
      1. Proceed to the Emergency Room after initial first aid after hours, weekend, and holiday. The Emergency Room phone number is (734) 936-6666.
   2. Follow first aid procedures for **bite, scratches, and needle sticks** using the Monkey Bite/Scratch First Aid Kit before proceeding to UM Occupational Health Services.
1. Put on exam gloves before scrubbing wound. If the injury involves a single hand, glove the other hand before proceeding. If the injury does not involve a hand, glove both hands before proceeding.
2. Place non-sterile gauze sponges in the plastic bowl.
3. Moisten the sponges with saline and then pour Hibiclens onto sponges to saturate them.
4. With a gloved hand, scrub the wound vigorously with Hibiclens-soaked sponges for 3-5 minutes. Discard gauze and pour saline on the wound to rinse area. Repeat scrubs and rinses two more times for a total of 15 minutes of scrubbing.
5. Cover wound with sterile gauze.
6. Call UM Occupational Health Services at 734-764-8021 and notify them of your injury and your expected visit.
7. If possible, complete prime portion of Georgia State University B Virus Submission Form. This form is included in the Monkey Bite Scratch Kit and is required by UM Occupational Health Services for human sample submission. Include:
   1. Primate's clinical number
   2. Date of injury
   3. Type of injury or exposure (needle stick etc). This form is available in IVAC, and on the National B Virus Resource Center website at http://www.gsu.edu/bivirus
8. Proceed directly to UM Occupational Health Services bringing the B Virus Submission Form. UM Occupational Health Services is located C380 Med Inn Building.
9. NOTE: First aid procedures similar to those described above are recommended even if the monkey is not a macaque. The employee should contact his/her supervisor and proceed to UM Occupational Health Services, however viral cultures and serum samples will not be collected from the patient or the monkey.
3. Follow these first aid procedures for eye splashes using the Monkey Bite/Scratch First Aid Kit before proceeding to UM Occupational Health Services.
   1. Rinse eyes immediately with water at an eye wash station or sink for 15 minutes. If water is not available, use sterile eyewash or saline irrigating solution. Do not use hibiclens in the eyes.
   2. Call UM Occupational Health Services at 734-764-8021 and notify them of your injury and your expected visit.
   3. Complete the prime portion of Georgia State University B Virus Submission Form. This form is included in the Monkey Bite Scratch Kit and is required by UM Occupational Health Services for human sample submission. Include:
      1. Primate's clinical number
      2. Date of injury
      3. Type of injury or exposure (eye splash).
     4. Proceed directly to UM Occupational Health Services (Emergency Room) bringing the B Virus Submission Form. UM Occupational Health Services is located C380 Med Inn Building.
     5. NOTE: First aid procedures similar to those described above are recommended even if the monkey is not a macaque. The employee should contact his/her supervisor and proceed to UM Occupational Health Services, however viral cultures and serum samples will not be collected from the patient or the monkey.
6. All work related illnesses and injuries must be reported to Work Connections, by the supervisor within 24 hours by faxing the completed Illness and Injury Report Form to (734) 936-1913. This form is available at workconnections.umich.edu in the Forms section.

4. Post Exposure Procedures for Monitoring Exposed Personnel
   1. Patients are referred to UM Occupational Health Services for follow-up examinations and collection of additional blood samples.

5. Post Exposure Procedures for Monitoring Animals
   1. Reporting the injury. The person injured or his/her supervisor should contact the ULAM area veterinary technician to report the injury.
   2. The veterinary technician will obtain and record the following information in an electronic version of the Bite/Scratch Log which is kept on the network share drive at \maize.umhsnas.med.umich.edu\ULAM\ULAM_General-Veterinary/Primates/NHP Bite Scratch log.xls:
      1. Person injured
      2. Principal Investigator
      3. Monkey identification
      4. Room in which animal was housed
      5. Date of injury
      6. Wound location
      7. How the injury occurred
3. Physical examination of monkey. The area veterinary resident should perform a physical examination of the monkey.
   1. The physical examination should be performed preferably on the same day that the injury occurred but no longer than 24 hours after the injury.
      1. The monkey's mouth should be examined closely for the presence of ulcers, crusts, scabs, exudate and the eyes examined for conjunctivitis.
      2. The findings should be recorded on an Animal Treatment Report (ATR).
      3. The current medical history of the monkey also should be examined.
      4. If there are clinical signs of infection in the monkey, the examining veterinarian should communicate this information by telephone to UM Occupational Health Services.
   2. Blood samples and viral cultures from the monkey. After the examination has been completed, trained personnel obtain blood and viral cultures from the monkey and submit samples to the ULAM IVAC Animal Diagnostic Laboratory (ADL).
      1. The M4 media (Remel #R12500, Fisher item 22-246-350) and swabs are stocked in the ARF and NCRC Pharmacy refrigerators and are maintained by the veterinary technicians.
      2. Blood samples for serology:
         1. Collect two 3 ml samples of blood in red-topped tubes. Do not use anticoagulants.
2. Label the tubes with the date, identification number of the monkey, and laboratory accession number.
3. IVAC ADL separates the serum before shipping
   1. If IVAC ADL staff is not available, serum should be separated and stored in -80 freezer in ADL for shipping on next business day.
4. **Viral Cultures**: Collect 4 swabs for culture of Herpes B virus
   1. One from the mouth
   2. One from the conjunctiva of each eye
   3. One from the genitalia.
   4. Use sterile cotton or dacron swabs with wooden or plastic applicator sticks.
   5. Place each swab in a separate tube of Viraport transport medium and break the shaft of the swab, leaving the swab in the medium.
      1. Label each tube with:
         1. Monkey identification number
         2. Laboratory accession number
         3. Date
         4. Site from which the culture was taken
         5. If IVAC ADL staff is not available store swabs in -80 freezer in ADL for shipping on next business day.
6. Inform IVAC ADL personnel that the samples are from a potentially Herpes B positive animal so that laboratory personnel can take appropriate precautions.

