Ebola: risks and realities for BC

Dr Bonnie Henry Deputy Provincial Health Officer



Ebola Virus

- Family: Filoviridae
- n Genus Ebolavirus
 - **q** Sudan
 - **q** Zaire
 - **q** Reston
 - **q** Bundibuayo
 - **q** Taï Forest



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Ebola Haemorrhagic Fever Africa, 1976 - 2014



Enzootic Cycle

New evidence strongly implicates bats as the reservoir hosts for ebolaviruses, though the means of local enzootic maintainance and transmission of the virus within bat populations remain unknown.

Ebolaviruses:

Ebola virus (formerly Zaire virus) Sudan virus Taï Forest virus Bundibugyo virus Reston virus (non-human)

Epizootic Cycle

Epizootics caused by ebolaviruses appear sporadically, producing high mortality among non-human primates and duikers and may precede human outbreaks. Epidemics caused by ebolaviruses produce acute disease among humans, with the exception of Reston virus which does not produce detectable disease in humans. Little is known about how the virus first passes to humans, triggering waves of human-to-human transmission, and an epidemic.

Human-to-human transmission is a predominant feature of epidemics.

Following initial human infection through contact with an infected bat or other wild animal, human-to-human transmission often occurs.



WHO situation update 25 Feb 2015

Country	Case definition	Cumulative cases	Cases in past 21 days	Cumulative deaths
Guinea	Confirmed	2762	152	1704
	Probable	387	*	387
	Suspected	6	*	‡
	Total	3155	152	2091
Liberia	Confirmed	3153	10	‡
	Probable	1888	*	‡
	Suspected	4197	*	‡
	Total	9238	10	4037
Sierra Leone	Confirmed	8289	235	3095
	Probable	287	*	208
	Suspected	2725	*	158
	Total	11 301	235	3461
Total		23 694	397	9589

Table 1: Confirmed, probable, and suspected cases reported by Guinea, Liberia, and Sierra Leone

Data are based on official information reported by ministries of health. These numbers are subject to change due to ongoing reclassification, retrospective investigation and availability of laboratory results. *Not reported due to the high proportion of probable and suspected cases that are reclassified. *Data not available.

Guinea



Page 11

Sierra Leone

Figure 3: Confirmed weekly Ebola virus disease cases reported nationally and by district from Sierra Leone





Liberia



Epidemiological and clinical features of EVD



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Ebola virus' typical path through a human being

Day 7-9 Headache, fatigue, fever, muscle soreness

First

symptoms

Day 10 Sudden high fever, vomiting blood, passive behavior

Day 11 Bruising, brain damage, bleeding from nose, mouth, eyes, anus

Day 12 Loss of consciousness, seizures, massive internal bleeding, death Graphic: Melina Yingling

Final

stages

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Source: U.S. Centers for Disease and Control, BBC

National response

- n CCMOH established a Special Advisory Committee:
 - FPT committee including all P/Ts, DND, Health Canada BGTD, FNIHB), PHAC, CBSA, Corrections,
 - **q** Public health measures TG
 - **q** Infection prevention and control expert group
 - **q** communications





Item 7_1: Patient Life Cycle Presentation for Task Force Feb. 26, 2015



BC Hospital preparedness

- **n** Type 1: all facilities with an ED
 - **q** Prepared to assess and transfer
 - **n** Type 2: Prepared to assess and test
 - **q** Victoria General (Island Health)
 - **q** Kelowna General (Interior Health)
 - q University Hospital of Northern BC (NHA)
 - **q** Vancouver General, Richmond and St Paul's
- n Type 3: Prepared to treat EVD cases
 - **q** Surrey Memorial
 - **q** BC Children's





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- Office of the Provincial Health Officer
- Biographies

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- Current Health Topics
- * Help Fight the Flu
- Physician Resources
- Ebola Response Plan
- * BC Centre for Disease Control
- Middle East Respiratory Syndrome
- H1N1
- * Pandemic Influenza
- Avian Influenza
- * West Nile Virus
- * Drinking Water
- Injury Prevention
- Provincial Health Officer's Reports
- Public Health in B.C.
- Laws Related to Public Health in B.C.
- For Healthcare Professionals
- B.C. Medical Health Officers
- Media Room
- * Links
- * Contact Us

GOVERNMENT

Quick access to information based on government's structure

B.C. Government



Welcome to the Provincial Health Officer's Ebola Web-Site for B.C. Health Care Providers

Site Last Updated: Feburary 11, 2015

To support B.C.'s Health Care Providers, this web resource has been established to provide a centralized and ongoing source of current information about the emerging issues surrounding Ebola.

