What Ontario's Health System Needs to Know to Prepare for Ebola Virus Disease

Ministry of Health and Long-Term Care & Public Health Ontario
August 25, 2014

Ontario

Agenda

Opening remarks	Dr. Graham Pollett, Interim Chief Medical Officer of Health
Initial health system response actions	Clint Shingler, Ministry of Health and Long-Term Care
Occupational Health & Safety Act	Craig Lawrie, Ministry of Labour
Risk Assessment for Returning Travellers and Screening Tools	Dr. Bryna Warshawsky, Public Health Ontario
Infection prevention & control measures	Dr. Mary Vearncombe, Public Health Ontario
Laboratory testing guidelines	Dr. Vanessa Allen, Public Health Ontario
Question & answer session	All
Closing remarks	Dr. Brian Schwartz, Public Health Ontario

Dr. Graham Pollett
Interim Chief Medical Officer of Health

Clint Shingler
Acting Director, Emergency Management Branch
Ministry of Health and Long-Term Care

Source: Centers for Disease Control and Prevention, 2014 Ebola Outbreak in West Africa – Outbreak Distribution Map. Accessed August 14, 2014.

Current situation (August 22, 2014)

Country	Total cases (suspect, probable & confirmed)	Case deaths (suspect, probable & confirmed)
Guinea	607	406
Liberia	1082	624
Sierra Leone	910	392
Nigeria	16	5
TOTAL	2615	1427

Source: World Health Organization, Global alert and response: Ebola virus update – West Africa. August 22, 2014.

Preparedness

- The Ministry of Health and Long-Term Care continues to collaborate with Public Health Ontario (PHO), the Ministry of Labour and other health system partners to take measures to ensure the health system's readiness to respond to a case of Ebola virus disease (EVD)
- As part of our planning, Ontario is considering a number of scenarios:
  - confirmed case of EVD returns to Ontario from an affected country
  - ill traveller with signs and symptoms of EVD is identified at a border
  - individual returns from an affected country and presents at a health care setting in Ontario with signs and symptoms of EVD

Preparedness (cont'd)

- To ensure your readiness for a case of EVD, health organizations should:
  - ensure you are prepared to implement the infection prevention & guidelines for EVD as per PHO's Infection Prevention and Control Guidance for Patients with Suspected or Confirmed EVD in Ontario Health Care Settings
  - ensure you are prepared to safely collect and submit laboratory samples as per PHO's EVD Interim Sample Collection and Submission Guide
  - establish a relationship with your public health unit so you know how to contact them if you suspect a patient has EVD
  - review the materials on PHO's EVD Website at www.publichealthontario.ca/ebola on a regular basis

Initial health system response actions

- Follow PHO's guidance on EVD to identify suspect cases
- Once a health worker has identified a suspect case
  - contact your public health unit and the PHO Laboratory (416-235-6556/1-877-604-4567)
- Once Ontario is notified by the National Microbiology Laboratory that there is a confirmed case
  - Ministry Emergency Operations Centre will be activated to coordinate and direct the health system's response:
    - activating the emergency information cycle for public & health system communications
    - supporting patient & health worker safety
    - supporting public health units and health care providers to conduct case & contact management
    - ramping-up the Health Care Provider Hotline (1-866-212-2272) to respond to questions and concerns

Craig Lawrie
Infection Control Consultant
Ministry of Labour

Occupational health & safety requirements

- Health care facilities are required to comply with applicable provisions of the Occupational Health and Safety Act (OHSA) and its Regulations.
  - employers, supervisors and workers have rights, duties and obligations under the OHSA
  - specific requirements under the OHSA and its regulations are available at:
    - Occupational Health and Safety Act
    - Ontario Regulation 67/93 Health care and Residential Facilities
  - the Needle Safety Regulation (O.Reg 474/07) has requirements related to the use of hollow-bore safety-engineered needles
- Additional information is available at the Ministry of Labour's Health and Community Care Page.

