Virology/Phase III BSL-3 Emergency Response Packet

TAKE THIS PACKET WITH YOU!

• Emergency Contact Information
• Workers’ Compensation Information
• Directions to Authorized Treating Physicians
• Directions to Fort Collins Emergency Room
• Biosafety Incident Report Form
• Infectious Agent Fact Sheets:

<table>
<thead>
<tr>
<th>Infected Agent</th>
<th>Virus Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bussuquara Virus</td>
<td>Powassan Virus</td>
</tr>
<tr>
<td>Chikungunya Virus</td>
<td>Semliki Forest Virus</td>
</tr>
<tr>
<td>Dengue Viruses (1-4)</td>
<td>Sindbis Virus</td>
</tr>
<tr>
<td>Eastern Equine Encephalitis Virus</td>
<td>St. Louis Encephalitis Virus</td>
</tr>
<tr>
<td>Hantavirus (Maporal virus, El Moro Canyon, Sin Nombre, Andes, Hantaan, Seoul virus)</td>
<td>Venezuelan Equine Encephalitis Virus</td>
</tr>
<tr>
<td>Illheus Virus</td>
<td>Western Equine Encephalitis Virus</td>
</tr>
<tr>
<td>Japanese Encephalitis Virus (to be acquired)</td>
<td>West Nile Virus</td>
</tr>
<tr>
<td>LaCrosse Virus</td>
<td>Yellow Fever Virus</td>
</tr>
<tr>
<td>MERS-CoV</td>
<td>Zika Virus</td>
</tr>
<tr>
<td>O’Nyong-Nyong Virus</td>
<td></td>
</tr>
</tbody>
</table>

Updated 12/2014
The most up to date version of this document can be found in the Biosafety or Occupational Health Websites under the “Illness Procedure and “Emergency Response Packet” Bar: http://www.ehs.colostate.edu/WOHSP/Bsl3Packets.aspx
# Emergency Phone Numbers

<table>
<thead>
<tr>
<th>BIOSAFETY EMERGENCY NUMBER</th>
<th>491-0270</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDRC On-Call</td>
<td>491-IDRC (491-4372)</td>
</tr>
<tr>
<td>Fort Collins Emergency Room</td>
<td>495-7000</td>
</tr>
<tr>
<td>Occupational Health Coordinator</td>
<td>491-3102, 420-8172</td>
</tr>
</tbody>
</table>
Workers’ Compensation Procedure

Updated 12/2014

NOTE: Workers Compensation Statutes change frequently, and every effort has been made to update this document accordingly. However, Risk Management is the source for the most current Workers’ Compensation procedures: http://www.ehs.colostate.edu/WWorkComp/Home.aspx

• First Report of Injury must be INITIATED as soon as possible
  – Online link: required forms: https://wsnet.colostate.edu/cwis86/EHslogin/default.aspx?From=WorkComp

• Medical attention must be sought by a CSU Authorized Treating Physician
  – For a complete list of CSU Authorized Treating Physicians:
    http://www.ehs.colostate.edu/WWorkComp/HealthContPrint.aspx

• All claims are subject to review and may not be covered under Workers Compensation unless found compensable under current Worker’s Compensation Statutes.
  – **GO TO A CSU AUTHORIZED TREATING PHYSICIAN WHENEVER POSSIBLE** as initial visit costs will be covered through Workers Compensation even if it is determined that your illness is not work related. If you must go to the ER or an Urgent Care provider for the specific reasons listed above, you and/or your insurance carrier will be responsible for all health care costs for illnesses/injuries that are NOT related to your employment.
  – **However,** in order to assure that medical attention is sought appropriately for potentially work related illnesses, CSU may cover certain out of pocket costs for ER or Urgent Care services that are NOT covered under Colorado Workers’ Compensation Statutes (provided that the requirements of this procedure have been properly followed). In general, such coverage will not exceed $2,000.

• CSU Workers’ Compensation Website: http://www.ehs.colostate.edu/WWorkComp/Home.aspx
When to go to a CSU Authorized Treating Physician

- During regular business hours
  - When you **have a fever**, and you have been in the **BSL-3 barrier in the last 5 days**
  - When you have a **KNOWN exposure** to or an injury **IN Volving TUBERCULOSIS**
  - When you have a minor injury

- When told by the ER, Urgent Care, or Workers’ Compensation to follow up after an Emergency Room or Urgent Care visit

- Due to limitations in Workers’ Compensation coverage for ER or Urgent Care visits, see a CSU Designated Care Provider whenever possible.
  - For details see Workers’ Compensation Procedure in this packet, or “BSL3 Illness Procedures” online at [http://www.ehs.colostate.edu/WBiosafety/Home.aspx](http://www.ehs.colostate.edu/WBiosafety/Home.aspx) under the bar labeled “BSL3 Illness Procedures, Info, and Emergency Response Packets”.
CSU AUTHORIZED TREATING PHYSICIANS

For NON-EMERGENCY incidents

If you go to the Emergency Room, follow-up with one of these providers

A complete list of designated providers can be found at: http://www.ehs.colostate.edu/WWorkComp/HealthContPrint.aspx
University of Colorado Health Occupational Health Services  
4674 Snow Mesa Drive, Suite 200  
Fort Collins, CO  
(970) 495-8450  
Mon-Fri, 7:00am - 6:00pm

FROM FOOTHILLS CAMPUS:  
• Right on Overland trail  
• Left on W. Prospect Rd  
• Left on S. College Ave.  
• Left on Harmony Rd.  
• Right on Snow Mesa Dr  
• Occ Health is on 2nd floor, Suite 200

Approximate drive time is 20 minutes.

FROM MAIN AND SOUTH CAMPUS:  
• South on College Ave.  
• Left on Harmony Rd.  
• Right on Snow Mesa Dr  
• Occupational Health Services is on 2nd floor, Suite 200

Approximate drive time is 15 minutes.
**Workwell Fort Collins**
1600 Specht Point Road, Suite 115  
Fort Collins, CO  
(970) 672-5100  
Mon- Fri, 8:00am - 5:00pm

**Workwell Loveland**
1608 Topaz Drive  
Loveland, CO  
(970) 593-0125  
Mon-Fri, 8:00am - 5:00pm

**FROM FOOTHILLS CAMPUS to Workwell, Fort Collins**
- Turn Right on Overland Trail.  
- Turn Left on W. Prospect Road.  
- Turn Right at Specht Point Drive.  
- Workwell is located on the first floor.  
Approximate drive time is 15 minutes.

**FROM MAIN AND SOUTH CAMPUSES to Workwell, Fort Collins**
- Head East on Prospect Road.  
- Turn Right at Specht Point Drive.  
- Workwell is located on the first floor.  
Approximate drive time is 15 minutes.
When to go to the Emergency Room

• When you have a KNOWN EXPOSURE to a BSL-3 infectious agent (other than Tuberculosis)

• When you have a major injury

• **WHEN A CSU AUTHORIZED TREATING PROVIDER IS CLOSED** and you have a fever within 5 days of being in the BSL-3 barrier and/or have symptoms associated with disease due to pathogens worked with.
  
  – IF YOU GO TO THE EMERGENCY ROOM OR URGENT CARE AND ARE DIRECTED TO DO SO, YOU MUST FOLLOW UP WITH ONE OF THE CSU AUTHORIZED TREATING PHYSICIAN THE NEXT BUSINESS DAY.

• Complete list: [http://www.ehs.colostate.edu/WWorkComp/Home.aspx](http://www.ehs.colostate.edu/WWorkComp/Home.aspx)

• If you go to the Emergency Room or Urgent Care, it is your responsibility to follow up by providing them with your Workers’ Compensation claim number and billing information:
  
  P.O. Box 4998
  Greenwood Village, CO 80155
  Phone: (303) 804-2000
  Fax: (303) 804-2005
  Toll-Free: (888) 428-4671
Emergency Room Directions

Please do not drive yourself. Have someone take you. Contact Biosafety if you need a ride. 491-0270
EMERGENCY ROOM NEAREST TO CSU

Go to Emergency Room closest to you

Poudre Valley Hospital
Emergency Dept (Colorado Health Medical Group)
1024 South Lemay Ave
Fort Collins, CO
(970) 495-7000
24 hours, 7 days per week

FROM FOOTHILLS CAMPUS
• Turn Left on Overland Trail
• Turn Right on W. Mulberry Street
• Turn Right on Riverside Avenue
• Turn Right at S. Lemay Avenue
• Hospital is on the East side of the road.

FROM MAIN AND SOUTH CAMPUSES
• Head East on Prospect or Drake
• Turn Left at Lemay Avenue
• Hospital is on the East side of the road.

Approximate drive time is 15 minutes.