This site contains updated this information that will be revised as necessary and will also provide access to national, provincial- and health authority-specific information, including:

- Clinical Information and Patient Care
- Infection Control
- Epidemiology
- Public Health Measures

New or Updated Information

- Emergency Department Risk Assessment Algorithm (PDF 155K) February 26, 2015
- British columbia Ebola Virus Disease Personal Protective Equipment Guidelines (PDF 549K) February 11, 2015 NEW!
- Donning and Doffing Recommendations Higher Transmission Risk (PDF 456K) February 11, 2015
 - Donning and Doffing Recommendations Lower Transmission Risk (PDF 438K) February 11, 2015
- EVD PPE Donning and Doffing Checklist Low Risk (PDF 313K) February 11, 2015
- EVD PPE Donning and Doffing Checklist Option 1 High Risk (PDF 312K) February 11, 2015 NEW!
- EVD PPE Donning and Doffing Checklist PAPRS High Risk (PDF 314K) February 11, 2015 NEW!
- Revised EVD PPE Training Framework (PDF 311K) February 11, 2015 NEWI
- Ebola Virus Disease Medical Health Officer Risk Assessment Algorithm (PDF 191K) February 3, 2015 NEWI
- <u>Recommendations for Emergency Departments in Caring for Potential EVD Patients</u> (PDF 950K) January 21, 2015
- British Columbia Ebola Virus Disease (EVD) Contact Investigation and Management Guideline (PDF 1.3M) January 2, 2015 NEWI
- <u>BC Guidance on Environmental Management of Potential Ebola Contamination in Community Settings</u> (PDF ^{231K}) January 2, 2015 NEW!
- Provincial EVD PPE Training plan (PDF 310K) January 2, 2015 NEW!
- Recommendations for the Critical Care Management of Suspected and Confirmed (EVD) Cases (PDF 521K) January 2, 2015 NEWI
- <u>Recommendations for Environmental Services, Biohazardous Waste Management and Food and Linen</u> Management for EVD (PDF 342K) — February 2, 2015 NEW!



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Infection Prevention and Control

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- Initial guidance based on past experience
- Importance of contact and droplet protection



Attention to detail



Then along came Dallas





- Patient travelled from Liberia
- Sent home initially;
 returned with advanced
 symptoms and died
- n 2 nurses infected

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None of his close
 contacts in the
 community became ill

And New York



New York doctor tests positive for Ebola sparking fears disease could spread in America's biggest city





IPAC changes

- Fear and overreaction
- n 'No skin in the game'
- Differentiation between low transmission risk
 ('dry') and high transmission risk ('wet') patients
- Recognition that the greatest danger is in late stage disease with copious body fluids, particularly vomitus and bloody diarrhea
- Importance of fluid impermeable



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	Public Health Agency of Canada www.publichealth.gc.ca		R	4
rançais H	eases > Viral Hemorrhagic Fever > Ebola virus disease > Infection Pr	revention a	Canada.	Expert
/orking Group: Advice	on Infection Prevention and Control Measures for Ebola Virus Diseas	se in Healt	hcare Settir	ngs
lain Menu		<u>1</u>] +/- техт		< SHARE
About the Agency	Infection Prevention and Control	Related	links	
Infectious Diseases	Expert Working Group: Advice on	Statement on Infection		
Chronic Diseases	Infection Prevention and Control	Measure	es for Ebola	a Virus
Fravel Health	Measures for Ebola Virus Disease in	Disease		
ood Safety	Healthcare Settings			
mmunization & /accines	The Public Health Agency of Canada (PHAC) requested the advi	ice of its I	nfection Pr	evention
Emergency Preparedness & Response	and Control Expert Working Group to develop this document or prevention and control (IPC) measures to assist healthcare org provincial / territorial public health efforts in establishing appro	anizations	ate infections and comp and comp cautions for	on lement or the
lealth Promotion	management of Ebola virus disease (EVD) in healthcare setting	s.		
Injury Prevention	Based on experience to date in the United States (US) and Euro	ope, and v	with implen	nentation
ab Biosafety & Biosecurity	of border screening processes that provide direction to individuals arriving in Canada from countries currently affected by EVD, it is expected that individuals with EVD will present to hospitals for care and not to other healthcare settings, such as physician offices, walk in			esent to alk in
Surveillance	 clinics, and pharmacies. Even so, the advice in this document is settings. 	s applicabl	le to all he	althcare
xplore	The purpose of this document is to provide background and ad	vice on wh	aat the min	inaura
Media Room	level of infection control measures should be based on a review	of availa	ble scientif	ïc
Acts & Regulations	evidence. This advice has informed the IPC Statement developed by PHAC. The target audiences for this document are IPC professionals, Occupational Health and Safety professionals, healthcare organizations, and healthcare providers responsible for educating health care workers (HCWs) on IPC. The advice is intended for healthcare settings where			get
Reports & Publications				
A-Z Index	there may be potential for contact with a symptomatic patient	who is sus	spected (pe	erson
ansparency	under investigation or probable case) or confirmed to have EVD).		
External Advisory Bodies	The advice contained in this document should be read in conjur provincial, territorial and local legislation, regulations, and polic should not be regarded as rigid standards, but principles and re	nction with ies. Recor	n relevant f mmended i dations to i	federal, measures inform the
Completed Access to Information Requests	development of guidance. This advice is based on currently available scientific evidence a approach where the evidence is lacking or inconclusive. It is su	nd adopts bject to re	a precauti	ionary change as
Proactive Disclosure	new information becomes available.	-		-