Public Health Ontario
PARTNERS FOR HEALTH

Santé publique Ontario
PARTENAIRES POUR LA SANTÉ

Risk Assessment for Returning Travellers and Screening Tools

Dr. Bryna Warshawsky

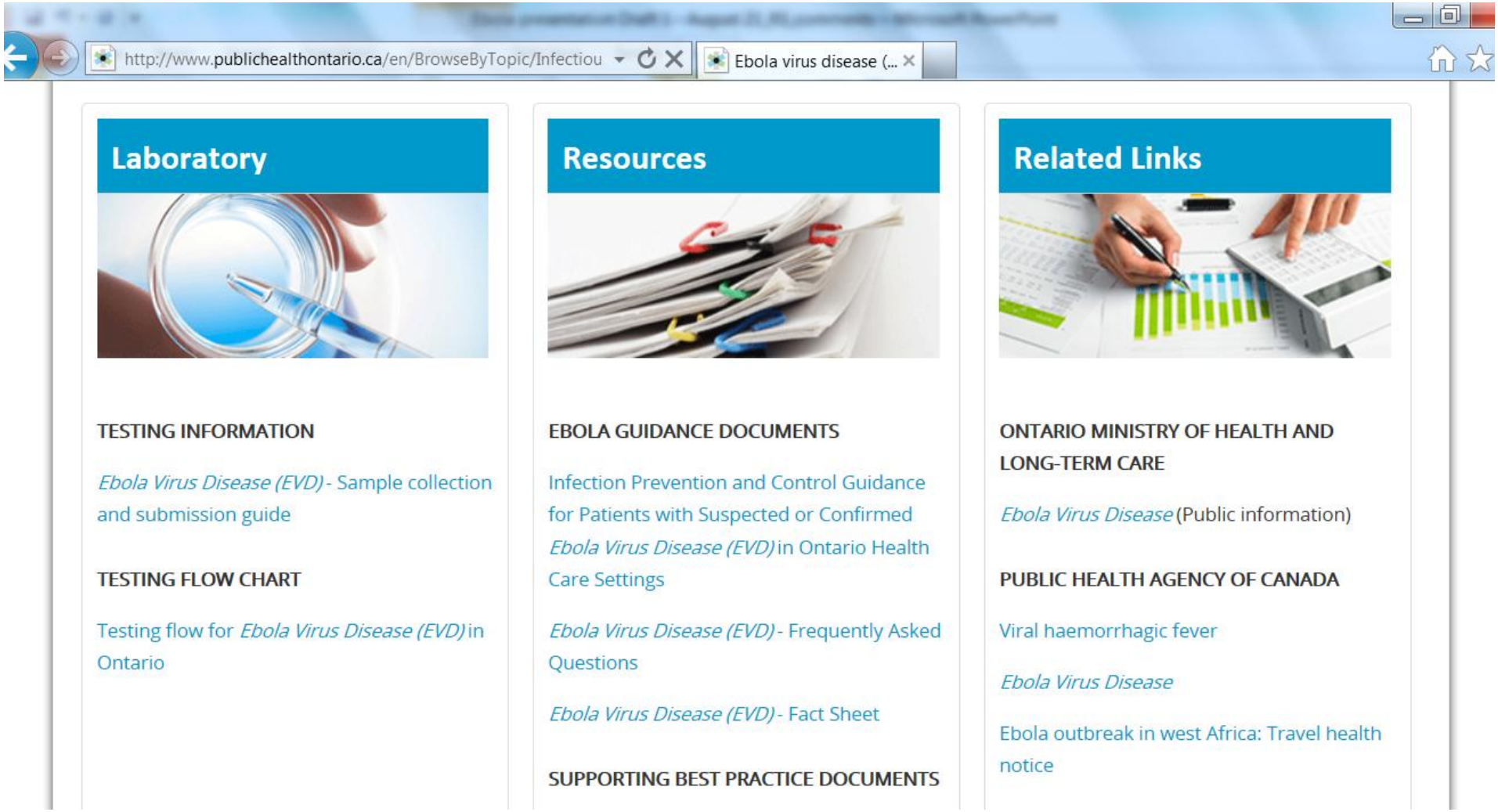
Ontario
Agency for Health Protection and Promotion
Agence de protection et de promotion de la santé

Public Health Ontario
PARTNERS FOR HEALTH

Santé publique Ontario
PARTENAIRES POUR LA SANTÉ

PHO EVD resource page

http://www.publichealthontario.ca/ebola



Key EVD Facts

- Only spread by direct contact with blood and body fluids
- Incubation 2-21 days; usually 8-10 days
- Only infectious when symptomatic
- Increasingly infectious as get sicker

Perspectives on risk assessment

- Ebola virus disease confined to well-defined geographic areas
  - Guinea, Liberia, Sierra Leone, Nigeria (Lagos only)
- Most infected individuals likely to have known exposures (not unrecognized exposures)
- Most infected individuals, other than aid and health care workers, not likely to travel to Ontario
- Routine droplet and contact infection control measures prevent transmission
- Common things are common
  - Malaria, influenza, meningococcal, *Salmonella* typhi much more likely diagnoses