Approximate drive time is 10 minutes.
Poudre Valley Hospital Harmony

URGENT CARE

Go to an Urgent Care closest to you

FROM FOOTHILLS CAMPUS
• Turn Left on Overland Trail
• Turn Right on Mulberry Ave
• Turn Right on Riverside Ave
• Turn Left on E. Prospect Rd
• Turn Right on Timberline Rd
• Turn Left on E. Harmony Rd
• Facility is on the South side of Harmony Road
• Follow signs to Urgent Care

Approximate drive time is 21 minutes

FROM MAIN AND SOUTH CAMPUSSES
• Head East on Prospect Rd
• Turn Right on Timberline Rd
• Turn Left on E. Harmony Rd
• Facility is on the South side of Harmony Road
• Follow signs to Urgent Care

Approximate drive time is 20 minutes

PVHs Harmony Urgent Care
2127 E. Harmony Road
Daily, 8 a.m. to 8 p.m.
(970) 297-6250
# Biosafety Incident Report Form

**THIS IS NOT A WORKERS’ COMPENSATION INCIDENT REPORT FORM**

If this is an injury, have you filled out a workers’ compensation form?  □ Yes  □ No

## Personal Information

<table>
<thead>
<tr>
<th>Date:</th>
<th>CSU ID:</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Name:</td>
<td>Last Name:</td>
</tr>
<tr>
<td>Email:</td>
<td>Phone Number:</td>
</tr>
<tr>
<td>Alt. Phone Number:</td>
<td></td>
</tr>
</tbody>
</table>

## Emergency Contact Information

<table>
<thead>
<tr>
<th>Name:</th>
<th>Phone #:</th>
<th>Alt. Phone #:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
<td>Phone #:</td>
<td>Alt. Phone #:</td>
</tr>
</tbody>
</table>

## Incident Information

- Pathogen working with:  
- Does the pathogen contain recombinant DNA or synthetic nucleic acid molecules?  □ Yes  □ No
- Location (building, room):  
- Time of Incident:  
- Incident Type (exposure, physical injury, etc.):  
- Incident Description (Provide as much detail as possible and list external events that may have contributed to the incident):
<table>
<thead>
<tr>
<th>Method and Location of Injury</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>✣ Needlestick</td>
<td></td>
</tr>
<tr>
<td>✣ Blood or body fluids</td>
<td></td>
</tr>
<tr>
<td>✣ Spill</td>
<td></td>
</tr>
<tr>
<td>✣ Aerosol</td>
<td></td>
</tr>
<tr>
<td>✣ Animal Bite/Scratch</td>
<td></td>
</tr>
<tr>
<td>✣ Necropsy</td>
<td></td>
</tr>
<tr>
<td>✣ Broken glass</td>
<td></td>
</tr>
<tr>
<td>✣ Sharps Container</td>
<td></td>
</tr>
<tr>
<td>✣ Other (describe)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Action(s) taken to control incident (e.g. hand washing, spill clean-up, etc.):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Personal Protective Equipment (PPE) Worn at time of Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>✣ Scrubs</td>
</tr>
<tr>
<td>✣ Surgical gown</td>
</tr>
<tr>
<td>✣ N-95 respirator mask</td>
</tr>
<tr>
<td>✣ Gloves</td>
</tr>
<tr>
<td>✣ Hair Cover</td>
</tr>
<tr>
<td>✣ Tyvek</td>
</tr>
<tr>
<td>✣ PAPR</td>
</tr>
<tr>
<td>✣ Face Shield</td>
</tr>
<tr>
<td>✣ Goggles</td>
</tr>
<tr>
<td>✣ Shoes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Was there a PPE failure?</th>
</tr>
</thead>
<tbody>
<tr>
<td>If yes, explain:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
**Bussuquara Virus**

Principal investigators are responsible for communicating this information to staff working with or around this agent, and for mitigation of associated risks. This document is not intended to be used as a sole source for diagnosis, medical treatment, or medical advice. Consult a CSU Authorized Treating Physician for concerns about work related medical conditions.

**CONTAINMENT AND SPECIAL PRECAUTIONS**

**Containment:**
- **Containment: BSL-2** level practices, containment equipment, and facilities are recommended for infectious or potentially infected materials, animals, or cultures
- BSL-3 level practices, containment equipment and facilities are recommended for work with infectious or potentially infected arthropods.

**Special considerations:**
- Mosquito-borne virus

**HAZARD IDENTIFICATION**

**Disease:** Bussuquara fever

**Transmission:** Mosquito bite

**Incubation:** unknown

**Infectious dose:** unknown

**VIABILITY/INACTIVATION**

**Inactivation:**
- Autoclave sensitive
- 1% bleach (500 ppm available sodium hypochlorite), 70% ethanol, 2% glutaraldehyde, organic solvents, detergents

**MEDICAL**

**Signs and symptoms:**
- A single clinical self-limiting human infection has been reported, with symptoms including:
  - Fever
  - Anorexia
  - Joint pain
  - Chills
  - Profuse sweating
  - Restlessness

**Pre-exposure prophylaxis:**
None

**Diagnosis:**
Serum testing at day of exposure and day 14 to check for 4-fold rise in antibody titer
Post-exposure prophylaxis:
- Treatment is supportive and symptomatic

Treatment of clinical cases:
- Treatment of symptoms

WHAT TO DO IF AN EXPOSURE OCCURS

Employees, Graduate Students, Work Study
1. Employee notifies Biosafety (970-491-0270) and/or Occupational Health Program Coordinator (970-420-8172) to inform where medical attention will be sought and if transportation is needed
   - The Principal Investigator/Supervisor must also be notified
2. Employee goes to Emergency Room
3. After the Emergency Room visit, individual fills out the following forms:
   - Workers’ Compensation (within 4 days or as soon as possible): http://www.ehs.colostate.edu/WWorkComp/Home.aspx
4. Employee follows up with CSU Authorized Treating Physician

Student Not Paid by CSU
1. Contact supervisor/PI
2. Student or supervisor contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Student goes to CSU Health Network (formerly Hartshorn Health Services)

Volunteers and Visitors
1. Contact supervisor/PI
2. Contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Individual goes to their personal physician, or as otherwise directed by their physician

REFERENCES
- Zoonoses: infectious diseases transmitted from animals to humans by H. Krauss (Available at http://estore.asm.org/viewItemDetails.asp?ItemID=318)

CONTENT REVIEW
This document has been reviewed by:
- CSU subject matter expert: Dr. Carol Blair
Chikungunya Virus

Principal investigators are responsible for communicating this information to staff working with or around this agent, and for mitigation of associated risks. This document is not intended to be used as a sole source for diagnosis, medical treatment, or medical advice. Consult a CSU Authorized Treating Physician for concerns about work related medical conditions.

CONTAINMENT AND SPECIAL PRECAUTIONS

Containment
- BSL-3 level practices, containment equipment and facilities are required for infectious or potentially infected materials, animals, cultures, or insects

Special considerations:
- Mosquito-borne virus
- Transmission to fetus rare, may cause abortion in first trimester

HAZARD IDENTIFICATION

Disease: Chikungunya fever

Transmission: Mosquito bite, aerosol transmission in laboratory

Communicability: Limited evidence for vertical transmission (mother to infant in womb)

Incubation: 2-12 days

Infectious dose: unknown

VIABILITY/INACTIVATION

Inactivation:
- Autoclave sensitive
- 1% bleach (500 ppm available sodium hypochlorite), 70% ethanol, 2% glutaraldehyde, organic solvents, detergents

MEDICAL

Signs and symptoms:
- Self-limiting fever
- Arthralgia (joint pain)
- Arthritis in knee, joints and ankle
- Rash
- Nausea and vomiting
- Eruption of mucous surfaces

Pre-exposure prophylaxis:
None
Diagnosis:
- Serology – testing serum to detect virus-specific IgM and IgG
- Serum taken:
  - Day of exposure and 10-14 days later to detect 4-fold rise in titer

Treatment
Post-exposure prophylaxis:
- Supportive care

Treatment of clinical cases:
- Treatment is supportive and symptomatic

WHAT TO DO IF AN EXPOSURE OCCURS

Employees, Graduate Students, Work Study
1. Employee notifies Biosafety (970-491-0270) and/or Occupational Health Program Coordinator (970-420-8172) to inform where medical attention will be sought and if transportation is needed
   - The Principal Investigator/Supervisor must also be notified
2. Employee goes to Emergency Room
3. After the Emergency Room visit, individual fills out the following forms:
   - Workers’ Compensation (within 4 days or as soon as possible): http://www.ehs.colostate.edu/WWorkComp/Home.aspx
4. Employee follows up with CSU Authorized Treating Physician

Student Not Paid by CSU
1. Contact supervisor/PI
2. Student or supervisor contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Student goes to CSU Health Network (formerly Hartshorn Health Services)

Volunteers and Visitors
1. Contact supervisor/PI
2. Contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Individual goes to their personal physician, or as otherwise directed by their physician

REFERENCES
- CDC Web Page: http://www.cdc.gov/chikungunya/
- WHO Fact Sheet: http://www.who.int/mediacentre/factsheets/fs327/en/
**Disclaimer**
This document is for informational purposes ONLY. This document should not be used in lieu of professional medical attention, and medical professionals should seek appropriate resources for diagnosis and treatment.**

WHO Guidelines on Clinical Management:
http://www.wpro.who.int/mvp/topics/ntd/Clinical_Mgmt_Chikungunya_WHO_SEARO.pdf

**CONTENT REVIEW**
This document has been reviewed by:
- CSU subject matter expert: Dr. Carol Blair
Dengue Virus Types 1-4

Principal investigators are responsible for communicating this information to staff working with or around this agent, and for mitigation of associated risks. This document is not intended to be used as a sole source for diagnosis, medical treatment, or medical advice. Consult a CSU Authorized Treating Physician for concerns about work related medical conditions.