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rançais Ho	Contact Us Help Search Canada.ca Dates > Viral Homoschagis Foren > Fields virus disease > Provention and Control Measures			
lain Menu	Asses > Viral Hemorrhagic Fevel > Ebola Virus disease > Frevencion and control measures			
About the Agency				
Infectious Diseases	Statement on Infection Prevention and Control			
Chronic Diseases	Weasures for Epola Virus Disease			
Travel Health	All healthcare settings where ill individuals may present need to be prepared for Ebola			
Food Safety	disease (EVD).			
Immunization & Vaccines	Decisions on appropriate infection prevention and control measures should be made in conjunction with local, provincial, territorial and federal legislation, regulations and polici As more is learned about EVD, the measures may need to be modified			
Emergency Preparedness & Response	EVD is transmitted by direct contact of non-intact skin or mucous membranes with blood other body fluids of a person who is sick with EVD. Transmission can occur indirectly thr			
Health Promotion				
Injury Prevention	Patients are not infectious before the onset of symptoms, but become increasingly contagious with each stage of the disease and remain infectious while the virus remains i their blood or body fluids.			
Lab Biosafety & Biosecurity				
Surveillance	Along with the safety and care of nationts, healthcare worker safety must be of			
xplore	paramount importance.			
Media Room	 Adherence to occupational health and safety principles and application of appropria 			
Acts & Regulations	engineering controls, administrative controls, and personal protective equipment (
Reports & Publications	 Prior to interaction with suspect or confirmed EVD patients, healthcare workers mu 			
A-Z Index	trained in appropriate use of PPE.			
ransparency	 Healthcare workers need to have confidence in their PPE and in their ability to use properly. 			
External Advisory Bodies	 Comfort and proficiency with PPE are only achieved through repeated practice. 			
Completed Access to Information Requests	Initial Screening and Evaluation			
Proactive Disclosure	 Identity travel and potential exposure history. Has patient lived in or traveled to a country with widespread EVD or had contact with a confirmed EVD patient in the days? Visit the <u>WHO Global Alert and Response</u> I webpage for frequent updates 			
	Identify signs and symptoms. Assess for fever or any EVD compatible symptoms (fatigue, loss of appetite, vomiting, diarrhea, headache, abdominal pain, muscle or			

Suspect EVD if fever or EVD compatible symptoms and a history of potential exposure are present.

Tasks for IPAC task group

n Infection Control Guidelines for Health Care Settings

- British Columbia Ebola Virus Disease Personal Protective Equipment Guidelines (PDF 549K) February 11, 2015
- **q** Donning and Doffing Recommendations Higher Transmission Risk (PDF 456K) February 11, 2015
- **q** Donning and Doffing Recommendations Lower Transmission Risk (PDF 438K) February 11, 2015
- **q** EVD PPE Donning and Doffing Checklist Low Risk (PDF 313K) February 11, 2015
- **q** EVD PPE Donning and Doffing Checklist Option 1 High Risk (PDF 312K) February 11, 2015
- **q** EVD PPE Donning and Doffing Checklist PAPRS High Risk (PDF 314K) February 11, 2015
- Ebola Virus Disease PPE Training Poster: Lower Transmission Risk (PDF 695K) February 11, 2015
- Ebola Virus Disease PPE Training Poster: Higher Transmission Risk Option 1 (PDF 621K) February 11, 2015
- Ebola Virus Disease PPE Training Poster: Higher Transmission Risk Option 2 (PDF 741K) February 11, 2015
- **q** Revised EVD PPE Training Framework (PDF 311K) February 11, 2015
- Recommended Personnel for Persons Under Investigation, Probable and Confirmed Ebola Virus Disease (PDF 528K) December 1, 2014
- Interim Guidance Ebola Virus Disease, Infection Prevention and Control Measures for Borders, Healthcare Settings and Self-Monitoring at Home — Public Health Agency of Canada — September 12 2014
- Ebola Poster for Emergency Departments and Primary Care Settings (PDF 329K) November 7, 2014
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Ebola Expert Working Group: Infection Control Section