Public Health Ontario
PARTNERS FOR HEALTH
Santé publique Ontario
PARTENAIRES POUR LA SANTÉ

Interim Risk Assessment of Returning Travellers

EVD Risk level	Criteria	Action
No risk		
Very low risk		
Low risk		
Intermediate risk		
High risk		

Public Health Ontario
PARTNERS FOR HEALTH
Santé publique Ontario
PARTENAIRES POUR LA SANTÉ

Interim Risk Assessment of Returning Travellers

EVD Risk level	Criteria	Action
No risk	Not in affected country /area	
Very low risk	No known exposures	
Low risk	In a health care facility OR Near a person with EVD but no direct contact	
Intermediate risk	Direct contact WITH full PPE	
High risk	Direct contact WITHOUT full PPE	

Public Health Ontario
PARTNERS FOR HEALTH

Santé publique Ontario
PARTENAIRES POUR LA SANTÉ

Interim Risk Assessment of Returning Travellers

EVD Risk level	Criteria	Action
No risk	Not in affected country/ area	No action
Very low risk	No known exposures	Self-monitoring No public health action
Low risk	In a health care facility OR Near a person with EVD but no direct contact	Self-monitoring Intermittent public health follow-up
Intermediate risk	Direct contact WITH full PPE	Self-monitoring Daily public health follow-up
High risk	Direct contact WITHOUT full PPE	Self-monitoring Daily public health follow-up Review daily activities Stay in town

Public Health Ontario | Santé publique Ontario
PARTNERS FOR HEALTH | PARTENAIRES POUR LA SANTÉ

Interim Risk Assessment for Returning Traveller Action for symptomatic patient

- Consider:
  - Presenting symptoms
  - Ebola virus disease (EVD) risk level
- If needed, consult with infectious disease and/or public health
- In hospital, notify Infection Prevention and Control (IPAC)
- Notify public health of symptomatic returning traveller from country/area affected by EVD, even if EVD not suspected after assessment
  - Public health will arrange additional follow-up

Screening tools

- Screening for travel to affected country/area and presence of symptoms
- Recommended action for:
  - Primary health care providers
  - Emergency departments
  - Community laboratories
  - Dental and allied health care professional offices
  - Post-secondary schools
- First responders also developing screening tool

Public Health Ontario
PARTNERS FOR HEALTH

Santé publique Ontario
PARTENAIRES POUR LA SANTÉ

Infection Prevention and Control

Dr. Mary Vearncombe

Ontario
Agency for Health Protection and Promotion
Agence de protection et de promotion de la santé

Key EVD Facts

- Only infectious when symptomatic
- Increasingly infectious as get sicker
- Confined to well-defined geographic areas
  - Guinea, Liberia, Sierra Leone, Nigeria (Lagos only)
- Consistent use of Routine Practices is the best defence against the transmission of infection, including EVD

Public Health Ontario | Santé publique Ontario

PARTNERS FOR HEALTH | PARTENAIRES POUR LA SANTÉ

Identification of Suspect EVD Patients

Does patient have fever +/- any of headache, myalgia, malaise, vomiting, diarrhea, sore throat, cough, rash, conjunctivitis, petechiae, ecchymosis, hemorrhage?

AND

Has the patient been in West Africa (Guinea, Liberia, Lagos Nigeria, Sierra Leone) within the last 21 days?

IF YES TO BOTH

Possible EVD

Initiate Precautions for EVD

Laboratory Testing

Transmission of EVD

- Direct contact with blood, body fluids, secretions, excretions
- Indirect contact with patient care equipment or surfaces contaminated with blood, body fluids, secretions, excretions
- Possibly when performing AGMPs (theoretical)
- EVD is not airborne

IPAC Practices for EVD: Droplet + Contact Precautions

- Patient accommodation:
  - Single room with dedicated bathroom (minimum requirement); door closed
  - consider use of an isolation room that has an anteroom for donning or doffing PPE
- PPE for all staff entering the room:
  - fluid-resistant, long-sleeved, cuffed gown
  - gloves
  - full face protection (face shield)
  - surgical or procedure mask
- Maintain log of all individuals entering the room; only essential people should enter the room