4. **Submit Samples to the National B Virus Resource Laboratory**
   1. National B Virus Resource Laboratory sample submission form is available in IVAC, and on the National B Virus Resource Center website at http://www.gsu.edu/bvirus
   2. The form used by the IVAC ADL for monkey sample submission is also required by UM Occupational Health Services for human sample submission.
      1. This form contains information on both the monkey and the human involved in the exposure.
      2. Two copies of this form are completed for a baseline exposure submission.
      1. The first copy is completed by the exposed individual and delivered to UM Occupational Health Services immediately after the exposure.
      2. The second copy is completed by the veterinary resident upon sample collection for IVAC ADL sample submission. An exposure follow-up submission only requires one form to be completed by the resident (an additional form for UM Occupational Health Services are not necessary).
      3. Sections to be completed include the entire “Primate Sample Information” section and primate related questions under “Human Sample Information”.
   3. One of the two serum samples and all 4 swabs from the monkey should be submitted to the National B Virus Resource Laboratory for Herpes B serology and culture, respectively.
   4. Follow the B Virus submission protocol in the IVAC ADL for sample preparation and transport.
      1. Request a serum titer for Herpes B.
      2. The other serum sample should be labeled Sample 1 and should be frozen for use at a later date (dispose of this reserve after first sample is successfully received and tested).
   3. When results from the B Virus Resource Laboratory are received by the IVAC ADL, copies of the results should be distributed to the veterinary technician for recording in the Bite/Scratch Log and the area veterinary resident and faculty.
   4. The IVAC ADL is also responsible for faxing results to either (734) 998-6562 or (734) 763-7405. Phone UM Occupational Health Services at (734) 764-8021 to confirm the receipt. In the event that a positive viral culture occurs; emphasize the priority nature of the information during the phone conversation.
   5. Follow-up samples
      1. If results of the first test are not found to be at the maximum detectable level, the veterinary resident obtains a second serum sample from the monkey two weeks after the injury was sustained.
         1. Label the second sample “Sample 2.” Send sample 2 to the National B Virus Resource Laboratory for Herpes B serology.
         2. Request titers so that it can be determined whether a rise in titer has occurred; a rise in the monkey's titer indicates active infection.
      2. Follow-up sample results are distributed in the same manner as initial samples. (see section 4.e.iii.2 above)

6. **Monkey Bite/Scratch Kits**

   1. First aid kits are maintained in or near all monkey housing areas.
   2. **Monkey Bite and Scratch Kit Maintenance and Restocking**
      1. In ULAM managed areas, the Veterinary Technician Office maintains and restocks the Monkey Bite/Scratch Kits.
      2. In PI managed areas, the employing unit is responsible for maintenance and restocking of its own Monkey Bite /Scratch Kits. The unit responsible for kit maintenance must educate employees on the location of these kits.
   3. **Bite/Scratch kit content list** (Appendix A)
      1. Supplies can be purchased from the vendors listed below or from ULAM (contact the ULAM Office at 764-0277). All forms in the kit are available from the ULAM website.
      4. Copies of the kit forms are attached. (Appendices B-E)