Doffing of PPE for Health Care Worker Exiting Ebola Patient Room: High Transmission Risk Option #1

Ensure the following items are prepped and available in the Patient Room:

•Disinfectant wipes • Absorbent pad • Shuffle pit with disinfectant

Ensure the following items are prepped and available in the Anteroom:

•Infectious waste container • Disinfectant wipes • Steel stool • ABHR • Gloves (long type not required)

Inside Patient Room

Engage Trained Observer. Trained Observer to notify PPE Doffing Assistant if required. While observing the HCW Doffing
Procedure, the Trained Observer may not enter the doffing area and should observe from a designated room separated
from the doffing area but with good visual and voice contact. If this is not possible, the Trained Observer may be
separated from the HCW by an appropriate partition that provides the necessary physical separation.

 Before entering the PPE Removal Area, inspect PPE. 	3. Disinfect outer-gloves hands with a disinfectant wipe or ABHR and allow to dry.	4. Stand in shuffle pit filled with disinfectant solution for one minute. The shuffle pit will be located inside the patient room adjacent to the door.	5. Step out of shuffle pit onto absorbent mat.
	In Doffing Ar	ea/Enclosure	
 Wipe door handle with a new disinfectant wipe and exit the patient room into PPE doffing area. 	7. Step onto disposable absorbent mat. Wipe down external surface of boots. Remove boots and place boots in reprocessing	8. Inspect the knee-high leg and foot covers to assess for contamination. If contaminated, disinfect leg cover surface with	 Inspect outer glove surfaces for cuts or tears. If outer gloves are cut or torn, notify observer.
	container.	disinfectant wipe.	

10. Disinfect outer-gloved hands with a disinfectant wipe or ABHR, and allow to dry.	11. Remove and discard outer set of gloves, taking care not to contaminate inner gloves during removal process.	 12. Inspect inner glove: a) If cut/torn, disinfect the glove with disinfectant wipe or ABHR. Remove the inner glove, perform hand hygiene with alcohol hand rub on bare hands and put on a clean pair of gloves. This is a breach. b) If no tears/cuts, disinfect inner gloved hands with a disinfectant wipe or ABHR and allow to dry. 	13. Remove the face shield by tilting your head slightly forward, and pulling it over the head using the rear strap. Allow the face shield to fall forward and discard in infectious waste container.
14. Disinfect inner gloved hands with a disinfectant wipe or ABHR and allow to dry.	15. Remove head covering. Carefully grasp outer surface of hood, tilt head forward, close eyes and remove hood pulling towards front of face Place in biohazardous waste container.	16. Disinfect inner gloved hands with a disinfectant wipe or ABHR and allow to dry.	17. Untie side strap of gown. Do not reach behind neck to release the velcro neck snap. Instead, remove gown by pulling away from the body, rolling inside out being careful to avoid contaminating inner clothing. Place in biohazardous waste bin.
18. Remove leg and foot coverings while sitting on designated stool. Place leg and foot coverings in biohazardous waste container.	19. Disinfect inner gloved hands with a disinfectant wipe or ABHR and allow to dry.	20. Remove inner gloves and dispose in biohazardous waste container.	21. Carefully perform hand hygiene with ABHR.

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IDENTIFYING A BREACH IN PPE

A breach involves a situation in which PPE has been totally or partially compromised resulting in potential exposure to the health care worker. Examples of a breach include:

- Gloves separate from gown leaving exposed skin
- Inner glove cut/torn, even if outer glove appears intact
- Visible cut/tear in gown
- Needlestick

A breach may be identified during patient care, during inspection of one's PPE before exiting the patient's room, or as otherwise specifically noted in certain steps in this document.

If you experienced a breach, remain calm and follow all the steps in this doffing document. Refer to the section at the end of this document – Process to Follow in the Event of a Breach.