Risk Assessment for EVD

- Use risk assessment to determine the need for additional PPE; as the patient's condition changes, the risk to HCPs may change.
- The procedure being performed and the presence of clinical symptoms impacts the decision of what PPE to wear.
- Clinical risks may include:
  - Large amounts of blood/body fluids: foot/leg coverings, head coverings, waterproof gowns, or biohazard suits
  - Aerosol generating procedures: N95 respirators
  - Phlebotomy: double gloves
- Ensure adequate training before adding unfamiliar PPE

Donning/Doffing PPE

- Room with anteroom: remove and dispose of PPE in the anteroom
- Room without anteroom: remove and dispose of PPE inside the doorway upon exiting the room
- Consider having a second HCP observe the application and removal PPE, particularly if additional PPE is required
- Hand hygiene performed at appropriate times during the PPE removal process and before touching the face

Environmental Cleaning

- Experienced ES staff trained in IPAC practices and use of PPE should be assigned; ES staff cleaning the room must use the same PPE as other HCPs.
- Routinely used hospital grade disinfectants following the manufacturer's recommendations are sufficient; consider use of disinfectant with virucidal claim.
- The frequency of cleaning based on the level of contamination with blood and/or body fluids.
- Housekeeping equipment should be disposable or remain in the room.

Laboratory Testing

- Minimize testing; only testing essential to the diagnosis and acute management of the patient should be performed
- Patients with suspected EVD should be tested for EV
- Appropriate testing to rule out more common infectious causes of fever in the returned traveler (e.g. malaria, typhoid)
- Specimens should be taken by experienced staff: use double gloves to facilitate the cleaning of the exterior of the specimen container
- Laboratory must be contacted prior to collection and transport of specimens; specimens should not be transported in a pneumatic tube system

Public Health Ontario
PARTNERS FOR HEALTH

Santé publique Ontario
PARTENAIRES POUR LA SANTÉ

Laboratory Testing Guidance

Dr. Vanessa Allen

Dr. Jonathan Gubbay

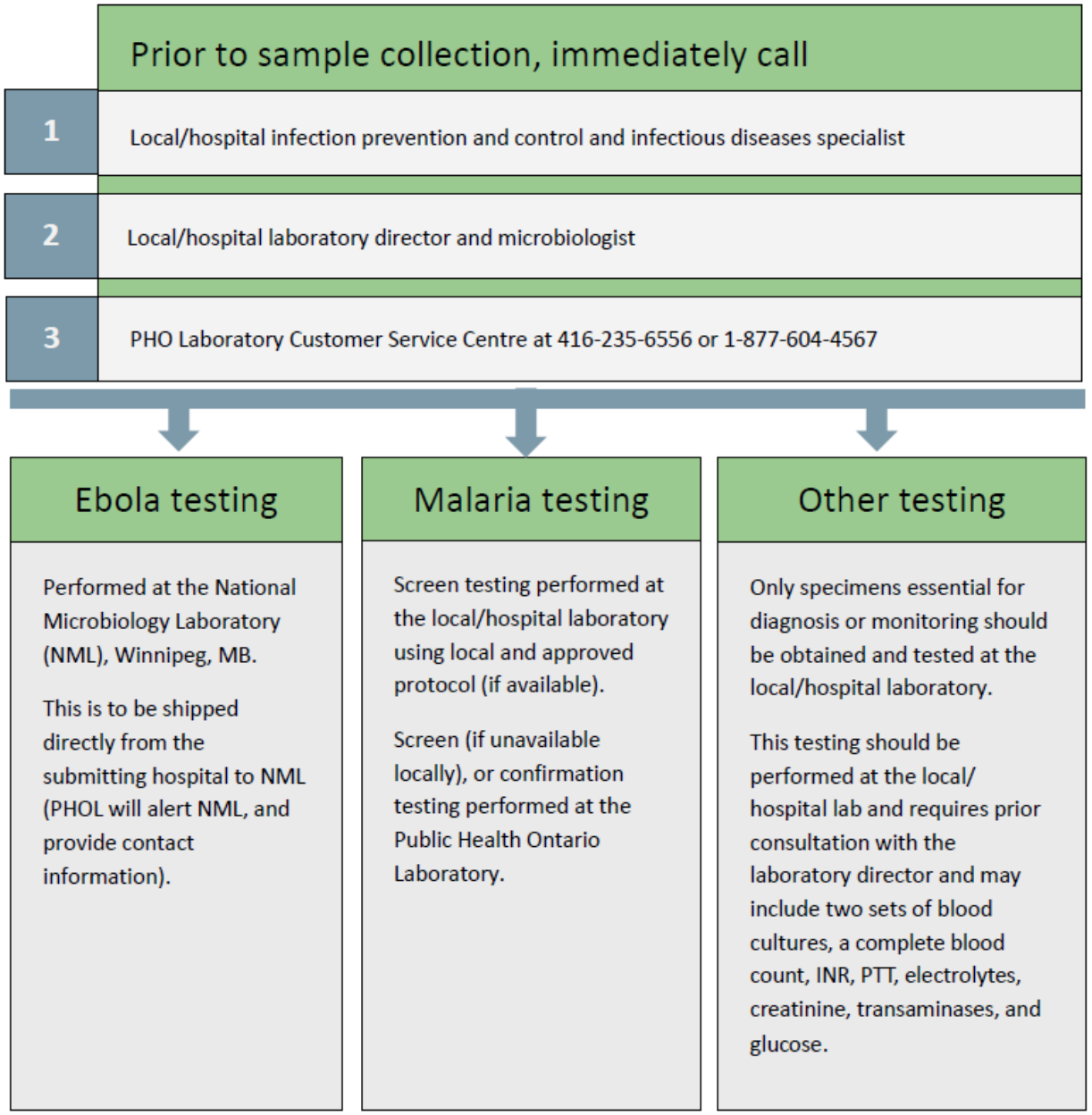
Ontario
Agency for Health Protection and Promotion
Agence de protection et de promotion de la santé