CONTAINMENT AND SPECIAL PRECAUTIONS

Containment:
- BSL-2 level practices, containment equipment and facilities are recommended for infectious or potentially infected materials, animals, or cultures
- BSL-3 level practices, containment equipment and facilities are required for work with infectious or potentially infected arthropods.

Special considerations:
- Mosquito-borne viruses

HAZARD IDENTIFICATION

Disease: Dengue fever, dengue hemorrhagic fever, dengue shock syndrome

Transmission: Mosquito bite

Incubation: 3-14 days, usually 4-7 days

Infectious dose: unknown

VIABILITY/INACTIVATION

Inactivation:
- Autoclave sensitive
- 1% bleach (500 ppm available sodium hypochlorite), 70% ethanol, 2% glutaraldehyde organic solvents, detergents

MEDICAL

Signs and symptoms:
- Dengue fever
  - Fever
  - Severe headache
  - Severe pain behind the eyes
  - Joint pain
  - Muscle and bone pain
  - Rash
  - Mild bleeding from the nose or gums
  - Leukopenia
- Dengue hemorrhagic fever
  - Fever lasting 2-7 days
  - Sweatiness; cold and clammy extremities
- Ecchymosis (purple coloring of the skin from subcutaneous hematoma) and petechia (pinpoint size hemorrhages)
- Vomiting blood
- Severe abdominal pain
- Difficulty breathing
- Capillary leaking into peritoneum and pleural cavities
- Circulatory system failure
- Shock
- Plasma leakage
- Dengue shock syndrome

Pre-exposure prophylaxis:

NONE – no vaccine currently approved for use

Diagnosis:

- Serology – MAC-ELISA – detect IgM antibodies for all four serotypes, IgG ELISA – detect specific antibodies elicited by dengue infection, Plaque reduction neutralization test
- Serum taken:
  - Day of exposure and 12-14 days later to detect 4-fold rise in antibody titer, also 0 to 5 days after symptoms occur for MAC-ELISA,
- RT-PCR (FDA approved -CDC DENV-1-4 Real-Time RT-PCR Assay) for virus RNA detection and typing
- Virus isolation from serum during first 5 days after onset of symptoms

```
1 day 2 3 4 5 6 7 8 9 14 3 months 3 years

Virus isolation

Onset of symptom

IgM detection

IgG detection

www.CDC.gov
```

Treatment

Post-exposure prophylaxis:
- Supportive care with daily monitoring

Treatment of clinical cases:
- Treatment of symptoms, hydration, replacement of plasma losses
WHAT TO DO IF AN EXPOSURE OCCURS

Employees, Graduate Students, Work Study
1. Employee notifies Biosafety (970-491-0270) and/or Occupational Health Program Coordinator (970-420-8172) to inform where medical attention will be sought and if transportation is needed
   • The Principal Investigator/Supervisor must also be notified
2. Employee goes to Emergency Room
3. After the Emergency Room visit, individual fills out the following forms:
   • Biosafety Incident report form: http://www.ehs.colostate.edu/WBiosafety/PDF/IncidentReportForm.pdf
   • Workers’ Compensation (within 4 days or as soon as possible): http://www.ehs.colostate.edu/WWorkComp/Home.aspx
4. Employee follows up with CSU Authorized Treating Physician

Student Not Paid by CSU
1. Contact supervisor/PI
2. Student or supervisor contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Student goes to CSU Health Network (formerly Hartshorn Health Services)

Volunteers and Visitors
1. Contact supervisor/PI
2. Contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Individual goes to their personal physician, or as otherwise directed by their physician

Volunteers and Visitors
5. Contact supervisor/PI
6. Contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
7. Individual goes to their personal physician, or as otherwise directed by their physician

REFERENCES
• BMBL: http://www.cdc.gov/biosafety/publications/bmbl5/BMBL.pdf
• CDC Case Definition: http://www.cdc.gov/dengue/clinicalLab/caseDef.html
• CDC Laboratory Guidance for Testing: http://www.cdc.gov/dengue/clinicalLab/laboratory.html
• http://www.cdc.gov/Dengue/clinicalLab/index.html

Page 3 of 4
Colorado State University  Environmental Health Services Biosafety Office  (970) 491-0270
Updated 2013

**Disclaimer** This document is for informational purposes ONLY. This document should not be used in lieu of professional medical attention, and medical professionals should seek appropriate resources for diagnosis and treatment.**
CONTENT REVIEW
This document has been reviewed by:

- CSU subject matter expert: Dr. Carol Blair

Encephalitis Viruses

Japanese Encephalitis Virus (JE)

Western Equine Encephalitis (WEE)

Venezuelan Equine Encephalitis (VEE)

Eastern Equine Encephalitis (EEE)

Principal investigators are responsible for communicating this information to staff working with or around this agent, and for mitigation of associated risks. This document is not intended to be used as a sole source for diagnosis, medical treatment, or medical advice. Consult a CSU Authorized Treating Physician for concerns about work related medical conditions.

CONTAINMENT AND SPECIAL PRECAUTIONS

Containment
- BSL-3 Level practices, containment equipment and facilities are required for work involving potentially infected materials, animals, cultures, or mosquitoes.

Special considerations:
- North American strains of EEE virus and some epizootic subtypes (IAB and IC) of VEE virus are Select Agents
- Arthropod-borne disease
- Can cross placenta

HAZARD IDENTIFICATION

Disease: Encephalomyelitis

Transmission: infected mosquitoes, aerosol transmission of VEE and WEE viruses, natural person to person spread not reported, no human to mosquito transmission for WEE and EEE virus, but can happen in VEE virus up to 72 hours post-infection, VEE virus known to cross the placenta and this may also occur with the other viruses.

Incubation: 1-6 days (VEE) 5-15 days (JE, WEE and EEE)

Infectious dose: VEE – 1 pfu, JE, WEE and EEE – unknown

VIABILITY/INACTIVATION

Stability: Stable in blood, exudates, and freeze dried materials (VEE), can survive over winter in mosquito eggs (JEE)

Chemical Inactivation: Like most enveloped viruses, susceptible to 1% bleach (500 ppm available sodium hypochlorite), 2% glutaraldehyde, 3-8% Formaldehyde, quaternary compounds and phenolics. JEE and VEE are susceptible to 70% ethanol. EEE is inactivated after 60 minutes exposure to 50% ethanol.

Physical Inactivation: Sensitive to autoclave and drying
MEDICAL

Signs and symptoms:

EASTERN EQUINE ENCEPHALITIS

- Fever
- Chills
- Myalgia (muscle pain)
- Arthralgia (joint pain)
- Headache
- Irritability
- Neck stiffness
- Confusion
- Stupor
- Disorientation
- Tremors
- Seizures
- Paralysis
- Coma
- Abdominal pain
- Vomiting and diarrhea
- Symptoms subside in 1-2 weeks

JAPANESE ENCEPHALITIS

- Fever
- Headache
- Stupor
- Disorientation
- Coma
- Tremors/Seizures
- Paralysis
- Diarrhea
- Myalgia (muscle pain)

WESTERN EQUINE ENCEPHALITIS (similar signs as EASTERN EQUINE ENCEPHALITIS)

- Fever
- Chills
- Myalgia (muscle pain); back pain
- Malaise (discomfort)
- headache
- Nausea, vomiting
- Diarrhea, abdominal pain
- Respiratory symptoms
- Symptoms subside in 1-2 weeks

VENEZUELAN EQUINE ENCEPHALITIS

- Fever
- Chills
- Malaise (discomfort)
- Myalgia (muscle pain)
- Severe headache
- Encephalitis
- Coughing
- Sore throat
- Nausea, vomiting
- Diarrhea
- Symptoms subside in 4-6 days

Pre-exposure prophylaxis:

- JE: Vaccine readily available, although there are no data demonstrating vaccine efficacy post needle stick or aerosol exposure.
- EEV, VEE, and WEE- May be available under certain circumstances through USAMRIID

Diagnosis:

- In all cases, Serum is taken on day of exposure, and 10-14 days post infection to detect 4-fold rise in titer.
- EEE: Isolated in A549 and MRC-5 cell cultures. Antigens detected by immunofluorescence and ELISA. Nucleic acid detected by RT-PCR.
- WEE: Throat swabs can be cultured. Viral isolation in embryonated eggs (Vero cell plaque assay). Also, detection methods similar to EEE.
• VEE: Viral isolation from blood, CSF and throat swabs. During febrile stage, antigen capture ELISA can detect VEE in the blood. Also, detection methods similar to EEE and WEE.