In the event of a breach

- If a breach in PPE is suspected and there has been exposure to a patient's body fluids, go to designated doffing area immediately.
- Work with trained observer and doffing assistant to remove PPE as per the step-by-step instructions for doffing PPE, taking care to avoid any further self-contamination.
- 3. If exposed area is intact skin, wash the affected area well with soap and water.
- 4. If exposed area is a mucous membrane or eye flush the area with generous amounts of water.
- If a percutaneous injury occurs, do not promote bleeding by squeezing the wound and do not soak the wound in bleach or disinfectant. Wash the area with soap and water.
- Report the exposure immediately to Workplace Health. If after hours or Workplace Health is unable to assist contact your health authority's Medical Health Officer on call for further instructions.



Contact Management Guidance

- n Evolved given the issues of risk
- n As CBSA process was developed the risk of a Dallas-like traveler became vanishingly small
- Focus on notification by quarantine service and monitoring in the community



Quarantine Program Notification



Returnees

- Higher Risk
 - A person who does not have symptoms and who had unprotected exposure to the Ebola virus
 - (i.e., known EVD exposure or unprotected direct contact)
- At Risk
 - HCW/Aid worker in EVD area, no direct contact or protected contact
- At Low Risk
 - A person who has been in a country with widespread and intense Ebola virus transmission within the past 21 days and has had no known exposures.
- Other
 - While some people may initially be considered contacts, further assessment may determine these individuals do not meet the contact definition. This includes travelers returning from countries where Ebola may be identified, but are not experiencing intense and widespread transmission.



High Risk

Movement Recommended to self-isolate.

Order to self-isolate at the discretion of the medical health officer (MHO). Should remain near a **Type Three** health facility (up to two hours by land ambulance or private transport). In home, **limit contact with other household members** (i.e., where possible, separate bedroom). **Limit social interactions**. Report any planned travel

Monitor

Advise to self-monitor. Avoid anti-pyretic medications. Daily active monitoring.

Return to work

Consideration of work that is possible from home/facility where self-isolating.

At Risk

Movement

Should remain near a **Type Two or Three** health facility (up to two hours by land ambulance transport). Travel only on public conveyances that can be exited promptly if symptoms develop. Avoid mass gatherings. Report any planned travel. **Monitor**

Monitor

Advise to self-monitor. Avoid anti-pyretic medications. Daily active monitoring.

Return to work

Is generally acceptable if workplace is within two hours of Type Two or Three facility, but should be discussed with the medical health officer

Return to work for health care workers/contractors (both returning and those exposed in B.C.) should be discussed between the health care worker/

contractor, medical health officer, director of infection control and director of workplace health

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At Low Risk

Movement

May travel by commercial conveyance back to and within Canada.

No restrictions on movement or work.

Report any planned travel.

Monitor

Advise to self-monitor. Avoid anti-pyretic medications. Active monitoring at the discretion of MHO

BC Exposed

- Higher Risk
 - A person who does not have symptoms and who had unprotected exposure to the Ebola virus (i.e., known EVD exposure or unprotected direct contact)
- At Risk
 - Had direct contact, but no breach in PPE
 - Interacted with Case but without direct or close contact
- At Low Risk
 - A person who has worn appropriate PPE without a breach and been involved with terminal cleaning of a hospital room used by an EVD patient where the patient is no longer present, or involved with cleaning a contaminated space in the community.



High Risk

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Report any planned travel.

Monitor

Advise to self-monitor. Avoid anti-pyretic medications. Active monitoring at the discretion of MHO

EVD response in Canada

- As of Feb 27, 102 Canadian response workers, including 63 HCWs, are known to be deployed in Liberia (12), Sierra Leone (84), and Guinea (6).
- 775 people have been screened by QO and ordered to report to public health (496 Montreal, 122 Toronto)
- Since July 29, 2014, NML has tested samples from 34 patients in Canada: BC (3), AB (5), ON (14), and QC (12). All were negative for EVD.



EVD in BC

- n 3 people have been tested (1 traveler, 2 HCW)
- n 3-7 people per week on PH monitoring since Nov
- n Total of 33 people so far have been monitored from all HA
- Notes and the second second
- Note: Not



Controversies

- **n** Can it be 'airborne'?
- Need for respirators
- Can we be ready everywhere?
- Centralized care versus regional model
- **n** US-like ongoing program for severe infections
- We will need to be prepared as long as the outbreak continues in west Africa



Global impact beyond EVD





Thank you. Questions?