Public Health Ontario
PARTNERS FOR HEALTH

Santé publique Ontario
PARTENAIRES POUR LA SANTÉ

Testing flow for Ebola virus disease (EVD) in Ontario

This is an excerpt from the *Ebola virus disease (EVD) interim sample collection and submission guide* available on the PHO website at www.publichealthontario.ca/ebola



Specimen collection/handling

- Label specimen container prior to collection if possible.
- Double glove to facilitate the decontamination of specimen container;
- The entire outside surface of each specimen container should be wiped with disinfectant in the patient room, then remove outer pair of gloves.
- Place specimens into separate sealable plastic biohazard bags.

Specimen collection/handling

- Place laboratory requisition separate pocket of the biohazard bag (not inside sealed compartment with specimen).
  - 1 requisition per sample.
- The outside of these biohazard bags should be wiped with hospital-grade disinfectant wipe or disinfectant before leaving the patient's room.
- Transport in a durable, leak-proof secondary container directly to the specimen handling area of the laboratory.

Specimen transport

- Shipping of samples must be done in accordance with the Transportation of Dangerous Goods Regulations (TDGR) by a TDG certified individual.
- Requires handling and shipping according to the international procedures for transport of category A infectious substances (UN2814).

Public Health Ontario | Santé publique Ontario

PARTNERS FOR HEALTH | PARTENAIRES POUR LA SANTÉ

Ebola Virus Disease (EVD)
PHOL Interim Guidance Document for Shipping of Suspect Ebola Specimens to NML by Non-PHOL Sites

August 18, 2014

This document has been updated as of August 18, 2014, based on the best available evidence at that time. Please refer to the Public Health Ontario website, PHO Laboratories - Ebola Test Information Sheet for the most recent version.

THIS DOCUMENT PROVIDES:

Specific instructions for the shipping of suspect Ebola specimens to the National Microbiology Laboratory (NML) by sites other than those from the Public Health Ontario Laboratories (PHOL).

http://www.publichealthontario.ca/en/eRepository/Ebola_virus_disease_(EVD)_Shippping_Suspect_Specimens_to_NML_from_non-PHO_labs.pdf

Malaria testing

PHO recommends (for non-PHO laboratories):

- Thin smear using routine (methanol) fixation.
- ICT after inactivation (e.g. Triton-X 100)
- **Do NOT do thick smears – poor quality after fixation.**

PHOL performs:

1. Thin smear using methanol fixation
2. Malaria ICT and PCR after Triton-X 100 inactivation.

- **Send EDTA blood (2ml) for malaria (do NOT send slides)**
- Ship to PHOL as Category A (UN2814).

Other key testing to perform on all patients

- Blood cultures (2 sets)
- CBC, INR, PTT, electrolytes, creatinine, transaminases, glucose

Avoid:

- cross matching of blood (can't be done safely) - if transfusion required give O Rh negative blood (universal donor).
- Cultures from non-sterile sites (these are non-essential).