• JE: Similar to EEE, WEE and VEE

Treatment (Post-Exposure Prophylaxis/Treatment):
• Treatment is supportive and symptomatic

WHAT TO DO IF AN EXPOSURE OCCURS

Employees, Graduate Students, Work Study
1. Employee notifies Biosafety (970-491-0270) and/or Occupational Health Program Coordinator (970-420-8172) to inform where medical attention will be sought and if transportation is needed
   • The Principal Investigator/Supervisor must also be notified
2. Employee goes to Emergency Room
3. After the Emergency Room visit, individual fills out the following forms:
   • Biosafety Incident report form: http://www.ehs.colostate.edu/WBiosafety/PDF/IncidentReportForm.pdf
   • Workers’ Compensation (within 4 days or as soon as possible): http://www.ehs.colostate.edu/WWorkComp/Home.aspx
4. Employee follows up with CSU Authorized Treating Physician

Student Not Paid by CSU
1. Contact supervisor/PI
2. Student or supervisor contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Student goes to CSU Health Network (formerly Hartshorn Health Services)

Volunteers and Visitors
1. Contact supervisor/PI
2. Contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Individual goes to their personal physician, or as otherwise directed by their physician

REFERENCES
• CDC General Information: http://www.cdc.gov/ncidod/dvbid/jencephalitis/qa.htm
• Iowa State University Technical Fact Sheet, Eastern, Western, Venezuelan: http://www.cfsph.iastate.edu/Factsheets/pdfs/easter_wester_venezuelan_equine_encephalomyelitis.pdf
• Iowa State University Technical Fact Sheet, Japanese: http://www.cfsph.iastate.edu/Factsheets/pdfs/japanese_encephalitis.pdf


**CONTENT REVIEW**

This document has been reviewed by:

- CSU subject matter experts: Dr. Richard Bowen

**Disclaimer**

This document is for informational purposes ONLY. This document should not be used in lieu of professional medical attention, and medical professionals should seek appropriate resources for diagnosis and treatment.**
Hantaviruses
(Maporal, El Moro Canyon, Sin Nombre, Andes, Hantaan, Seoul viruses)

Principal investigators are responsible for communicating this information to staff working with or around this agent, and for mitigation of associated risks. This document is not intended to be used as a sole source for diagnosis, medical treatment, or medical advice. Consult a CSU Authorized Treating Physician for concerns about work related medical conditions.

CONTAINMENT AND SPECIAL PRECAUTIONS

Containment:

- **Maporal, Hantaan and Seoul viruses**
  - BSL-3 practices, containment equipment and facilities are required for infectious or potentially infected materials, animals, cultures. PAPR is required while working with infectious or potentially infections materials and animals.

- **Sin Nombre and Andes viruses**
  - BSL-3 practices, containment equipment and facilities are required for infectious or potentially infected materials and cultures. PAPR is required while working with infectious or potentially infections materials and animals.
  - BSL-4 practices are required for infectious or potentially infected animals.

- **El Moro Canyon virus**
  - BSL-2 practices, containment equipment and facilities are required for infectious or potentially infected materials and cultures.
  - BSL-3 practices, containment equipment and facilities are required for infectious or potentially infected animals. PAPR is required while working with infectious or potentially infections materials and animals.

HAZARD IDENTIFICATION

**Diseases:** Hantavirus (cardio) pulmonary syndrome, hemorrhagic fever with renal syndrome

**Transmission:** Inhalation of aerosolized rodent urine or feces, contact of infectious materials with mucous membranes, broken skin and via bites of infected animals.

**Communicability:** Person to person transmission not documented in the United States. One outbreak of human to human transmission of Andes virus has been recorded, and was potentially due to close contact with infectious saliva or respiratory aerosols.

**Incubation:** 3-60 days; 1-2 weeks after exposure for hemorrhagic fever with renal syndrome; typically 1-5 weeks for hantavirus cardiopulmonary syndrome.

**Infectious dose:** unknown
VIABILITY/INACTIVATION

Inactivation:
- Autoclave sensitive
- 1% sodium hypochlorite (500 ppm available sodium hypochlorite), 70% ethanol (30 minute contact time), 1-5% Clidox (chlorine dioxide), 1-5% Dettol (parachlorometaxylenol), 1-5% Halamid-d (sodium-p-toluene-sulfonchloramide), 1-5% peracetic acid, or Virkon (10 minute contact time), absolute methanol (10 minute contact time).

MEDICAL

Signs and symptoms:
- **El Moro Canyon and Maporal hantaviruses** have not been associated with human disease, but are highly infectious in rodent populations and genetically similar to Sin Nombre and Andes viruses.
- **Hemorrhagic fever with renal syndrome (Hantaan, Seoul viruses)**
  - Fever
  - Chills
  - Headache
  - Backache
  - Nausea
  - Vomiting
  - Abdominal pain
  - Conjunctivitis
  - Rash
  - Shock
  - Flushing of face
  - Inflamed, red eyes
  - Renal failure
  - Hypertension (high blood pressure)
- **Hantavirus cardiopulmonary syndrome (Sin Nombre, Andes viruses)**
  - Fever
  - Myalgia (muscle pain, particularly lower back)
  - Headache
  - Chills
  - Dizziness
  - Malaise (discomfort)
  - Lightheadedness
  - Nausea
  - Vomiting
  - Diarrhea
  - Arthralgia (joint pain)
  - Respiratory distress

Pre-exposure prophylaxis:
- **NONE** – no vaccine currently approved for use in US

Diagnosis:
- Serology – presence of IgM or increase in IgG hantavirus specific antibody in serum or cerebrospinal fluid; ELISA, immunoblotting, immunofluorescent antibody test, virus neutralization
- Hematology – Platelet count lower than 100,000/mm³ (thrombocytopenia)
- Serum taken:
  - Day of exposure, and 10-14 days post infection to detect 4-fold rise in titer
- RT-PCR

Treatment:
- **Post-exposure prophylaxis:**
  - Supportive care with careful monitoring
- **Treatment of clinical cases:**
  - Supportive care and management of hydration, electrolyte, oxygen and blood pressure levels
WHAT TO DO IF AN EXPOSURE OCCURS

Employees, Graduate Students, Work Study
1. Employee notifies Biosafety (970-491-0270) and/or Occupational Health Program Coordinator (970-420-8172) to inform where medical attention will be sought and if transportation is needed
   • The Principal Investigator/Supervisor must also be notified
2. Employee goes to Emergency Room
3. After the Emergency Room visit, individual fills out the following forms:
   • Biosafety Incident report form: http://www.ehs.colostate.edu/WBiosafety/PDF/IncidentReportForm.pdf
   • Workers’ Compensation (within 4 days or as soon as possible): http://www.ehs.colostate.edu/WWorkComp/Home.aspx
4. Employee follows up with CSU Authorized Treating Physician

Student Not Paid by CSU
1. Contact supervisor/PI
2. Student or supervisor contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Student goes to CSU Health Network (formerly Hartshorn Health Services)

Volunteers and Visitors
1. Contact supervisor/PI
2. Contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Individual goes to their personal physician, or as otherwise directed by their physician

REFERENCES

• CDC Information on Hantavirus Pulmonary Syndrome (HPS): http://www.cdc.gov/hantavirus/hps/index.html
• CDC Hantavirus Information for Health Care Workers: http://www.cdc.gov/hantavirus/health-care-workers/
• CDC General Information: http://www.cdc.gov/ncidod/diseases/hanta/hps/noframes/generalinfoindex.htm
• Iowa State University Technical Sheet: http://www.cfsph.iastate.edu/Factsheets/pdfs/hantavirus.pdf
• MSDSonline: http://www.msdsonline.com/resources/msds-resources/free-safety-data-sheet-index/hantavirus.aspx

CONTENT REVIEW

This document has been reviewed by:
• CSU subject matter expert: Dr. Tony Schountz

**Disclaimer** This document is for informational purposes ONLY. This document should not be used in lieu of professional medical attention. Medical professionals should seek appropriate resources for diagnosis and treatment.**
**La Crosse Virus**

Principal investigators are responsible for communicating this information to staff working with or around this agent, and for mitigation of associated risks. This document is not intended to be used as a sole source for diagnosis, medical treatment, or medical advice. Consult a CSU Authorized Treating Physician for concerns about work related medical conditions.

