

## 8 ZOO NOTIC AND VECTOR BORNE

Diseases transmitted from vertebrate animals to humans are zoonotic diseases. For some zoonotic diseases, animals are the reservoir and are essential for maintaining the infection in nature, and people are accidental hosts. For other zoonotic diseases, both animals and humans contract the infection from the same source, like soil, water, and insects. Vector borne diseases are transmitted by insects (vectors) like mosquitoes, ticks and fleas.

### 8.1 Transmission

Zoonotic and vector borne diseases are spread by direct transmission, indirect transmission, air borne route or by biting insect vectors.

Direct contact with infected animals can spread pathogens via mucous membranes of the eye, nose or mouth. Indirect transmission can occur via contact with contaminated inanimate objects, water, food, or through biological products (blood).

Some pathogens may also be transmitted through the air as microbial aerosols and can be inhaled. Diseases considered agents of bioterrorism are often spread by this method.

### 8.2 Risk Factors

The following risk factors may be associated with increased risk of spreading illness:

- Intensity of exposure (for example density of vectors/reservoirs in the area, increased number mosquito bites, large areas of skin exposed).
- Activities in recreational waters represents an increased risk for some zoonotic diseases
- Occupational risk

### 8.3 Diagnosis and Laboratory Guidelines

Regional laboratories

- Process clinical samples and refer to external laboratories for testing if not available locally (for example confirmatory testing).

Laboratory Guidelines:

- Collect specimens/samples where necessary.

Please refer to disease specific guidelines for additional information on laboratory guidelines or contact your local laboratory.

### 8.4 Prevention

#### Education

Educate the case and household or group members regarding the course of the disease, its ecology and applicable preventative measures. If required, inform persons of any prophylaxis and/or exclusion measures (refer to specific disease guidelines).

Prevention Messages:

- Hand Washing
- Food Safety
- Safe Water Source
- Animal Handling
- Animal Bite Prevention
- Mosquito Bite Prevention
- Tick Bite Prevention.

More information is in the prevention messages section.

## **Immunization**

Some zoonotic and vector borne diseases are vaccine preventable. Encourage yellow fever vaccination for persons travelling to endemic regions. Encourage rabies pre-exposure vaccination for persons working in high risk occupations, or for persons travelling to endemic regions.

For immunization as a public health measure, see Case Management sections and individual specific disease guidelines.

## **8.5 Case Management**

### **Investigation**

Single cases should be investigated thoroughly and as soon as reasonably possible. Follow-up allows for identification of other cases among similarly exposed member of a group, preventing the case from suffering similar illness in the future, limiting further transmission in specific situations (for example blood transfusions) and identifying outbreaks or acts of bioterrorism. Consider if the individual is in a higher risk group (occupational risk). Determine the most probable source of infection and ask about recent exposure to vectors, animals (domestic and wildlife), animal products, and travel history to endemic areas.

Provide advice and education to cases about symptoms, communicability period, and applicable preventative measures. Advise cases to consult with a health care provider as needed.

### **Social Distancing/Exclusion**

Usually not applicable (no person to person transmission)

### **Treatment**

Treatment may be provided as needed and as directed by a health care provider.

### **Immunization**

Not applicable in general. Refer to specific disease guidelines (for example rabies and yellow fever).

## **8.6 Contact Management**

Provide advice and education to symptomatic contacts about symptoms, communicability period, and applicable preventative measures. Advise them to consult with a health care provider as needed. Considerations for determining contacts of persons with diagnosed or suspect zoonotic and vector borne diseases are type of agent involved, mode of transmission and common source and exposure.

## 8.7 Outbreak Management

Activate the local outbreak plan when an outbreak is declared.

## 8.8 Management of Special Situations

### Potential Agents of Bioterrorism

A bioterrorism attack is the deliberate release of viruses, bacteria, or other germs (agents) used to cause illness or death in people. These agents are typically found in nature, but it is possible that they could be changed to increase their ability to cause disease, make them resistant to current medicines, or to increase their ability to be spread into the environment. Biological agents can be spread through the air, through water, or in food.

An ideal biological agent is easily disseminated or transmitted person-to-person, causes high morbidity and mortality, and has the potential for major public health impacts. This includes causing public panic and social disruption, and requiring special action for public health preparedness. Potential agents are botulism toxin and smallpox. Some zoonotic and vector borne diseases are also potential agents of bioterrorism. This includes anthrax, brucellosis, plague, tularemia, and viral haemorrhagic fevers (Ebola, Marburg, Lassa and South American hemorrhagic fever viruses), with anthrax being the most likely agent used.