Specimen handling/processing in the laboratory

- **Any laboratory staff involved in manipulating, processing, or testing of non-inactivated clinical specimens, including malaria smears, should do so in a class II biological safety cabinet with enhanced precautions, including:**
  - fluid-resistant, long-sleeved cuffed gown
  - gloves
  - full face shield
  - fit-tested N95 or other approved particulate respirator
- The need for additional PPE such as the use of foot/leg coverings, head coverings or specific biohazard suits depends on the potential for fluid contact as determined by the procedure being performed and the presence of clinical symptoms that increase the likelihood of contact with body fluids. It should be noted that these instances will be rare and the PPE recommended above is sufficient to protect the health care provider from infection.
- The use of N95 or other approved particulate respirator is recommended for laboratory testing due to the possibility of aerosol generating procedures in the opening, processing and testing in the laboratory setting, despite the lack of evidence of transmission in this manner.

Pretreatment reduces the titre of Ebola virus - facilitates measurement in open systems.

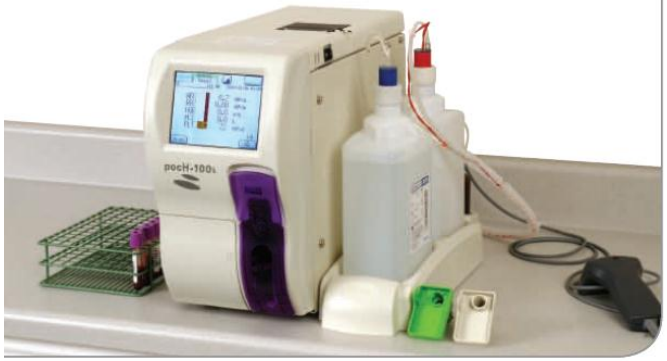
Can be done by:

- Heat inactivation at 56°C for one hour
- 10ul of 10% Triton X-100 per 1ml of serum for one hour.
  - CDC recommends doing both (100% efficacy in inactivation should not be assumed).
- Lysis procedures for nucleic acid extraction (e.g. guanidinium thiocyanate).
- Malaria smears (thin) are not infectious for Ebola virus after standard fixation in methanol.

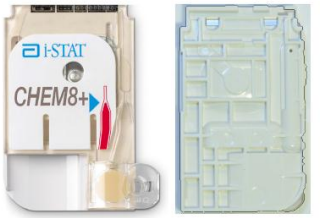
Point of care/small footprint analyzers

Network capability

- Data transfer via LIS (TCP/IP)
- Bi-directional interface



*Not for point-of-care use in a CLIA-waived laboratory.



FRONT BACK

ORIGINAL CHEM8+ CARTRIDGE

FRONT BACK

NEW CHEM8+ CARTRIDGE

Public Health Ontario
PARTNERS FOR HEALTH

Santé publique Ontario
PARTENAIRES POUR LA SANTÉ

Ebola Virus Disease (EVD)
Interim Sample Collection and Submission Guide

August 14, 2014

Table 1: Recommended specimen collection guidelines for diagnosis/detection of Ebola virus disease.

Specimen	Test	How to submit
Blood	PCR & viral culture	2-4 mls in tube containing EDTA
Blood	Serology	2-4 mls in serum separator tube (SST)

Repeat laboratory testing on day 4 of fever

- Ebola virus is only present in blood after onset of fever.
- It may take up to 4 days after fever onset for Ebola virus PCR to be positive.
  - If initial testing was done within 4 days of onset of fever, testing should be repeated on day 4 if clinical suspicion is still present.

Ebola PCR testing at the National Microbiology Laboratory, Winnipeg

- NML conducts PCR testing for 2 Ebola virus targets:
  - Polymerase gene
  - Nucleoprotein gene

- Testing currently done within one day of receipt at NML - may change depending on testing demand, level of suspicion that patient has Ebola (pretest probability).

Question & answer session

Outstanding questions

- Questions that were not answered can be sent to the Ministry of Health and Long-Term Care
  - emergencymanagement.moh@ontario.ca
  - Health Care Provider Hotline: 1-866-212-2272

Public Health Ontario
PARTNERS FOR HEALTH

Santé publique Ontario
PARTENAIRES POUR LA SANTÉ

Closing Remarks

Dr. Brian Schwartz

Ontario
Agency for Health Protection and Promotion
Agence de protection et de promotion de la santé

Thank you

emergencymanagement.moh@ontario.ca

Health Care Provider Hotline: 1-866-212-2272