5. **Related Documents**
6. Appendices

1. Appendix A: Contents of NHP Exposure Kit

<table>
<thead>
<tr>
<th>ITEM</th>
<th>VENDOR</th>
<th>STOCK NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hibiclens (8 ounce)</td>
<td>MWI</td>
<td>036222</td>
</tr>
<tr>
<td>1 liter bottle of saline for irrigation</td>
<td>MWI</td>
<td>501032</td>
</tr>
<tr>
<td>3 sterile packs of gauze sponges</td>
<td>MWI</td>
<td>035943</td>
</tr>
<tr>
<td>1 pair of disposable nitrile gloves size M</td>
<td>Medline</td>
<td>484802</td>
</tr>
<tr>
<td>1 pair of disposable nitrile gloves size XL</td>
<td>Medline</td>
<td>484804</td>
</tr>
<tr>
<td>Non-sterile gauze sponges</td>
<td>MWI</td>
<td>015164</td>
</tr>
<tr>
<td>Sterile eyewash or saline</td>
<td>B2 Pharmacy</td>
<td>N/A</td>
</tr>
<tr>
<td>Plastic bowl</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Copy of Macaque Monkey Bite/Scratch Exposure SOP</td>
<td>ULAM Website</td>
<td>N/A</td>
</tr>
<tr>
<td>Macaque Exposure Checklists - First aid and reporting processes</td>
<td>ULAM Website</td>
<td>N/A</td>
</tr>
<tr>
<td>Summary of Emergency Room Protocol</td>
<td>ULAM Website</td>
<td>N/A</td>
</tr>
<tr>
<td>This list (Contents of Kit)</td>
<td>ULAM Website</td>
<td>N/A</td>
</tr>
<tr>
<td>National B Virus Submission Form – Georgia State University</td>
<td>ADL, or <a href="http://www.gsu.edu/bvirus">http://www.gsu.edu/bvirus</a></td>
<td>N/A</td>
</tr>
</tbody>
</table>

2. Appendix B: First Aid Procedures for Bites, Scratches, and Needle Sticks

1. Put on exam gloves before scrubbing the wound. If the injury involves a single hand, glove the other hand before proceeding. If the injury does not involve a hand, glove both hands before proceeding. Place non-sterile gauze sponges in the plastic bowl. Moisten the sponges with saline first, then pour Hibiclens onto sponges to saturate them.

2. With a gloved hand, scrub the wound vigorously with Hibiclens-soaked sponges for 3-5 minutes. Discard gauze and pour saline on the wound to rinse area. Repeat scrubs and rinses two more times for a total of 15 minutes of scrubbing. Cover wound with sterile gauze.

3. Call UM Occupational Health Services at 734-764-8021 and notify them of your injury and your expected visit.

4. Complete primate portion of National B Virus Submission Form. This form is included in the Monkey Bite Scratch Kit. Include primate's name, clinical number, date of injury, test purpose, and type of injury (needle stick etc). Bring the completed B Virus Submission Form with you when you go to UM Occupational Health Services/Emergency Room.

3. Appendix C: First Aid Procedures for Eye Splashes

1. Rinse eyes immediately with water at an eye wash station or sink for 15 minutes. If water is not available, use Sterile eyewash or saline irrigating solution. **Do not use hibiclens in the eyes.**

2. Call UM Occupational Health Services at 734-764-8021 and notify them of your injury and your expected visit.

3. Complete primate portion of National B Virus Submission Form. This form is included in the Monkey Bite Scratch Kit. Include primate's clinical number, date of injury, test purpose, and type of injury (needle stick etc). Bring the completed B Virus Submission Form with you when you go to UM Occupational Health Services/Emergency Room.

4. Appendix D: Procedures Following First Aid

1. After following the First Aid Procedures above, proceed directly to the UM Occupational Health Services/Emergency Room.

2. Inform your supervisor of the injury. Contact or have your supervisor contact the ULAM area veterinary technician (764-0277) to report the injury.

3. Submit workman's compensation forms (i.e., Supervisor's Report of Employee Accident or Illness, Form no. UM MIO SHA 101A).

5. Appendix E: Summary of Emergency Room Monkey Bite Protocol

Refer to Monkey Bite Protocol found in ED Policy and Procedure Manual for additional information.

1. Repeat irrigation/cleansing;
   - Eye irrigation: 15 minutes with normal saline
2. Wound irrigation: 15 minutes with Chlorpactin.
3. Perform a viral culture of the wound.
4. Draw a red top tube.
5. Check tetanus immunization status, administer if necessary.
6. Contact ID fellow.
7. Leave message on UM Occupational Health Services answering machine informing them of the exposure (734-764-8021).
8. Provide copy of discharge instructions to patient.
9. Place this form in the follow-up box at the registration desk.

6. **Appendix F: Monkey Bite/Scratch Visual Guide** *(a laminated copy should be in every bite/scratch kit)*