Consult with RMOH IMMEDIATELY if release of a biological agent is suspected.

Some considerations for possibility of bioterrorism:

- A cluster of an unusual or unknown illness.
- Single case of disease caused by an uncommon agent and not linked to an endemic area.
- Recognized disease occurring in an unusual setting or in a key sector in a community.
- Recognized disease with unusual geographical or seasonal variation.
- Multiple atypical presentations of recognized disease agents.

Many other stakeholders and emergency planning agencies would be involved in responding to acts of bioterrorism. The following are general PH actions for a bioterrorism response:

- Liaise with police and other first responders. Refer to Provincial Health Suspicious Packages Protocol
- Assess the potential risk to individuals. Standard outbreak and incident investigation steps (case definitions and defining those “exposed but not ill”; case finding; data collection and recording; laboratory testing; descriptive epidemiology; hypothesis generation and testing. Consult with RMOH and others to assess the level of threat and actions required.
- Considerations for environmental or fomite sampling and testing.
- Considerations to limit further exposure. Consider closure of exposed zone and full biological protective equipment for those entering exposed zone.
- Considerations for decontamination of exposed persons.
- Prophylaxis.
- Considerations for assessment of potential risk to the environment. Consult with RMOH and others to assess the level of threat and actions required.
- Guidance on treatment- consultation with the infectious diseases specialist.
- Risk to contacts.
- Information for the public.
- Communications.

## 8.9 Notifiable Diseases and Events

- Anthrax
- Hemorrhagic fever (viral)
- Plague
- Yellow Fever
- Lyme borreliosis
- West Nile virus infection
- Brucellosis
- Exposure to a suspected rabid animal
- Hantavirus pulmonary syndrome
- Malaria
- Psittacosis
- Q fever
- Rabies
- Rickettsial infection
- Tetanus
- Toxoplasmosis
- Tularemia

## Zoonotic and Vector Borne Education

Disease specific information				
<input type="checkbox"/> Pathogen	<input type="checkbox"/> Mode of transmission	<input type="checkbox"/> Period of communicability	<input type="checkbox"/> Risk factors for transmission	<input type="checkbox"/> Risk factors for susceptibility
Education and control measures				
<b>Hand washing</b>	<input type="checkbox"/> After using the washroom	<input type="checkbox"/> Specific occupational risk		
	<input type="checkbox"/> After handling raw meat or poultry	<input type="checkbox"/> Before contact with children and the elderly		
	<input type="checkbox"/> After contact with animals, animal feces or farm environment	<input type="checkbox"/> After contact with domestic pets and pet treats		
	<input type="checkbox"/> Before preparing meals and before eating			
<b>Food Safety</b>	<input type="checkbox"/> Use a meat thermometer	<input type="checkbox"/> Use an appropriate sanitizer solution		
	<input type="checkbox"/> Your refrigerator temperature should not exceed 4°C	<input type="checkbox"/> Sanitize after you clean, i.e., raw juices from poultry and meat		
	<input type="checkbox"/> Wash and/or peel fruits or vegetables before eating	<input type="checkbox"/> Store food safely to prevent contamination		
	<input type="checkbox"/> Cool foods rapidly	<input type="checkbox"/> Cook or reheat thoroughly		
<b>Safe Water Source</b>	<input type="checkbox"/> Drink from a known potable water source	<input type="checkbox"/> Springs, streams and dug wells are not safe		
	<input type="checkbox"/> If water source is questionable, boil for minimum of 1 minute	<input type="checkbox"/> Safe recreational waters		
<b>Animal Handling</b>	<input type="checkbox"/> Workers should follow farming and animal husbandry practices	<input type="checkbox"/> Wear gloves when handling animals		
<b>Tick and Mosquito Bite Prevention</b>	<input type="checkbox"/> Wear protective clothing to limit access to skin	<input type="checkbox"/> Use insect repellents for example DEET		
	<input type="checkbox"/> Look for ticks and remove them immediately	<input type="checkbox"/> If you are bitten by a tick look for the early signs of Lyme disease		
<b>Additional</b>	<input type="checkbox"/> Disease factsheet	<input type="checkbox"/> Information provided verbally		
	<input type="checkbox"/> Information provided electronically	<input type="checkbox"/>		

\_\_\_\_\_

Date

\_\_\_\_\_

Regional Public Health