**CONTAINMENT AND SPECIAL PRECAUTIONS**

**Containment:**
- BSL-2 practices, containment equipment and facilities are recommended for infectious or potentially infected materials, animals, or cultures.
- BSL-3 practices, containment equipment and facilities are recommended for work involving arthropods and/or potentially producing aerosols

**Special considerations:**
- Mosquito-borne virus

**HAZARD IDENTIFICATION**

**Disease:** La Crosse encephalitis

**Transmission:** mosquito bite

**Incubation:** 5-15 days

**Infectious dose:** unknown

**VIABILITY/INACTIVATION**

**Inactivation:**
- 1% sodium hypochlorite (500 ppm available sodium hypochlorite), 70% ethanol, organic solvents, detergents

**MEDICAL**

**Signs and symptoms:**
- Fever lasting 2-3 days
- Headache
- Nausea
- Vomiting
- Fatigue
- Lethargy
- Severe neuroinvasive disease can occur in children under the age of 16

**Pre-exposure prophylaxis:**
None

**Diagnosis:**
Testing serum taken at day of exposure and day 14 to check for 4-fold rise in antibody titer.
Treatment:

Post-exposure prophylaxis:
- Supportive care

Treatment of clinical cases:
- Treatment is supportive and symptomatic

WHAT TO DO IF AN EXPOSURE OCCURS

Employees, Graduate Students, Work Study
1. Employee notifies Biosafety (970-491-0270) and/or Occupational Health Program Coordinator (970-420-8172) to inform where medical attention will be sought and if transportation is needed
   - The Principal Investigator/Supervisor must also be notified
2. Employee goes to Emergency Room
3. After the Emergency Room visit, individual fills out the following forms:
   - Workers’ Compensation (within 4 days or as soon as possible): [http://www.ehs.colostate.edu/WWorkComp/Home.aspx](http://www.ehs.colostate.edu/WWorkComp/Home.aspx)
4. Employee follows up with CSU Authorized Treating Physician

Student Not Paid by CSU
1. Contact supervisor/PI
2. Student or supervisor contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Student goes to CSU Health Network (formerly Hartshorn Health Services)

Volunteers and Visitors
1. Contact supervisor/PI
2. Contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Individual goes to their personal physician, or as otherwise directed by their physician

REFERENCES

CONTENT REVIEW
This document has been reviewed by:
- CSU subject matter expert: Dr. Carol Blair
**Middle East Respiratory Syndrome Virus (MERS-CoV, Formerly Human Coronavirus Erasmus)**

Principal investigators are responsible for communicating this information to staff working with or around this agent, and for mitigation of associated risks. This document is not intended to be used as a sole source for diagnosis, medical treatment, or medical advice. Consult a CSU Authorized Treating Physician for concerns about work related medical conditions.

**CONTAINMENT AND SPECIAL PRECAUTIONS**

**Containment**
- BSL-3 and ABSL-3 Level practices, containment equipment and facilities are required for work involving virus culture and isolation, laboratory manipulation of virus stocks, and all work involving animals. All work with exposed animals or manipulation of virus in vitro will require use of a PAPR for respiratory protection.

**Special considerations:**
- **Healthcare:** There is very limited information on transmission, severity and clinical impact of this newly emerged coronavirus. Until transmission is better understood, it is recommended that patients under investigation and probable and confirmed cases should be managed according to CDC’s infection control recommendations for the coronavirus that caused SARS per Appendix A of the 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings (http://www.cdc.gov/hicpac/2007ip/2007isolationprecautions.html) and CDC’s Appendix 1, Supplement I of Public Health Guidance for Community-Level Preparedness and Response to SARS (http://www.cdc.gov/sars/guidance/I-infection/app1.html) which include:
  - Prioritized placement into a single patient room, with preference for Airborne Infection Isolation Room
  - Droplet Precautions are recommended in addition to Standard Precautions, and Airborne Precautions should be used for aerosol generating procedures.
  - Appropriate use of PPE:
    - Laboratory coat or gown and gloves are recommended during procedures and patient-care that might result in contact of clothing/exposed skin with blood/body fluids, secretions.
    - In addition, eye protection, particulate N95 masks or equivalent during procedures and patient-care likely to generate splashes or sprays of blood, body fluids, or secretions.
  - Vigilant environmental disinfection is recommended per http://www.cdc.gov/hicpac/Disinfection_Sterilization/3_2contaminatedDevices.html

**VIABILITY/INACTIVATION**

**Inactivation:**
- Autoclave sensitive
- Studies with SARS indicates effective disinfection after 1-minute contact time with 10% household bleach (5,000 ppm available sodium hypochlorite), 70% ethyl alcohol, and povidone-iodine (1% iodine)

**Stability:**
- Not specifically known, however, the closely related SARS-CoV is infectious in solution for up to 9 days, and 24 hours to 6 days in the dried state, and is heat labile.

**HAZARD IDENTIFICATION**

**Transmission:** At least one strain has the potential for a broad host range, indicating potential for zoonotic and human-to-human transmission.
**Communicability:** Unclear. May have originated from bats, and zoonotic infection and human-to-human transmission is a possibility.

**Incubation:** Unknown. The incubation period for SARS is usually 2-7 days with approximately 95% of patients developing symptoms within 10 days.

**Infectious dose:** Unknown

**MEDICAL**

**Signs and symptoms:**
- Symptoms have not yet been comprehensively defined, and may be similar to SARS, including prodromal symptoms of fever, myalgias and headache for the first 3 – 7 days followed by respiratory symptoms including non-productive cough. Dyspnea may follow and may progress to respiratory failure.
- CDC requests that state and local health departments report patients under investigation for infection to CDC. Severity of symptoms may vary, ranging from flu-like to symptoms to those for severe acute respiratory syndrome (SARS):
  - Criteria for investigation of infection can be found at [http://www.cdc.gov/coronavirus/ncv/case-def.html](http://www.cdc.gov/coronavirus/ncv/case-def.html) and include:
    - Acute respiratory infection, which may include fever and cough, AND
    - Suspicion of pulmonary parenchymal disease (e.g. pneumonia or acute respiratory distress), AND
    - Symptoms not already explained by any other infection or etiology, including all clinically indicated tests for community acquired pneumonia

**Pre-exposure prophylaxis:**
- None

**Medical Surveillance and Occupational Health:**
- Before the initiation of work involving HuCov EMC, personnel shall be enrolled in the CSU Occupational Health Medical Surveillance Program; and be appropriately trained and proficient in specific laboratory and safety practices for the work being performed.
- Personnel working with HuCov EMC should immediately contact their supervisor in the event of exposure or development of respiratory symptoms
  - Exposures: The procedure outlined below should be followed for exposures
  - Symptoms: If symptoms consistent with the above description occur, then personnel should seek medical attention from a CSU Authorized Treating Physician, per the CSU Illness Procedure:

**Diagnosis:**
- To increase likelihood of detection, it is recommended that multiple specimens are collected from different sites.
- Lower respiratory tract and stool specimens should be considered as priority for collection and testing.
Treatment:

Post-exposure prophylaxis:
- Evaluation and active monitoring for respiratory symptoms as discussed above (in addition to sore throat, rhinorrhea, chills, myalgia, headache) within 10 days of exposure
- Activity restrictions should be discussed with the health department

Treatment of clinical cases:
- No specific treatment is recommended except for meticulous supportive care.

WHAT TO DO IF AN EXPOSURE OCCURS

Employees, Graduate Students, Work Study
1. Employee notifies Biosafety (970-491-0270) and/or Occupational Health Program Coordinator (970-420-8172) to inform where medical attention will be sought and if transportation is needed
   - The Principal Investigator/Supervisor must also be notified
2. Employee goes to Emergency Room
3. After the Emergency Room visit, individual fills out the following forms:
   - Workers’ Compensation (within 4 days or as soon as possible): http://www.ehs.colostate.edu/WWorkComp/Home.aspx
4. Employee follows up with CSU Authorized Treating Physician

Student Not Paid by CSU
1. Contact supervisor/PI
2. Student or supervisor contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Student goes to CSU Health Network (formerly Hartshorn Health Services)

Volunteers and Visitors
1. Contact supervisor/PI
2. Contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Individual goes to their personal physician, or as otherwise directed by their physician

REFERENCES
- CDC disinfection guide (SARS): http://www.cdc.gov/hicpac/Disinfection_Sterilization/3_2contaminatedDevices.html
- CDC infection control guidelines: http://www.cdc.gov/sars/guidance/I-infection/app1.html
- CDC Medical surveillance (SARS): http://www.cdc.gov/sars/guidance/F-lab/app6.html
CONTENT REVIEW

This document has been reviewed by:

- CSU subject matter expert: Dr. Richard Bowen
- CSU Institutional Biosafety Committee Physician: Dr. Joseph Lopez
- Colorado Health Medical Group, Occupational Health (Dr. Tracey Stefanon)

O’ Nyong-Nyong Virus

Principal investigators are responsible for communicating this information to staff working with or around this agent, and for mitigation of associated risks. This document is not intended to be used as a sole source for diagnosis, medical treatment, or medical advice. Consult a CSU Authorized Treating Physician for concerns about work related medical conditions.

CONTAINMENT AND SPECIAL PRECAUTIONS

Containment:
- BSL-2 practices, containment equipment and facilities are recommended for infectious or potentially infected materials, animals, or cultures.
- BSL-3 practices, containment equipment and facilities are recommended for arthropod work

Special considerations:
- Mosquito-borne virus

HAZARD IDENTIFICATION

Disease: Epidemic polyarthritis and rash

Transmission: Mosquito bite, aerosol transmission in research

Incubation: greater than 8 days

Infectious dose: unknown

VIABILITY/INACTIVATION

Inactivation:
- Autoclave sensitive
- 1% sodium hypochlorite (500 ppm available sodium hypochlorite), 70% ethanol, 2% glutaraldehyde, organic solvents, detergents

MEDICAL

Signs and symptoms:
- Typically a Self-limiting febrile viral disease
- Arthralgia (joint pain) or arthritis in the knee, ankle or small joints of the extremities
- Maculopapular (flat red area) rash
- Buccal (cheeks, mouth) and palatal(tongue) enanthema (lesions on the mucous membrane)

Pre-exposure prophylaxis:
None

Diagnosis:
- Testing serum taken at day of exposure and day 14 to check for 4-fold rise in antibody titer.

Treatment:
- Post-exposure prophylaxis:
  - Supportive care
- Treatment of clinical cases:
WHAT TO DO IF AN EXPOSURE OCCURS

Employees, Graduate Students, Work Study

1. Employee notifies Biosafety (970-491-0270) and/or Occupational Health Program Coordinator (970-420-8172) to inform where medical attention will be sought and if transportation is needed
   • The Principal Investigator/Supervisor must also be notified
2. Employee goes to Emergency Room
3. After the Emergency Room visit, individual fills out the following forms:
   • Biosafety Incident report form:
     [http://www.ehs.colostate.edu/WBiosafety/PDF/IncidentReportForm.pdf](http://www.ehs.colostate.edu/WBiosafety/PDF/IncidentReportForm.pdf)
   • Workers’ Compensation (within 4 days or as soon as possible):
     [http://www.ehs.colostate.edu/WWorkComp/Home.aspx](http://www.ehs.colostate.edu/WWorkComp/Home.aspx)
4. Employee follows up with CSU Authorized Treating Physician

Student Not Paid by CSU

1. Contact supervisor/PI
2. Student or supervisor contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Student goes to CSU Health Network (formerly Hartshorn Health Services)
4. After the visit to CSU Health Network, student fills out Biosafety Incident Report form
   [http://www.ehs.colostate.edu/WBiosafety/PDF/IncidentReportForm.pdf](http://www.ehs.colostate.edu/WBiosafety/PDF/IncidentReportForm.pdf)

Volunteers and Visitors

1. Contact supervisor/PI
2. Contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Individual goes to their personal physician, or as otherwise directed by their physician
4. Individual fills out Biosafety Incident Report form
   [http://www.ehs.colostate.edu/WBiosafety/PDF/IncidentReportForm.pdf](http://www.ehs.colostate.edu/WBiosafety/PDF/IncidentReportForm.pdf)

REFERENCES


CONTENT REVIEW

This document has been reviewed by:

- CSU subject matter expert: Dr.Carol Blair
Powassan Virus

Principal investigators are responsible for communicating this information to staff working with or around this agent, and for mitigation of associated risks. This document is not intended to be used as a sole source for diagnosis, medical treatment, or medical advice. Consult a CSU Authorized Treating Physician for concerns about work related medical conditions.

CONTAINMENT AND SPECIAL PRECAUTIONS

Containment
- BSL-3 Level practices, containment equipment and facilities are recommended for potentially infected clinical or experimental tissues, cultures, animals or arthropods.

Special considerations:
- tick borne disease

HAZARD IDENTIFICATION

Disease: Powassan encephalitis

Transmission: ticks, consumption of raw milk

Incubation: 7-14 days

Infectious dose: unknown

VIABILITY/INACTIVATION

Stability: Does not survive outside the host

Physical Inactivation:
- Autoclave sensitive

Chemical Inactivation:
- 1% sodium hypochlorite (500 ppm available sodium hypochlorite, 70% ethanol, 2% gluteraldehyde

MEDICAL

Signs and symptoms:
- Acute inflammatory disease involving the brain, spinal cord, and meninges
- Asymptomatic and mild cases
- Severe infections:
  - Stupor, disorientation, coma, tremors, convulsions, spastic paralysis, neurologic sequelae, death

Pre-exposure prophylaxis:
None

Diagnosis:
Testing serum at day 0 and day 14 to check for antibody.

Treatment (Post-Exposure Prophylaxis/Treatment):
- Treatment is supportive and symptomatic
WHAT TO DO IF AN EXPOSURE OCCURS

Employees, Graduate Students, Work Study

1. Employee notifies Biosafety (970-491-0270) and/or Occupational Health Program Coordinator (970-420-8172) to inform where medical attention will be sought and if transportation is needed
   • The Principal Investigator/Supervisor must also be notified
2. Employee goes to Emergency Room
3. After the Emergency Room visit, individual fills out the following forms:
   • Biosafety Incident report form: http://www.ehs.colostate.edu/WBiosafety/PDF/IncidentReportForm.pdf
   • Workers’ Compensation (within 4 days or as soon as possible): http://www.ehs.colostate.edu/WWorkComp/Home.aspx
4. Employee follows up with CSU Authorized Treating Physician

Student Not Paid by CSU

1. Contact supervisor/PI
2. Student or supervisor contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Student goes to CSU Health Network (formerly Hartshorn Health Services)

Volunteers and Visitors

1. Contact supervisor/PI
2. Contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Individual goes to their personal physician, or as otherwise directed by their physician

REFERENCES

• Handbook of Zoonoses: Viral by George W. Beran (Available at: https://evolve.elsevier.com/cs/product/9780323044783?role=student)
• Public Health Agency of Canada: http://www.phac-aspc.gc.ca/msds-ftss/msds121e-eng.php

CONTENT REVIEW

This document has been reviewed by:
• CSU subject matter expert: Dr. Gregory Ebel
Semliki Forest Virus

Principal investigators are responsible for communicating this information to staff working with or around this agent, and for mitigation of associated risks. This document is not intended to be used as a sole source for diagnosis, medical treatment, or medical advice. Consult a CSU Authorized Treating Physician for concerns about work related medical conditions.

CONTAINMENT AND SPECIAL PRECAUTIONS

**Containment:** BSL-3 Level practices, containment equipment and facilities are recommended for infectious or potentially infected materials, animals, cultures, or mosquitoes.

**Special considerations:**
- Mosquito-borne virus
- Immunocompromised should take caution

HAZARD IDENTIFICATION

**Disease:** Self-limiting and mild

**Transmission:** Mosquito bite, aerosol transmission in laboratory

**Incubation:** unknown

**Infectious dose:** unknown

VIABILITY/INACTIVATION

**Inactivation:**
- Autoclave sensitive
- 1% sodium hypochlorite (500 ppm available sodium hypochlorite), 70% ethanol, organic solvents, detergents

MEDICAL

**Signs and symptoms:**
- Usually asymptomatic or very mild
- When present, symptoms include headache, fever, myalgia (muscle pain)
- Only one fatal case known. Patient was immunocompromised, suffered encephalitis due to a laboratory exposure to high concentration of virus.

**Pre-exposure prophylaxis:**
None

**Diagnosis:**
Unknown

**Treatment:**

**Post-exposure prophylaxis:**
- Supportive care

**Treatment of clinical cases:**
- Treatment is supportive and symptomatic
WHAT TO DO IF AN EXPOSURE OCCURS

Employees, Graduate Students, Work Study

1. Employee notifies Biosafety (970-491-0270) and/or Occupational Health Program Coordinator (970-420-8172) to inform where medical attention will be sought and if transportation is needed
   • The Principal Investigator/Supervisor must also be notified
2. Employee goes to Emergency Room
3. After the Emergency Room visit, individual fills out the following forms:
   • Biosafety Incident report form: http://www.ehs.colostate.edu/WBiosafety/PDF/IncidentReportForm.pdf
   • Workers' Compensation (within 4 days or as soon as possible): http://www.ehs.colostate.edu/WWorkComp/Home.aspx
4. Employee follows up with CSU Authorized Treating Physician

Student Not Paid by CSU

1. Contact supervisor/PI
2. Student or supervisor contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Student goes to CSU Health Network (formerly Hartshorn Health Services)

Volunteers and Visitors

1. Contact supervisor/PI
2. Contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Individual goes to their personal physician, or as otherwise directed by their physician

REFERENCES

• BMBL: http://www.cdc.gov/biosafety/publications/bmbl5/BMBL.pdf
• Atkins, Gregory J., B. J. Sheanan and P. Liljestrom. (1999). The molecular pathogenesis of Semliki Forest Virus: a model virus made useful? Journal of General Virology, 80, 2287-2297 (http://vir.sgmjournals.org/content/80/9/2287.full)

CONTENT REVIEW

This document has been reviewed by:

• CSU subject matter expert: Dr. Carol Blair
**Sindbis Virus**

Principal investigators are responsible for communicating this information to staff working with or around this agent, and for mitigation of associated risks. This document is not intended to be used as a sole source for diagnosis, medical treatment, or medical advice. Consult a CSU Authorized Treating Physician for concerns about work related medical conditions.

**CONTAINMENT AND SPECIAL PRECAUTIONS**

Containment:
- BSL-2 practices, containment equipment and facilities are recommended for infectious or potentially infected materials, animals, or cultures.
- BSL-3 practices, containment equipment and facilities are recommended for insect work

Special considerations:
- Mosquito-borne virus

**HAZARD IDENTIFICATION**

Disease: Epidemic polyarthritis and rash

Transmission: Mosquito bite

Incubation: less than 7 days

Infectious dose: unknown

**VIABILITY/INACTIVATION**

Stability: Survives at room temperature in blood for up to 2 days.

Inactivation:
- Autoclave sensitive
- 1% sodium hypochlorite (500 ppm available sodium hypochlorite), 70% ethanol, 2% gluteraldehyde, organic solvents/detergents

**MEDICAL**

Signs and symptoms:
- Typically a self-limiting febrile disease:
  - Fever
  - Rash
  - Arthralgia (joint pain) or arthritis
  - Lassitude (diminished energy)
  - Headache
  - Myalgia (muscle pain)
  - Rash on trunk progressing to face, legs, palms, soles—lasts ~10 days
  - Jaundice – rare
  - Myocardial damage – rare
Pre-exposure prophylaxis:

None

Diagnosis:

Testing serum taken at day of exposure and day 14 to check for 4-fold rise in antibody titer.

Treatment:

Post-exposure prophylaxis:
- Supportive care

Treatment of clinical cases:
- Treatment is supportive and symptomatic

WHAT TO DO IF AN EXPOSURE OCCURS

Employees, Graduate Students, Work Study
1. Employee notifies Biosafety (970-491-0270) and/or Occupational Health Program Coordinator (970-420-8172) to inform where medical attention will be sought and if transportation is needed
   - The Principal Investigator/Supervisor must also be notified
2. Employee goes to Emergency Room
3. After the Emergency Room visit, individual fills out the following forms:
   - Workers’ Compensation (within 4 days or as soon as possible): http://www.ehs.colostate.edu/WWorkComp/Home.aspx
4. Employee follows up with CSU Authorized Treating Physician

Student Not Paid by CSU
1. Contact supervisor/PI
2. Student or supervisor contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Student goes to CSU Health Network (formerly Hartshorn Health Services)

Volunteers and Visitors
1. Contact supervisor/PI
2. Contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Individual goes to their personal physician, or as otherwise directed by their physician

REFERENCES
- CDC Information: http://www.cdc.gov/ncidod/eid/vol10no5/03-0689.htm

**Disclaimer** This document is for informational purposes ONLY. This document should not be used in lieu of professional medical attention, and medical professionals should seek appropriate resources for diagnosis and treatment.**
CONTENT REVIEW

This document has been reviewed by:

- CSU subject matter expert: Dr. Carol Blair

St. Louis Encephalitis Virus

Principal investigators are responsible for communicating this information to staff working with or around this agent, and for mitigation of associated risks. This document is not intended to be used as a sole source for diagnosis, medical treatment, or medical advice. Consult a CSU Authorized Treating Physician for concerns about work related medical conditions.

CONTAINMENT AND SPECIAL PRECAUTIONS

Containment:
- BSL-3 Level practices, containment equipment and facilities are required for work involving potentially infected materials, animals, cultures, or mosquitos.

Special considerations:
- Mosquito-borne virus

HAZARD IDENTIFICATION

Disease: St. Louis encephalitis

Transmission: Mosquito bite

Incubation: 4-21 days

Infectious dose: unknown

VIABILITY/INACTIVATION

Inactivation:
- Autoclave sensitive
- 1% - 10% bleach (500-5000 ppm available sodium hypochlorite), 70% ethanol, 2% glutaraldehyde, organic solvents, detergents

MEDICAL

Signs and symptoms:
- Most infections are asymptomatic
- Acute inflammatory disease of short duration, potentially involving the brain, spinal cord and meninges
- Severe infections have acute onset:
  - High fever
  - Headache
  - Nausea
  - Myalgia (joint pain)
  - Malaise (discomfort)
  - Meningeal signs – stupor, coma, convulsions, paralysis
  - Individuals over 60 have high rate of acute encephalitis

Pre-exposure prophylaxis:
- None

Diagnosis:
- Testing Serum taken at day of exposure and day 14 to check for 4-fold rise in antibody titer
Treatment:

Post-exposure prophylaxis:
- Supportive care

Treatment of clinical cases:
- Treatment is supportive and symptomatic

WHAT TO DO IF AN EXPOSURE OCCURS

Employees, Graduate Students, Work Study
1. Employee notifies Biosafety (970-491-0270) and/or Occupational Health Program Coordinator (970-420-8172) to inform where medical attention will be sought and if transportation is needed
   - The Principal Investigator/Supervisor must also be notified
2. Employee goes to Emergency Room
3. After the Emergency Room visit, individual fills out the following forms:
   - Workers’ Compensation (within 4 days or as soon as possible): [http://www.ehs.colostate.edu/WWorkComp/Home.aspx](http://www.ehs.colostate.edu/WWorkComp/Home.aspx)
4. Employee follows up with CSU Authorized Treating Physician

Student Not Paid by CSU
1. Contact supervisor/PI
2. Student or supervisor contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Student goes to CSU Health Network (formerly Hartshorn Health Services)

Volunteers and Visitors
1. Contact supervisor/PI
2. Contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Individual goes to their personal physician, or as otherwise directed by their physician

REFERENCES
- CDC Information on Symptoms and Treatment: [http://www.cdc.gov/sle/](http://www.cdc.gov/sle/)

CONTENT REVIEW

This document has been reviewed by:
- CSU subject matter expert: Dr. Carol Blair
West Nile Virus

Principal investigators are responsible for communicating this information to staff working with or around this agent, and for mitigation of associated risks. This document is not intended to be used as a sole source for diagnosis, medical treatment, or medical advice. Consult a CSU Authorized Treating Physician for concerns about work related medical conditions.

CONTAINMENT AND SPECIAL PRECAUTIONS

Containment: BSL-3 Level practices, containment equipment and facilities are recommended for infectious or potentially infected materials, animals, cultures, or mosquitos.

Special considerations:
- Can cross placenta and present in breast milk

HAZARD IDENTIFICATION

Disease: West Nile Fever, Neuroinvasive West Nile

Transmission: mosquitos, exposure to broken skin or mucous membranes, needlesticks, transplacental and breast milk. Potential hazard in handling, including necropsy of infected birds.

Incubation: 3-12 days

Infectious dose: unknown

VIABILITY/INACTIVATION

Inactivation:
- Autoclave sensitive
- 1% sodium hypochlorite, 3% hydrogen peroxide, 70% ethanol, 2% glutaraldehyde, 1% iodine, phenolics and 3-8% formaldehyde

MEDICAL

Signs and symptoms:

West Nile Fever
- Flu –like symptoms
- Anorexia
- Nausea
- Swollen lymph nodes
- Vomiting
- Sore throat
- Conjunctivitis
- Skin rash on chest, stomach or back
- Fever
- Headache
- Resolve in 2 to 6 days
Neuroinvasive West Nile

- Encephalitis – changes in consciousness, disorientation, ataxia, incoordination, tremors, involuntary movements
- Meningitis – fever, headache, stiff neck, photophobia
- Flaccid paralysis – resembles polio, weakened limbs, muscle aches, abnormal bowel and bladder control, dizziness, vertigo

Pre-exposure prophylaxis:
NONE – no vaccine currently approved for use in US

Diagnosis:
Serology – presence of IgM in serum or cerebrospinal fluid, ELISA, plaque reduction neutralization tests, indirect immunofluorescence, (Cross reactivity with yellow fever, Japanese encephalitis, St. Louis encephalitis, or dengue)
Serum taken:
Day of exposure, and 10-14 days post infection to detect 4-fold rise in titer

Treatment (Post-Exposure Prophylaxis/Treatment):
Treatment is supportive and symptomatic

WHAT TO DO IF AN EXPOSURE OCCURS

Employees, Graduate Students, Work Study
1. Employee notifies Biosafety (970-491-0270) and/or Occupational Health Program Coordinator (970-420-8172) to inform where medical attention will be sought and if transportation is needed
   - The Principal Investigator/Supervisor must also be notified
2. Employee goes to Emergency Room
3. After the Emergency Room visit, individual fills out the following forms:
   - Workers’ Compensation (within 4 days or as soon as possible): [http://www.ehs.colostate.edu/WWorkComp/Home.aspx](http://www.ehs.colostate.edu/WWorkComp/Home.aspx)
4. Employee follows up with CSU Authorized Treating Physician

Student Not Paid by CSU
1. Contact supervisor/PI
2. Student or supervisor contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Student goes to CSU Health Network (formerly Hartshorn Health Services)

Volunteers and Visitors
1. Contact supervisor/PI
2. Contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Individual goes to their personal physician, or as otherwise directed by their physician
REFERENCES

- CDC Website: http://www.cdc.gov/ncidod/dvbid/westnile/index.htm
- Iowa State University Fact Sheet: http://www.cfsph.iastate.edu/Factsheets/pdfs/west_nile_fever.pdf

CONTENT REVIEW

This document has been reviewed by:

- CSU subject matter expert: Dr. Richard Bowen
Yellow Fever Virus

Principal investigators are responsible for communicating this information to staff working with or around this agent, and for mitigation of associated risks. This document is not intended to be used as a sole source for diagnosis, medical treatment, or medical advice. Consult a CSU Authorized Treating Physician for concerns about work related medical conditions.

CONTAINMENT AND SPECIAL PRECAUTIONS

Containment:
- BSL-3 level practices, containment equipment and facilities are required for infectious or potentially infected materials, animals, cultures, or insects
- Yellow fever vaccine, YFV-17D, may be handled at BSL-2

Special considerations:
- Mosquito-borne virus

HAZARD IDENTIFICATION

Disease: Yellow fever

Transmission: Mosquito bite

Communicability: No evidence of person to person transmission

Incubation: 3-6 days

Infectious dose: unknown

VIABILITY/INACTIVATION

Inactivation:
- Autoclave sensitive
- 1% - 10% bleach (500- 5000 ppm available sodium hypochlorite), 70% ethanol, 2% glutaraldehyde, organic solvents, detergents

MEDICAL

Signs and symptoms (The majority of infected persons have no illness or only mild illness)

May be viremic for 3-6 days before symptoms occur:
- Fever and chills
- Severe headache
- Back pain
- Muscle aches
- Nausea
- Fatigue
- Weakness

Remission:
- Fever and other symptoms subside, and most people recover.

Toxic phase:
• High fever returns
• Jaundice
• Bleeding from nose, mouth, and eyes
• Headache
• Back pain
• Nausea
• Vomiting (black vomit)
• Abdominal pain
• Fatigue
• Bruising
• Protein in urine

Late stages:
• Hypotension
• Shock
• Metabolic acidosis
• Acute tubular necrosis
• Heart, liver and Myocardial dysfunction
• Cardiac arrhythmia
• Confusion
• Seizures
• Coma

Pre-exposure prophylaxis:
• Live vaccine available – a single dose lasts 10 years or more, booster needed after 10 years
• All researchers working in CSU’s BRB Virology Phase III Facility must be vaccinated prior to working with YFV
• Vaccination for visitors

Diagnosis:
• Testing serum taken at day of exposure and day 14 to check for 4-fold rise in antibody titer
• IgM ELISA (MAC-ELISA) for serum antibodies during first 5 days after exposure
• RT-PCR for virus RNA during first 5 days after exposure

Treatment:
Post-exposure prophylaxis:
• Supportive care

Treatment of clinical cases:
• Treatment is supportive and symptomatic

WHAT TO DO IF AN EXPOSURE OCCURS

Employees, Graduate Students, Work Study
1. Employee notifies Biosafety (970-491-0270) and/or Occupational Health Program Coordinator (970-420-8172) to inform where medical attention will be sought and if transportation is needed
   • The Principal Investigator/Supervisor must also be notified
2. Employee goes to Emergency Room
3. After the Emergency Room visit, individual fills out the following forms:
   • Biosafety Incident report form:
Student Not Paid by CSU
1. Contact supervisor/PI
2. Student or supervisor contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Student goes to CSU Health Network (formerly Hartshorn Health Services)
4. After the visit to CSU Health Network, student fills out Biosafety Incident Report form

Volunteers and Visitors
1. Contact supervisor/PI
2. Contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Individual goes to their personal physician, or as otherwise directed by their physician
4. Individual fills out Biosafety Incident Report form

REFERENCES
- CDC Information for Health Care Providers: http://www.cdc.gov/yellowfever/healthCareProviders/index.html
- WHO Fact Sheet: http://www.who.int/mediacentre/factsheets/fs100/en/

CONTENT REVIEW
This document has been reviewed by:
- CSU subject matter expert: Dr. Carol Blair
Principal investigators are responsible for communicating this information to staff working with or around this agent, and for mitigation of associated risks. This document is not intended to be used as a sole source for diagnosis, medical treatment, or medical advice. Consult a CSU Authorized Treating Physician for concerns about work related medical conditions.

**Disclaimer** This document is for informational purposes ONLY. This document should not be used in lieu of professional medical attention, and medical professionals should seek appropriate resources for diagnosis and treatment.

## Zika Virus

**CONTAINMENT AND SPECIAL PRECAUTIONS**

**Containment:**
- **BSL-2** level practices, containment equipment and facilities are recommended for infectious or potentially infected materials, animals, or cultures

**Special considerations:**
- Mosquito-borne virus
- Closely related to Dengue virus

## HAZARD IDENTIFICATION

**Transmission:** Mosquito bite

**Incubation:** Unknown

**Infectious dose:** unknown

## VIABILITY/INACTIVATION

**Inactivation:**
- Autoclave sensitive
- 1% bleach (500 ppm available sodium hypochlorite), 70% ethanol, 2% glutaraldehyde organic solvents, detergents

## MEDICAL

**Signs and symptoms:**
- Mild symptoms, lasting only 2-4 days:
  - Fever
  - Conjunctivitis
  - Transient arthritis, mainly in smaller joints of hands and feet
  - Maculo-papular rash (often starting on the face, then spreading)

**Pre-exposure prophylaxis:**

NONE – no vaccine currently approved for use

**Diagnosis:**
- Serum taken:
  - Day of exposure and from acutely ill patients 5 days after onset of fever. Serological tests may cross react with other flaviviruses.
- RT-PCR (CDC, Fort Collins)
Treatment

Post-exposure prophylaxis:
- Supportive care

Treatment of clinical cases:
- Treatment is supportive and symptomatic

WHAT TO DO IF AN EXPOSURE OCCURS

Employees, Graduate Students, Work Study
1. Employee notifies Biosafety (970-491-0270) and/or Occupational Health Program Coordinator (970-420-8172) to inform where medical attention will be sought and if transportation is needed
   - The Principal Investigator/Supervisor must also be notified
2. Employee goes to Emergency Room
3. After the Emergency Room visit, individual fills out the following forms:
   - Workers’ Compensation (within 4 days or as soon as possible): http://www.ehs.colostate.edu/WWorkComp/Home.aspx
4. Employee follows up with CSU Authorized Treating Physician

Student Not Paid by CSU
1. Contact supervisor/PI
2. Student or supervisor contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Student goes to CSU Health Network (formerly Hartshorn Health Services)

Volunteers and Visitors
1. Contact supervisor/PI
2. Contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Individual goes to their personal physician, or as otherwise directed by their physician

REFERENCES
CONTENT REVIEW

This document has been reviewed by:

- CSU subject matter expert: Dr. Brian Foy