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EMS: Transport and Care of Patients ill with EVD

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Objectives

- Familiarization with Ebola
- Issues for EMS/Public Safety in management of patients with serious communicable disease
- Special considerations
- Lessons learned
- Implications for community preparedness

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Emergency Medical Services

EVD: What's special?

"Ebola virus disease (EVD) is a severe, often fatal illness, with a case fatality rate of up to 90%"

"the worst outbreak in the four-decade history of tracking the disease"

"Ebola epidemic ravaging West Africa an international health emergency"

Infection control: what's wrong?

As also found in the hospital setting:

- EMS crews do not comply with hand hygiene recommendations
- Compliance with standard infection control precautions and equipment disinfection has been described as suboptimal
- Collections of environmental samples from ambulances have grown methicillin-resistant *Staphylococcus aureus* and other multi-drug resistant organisms

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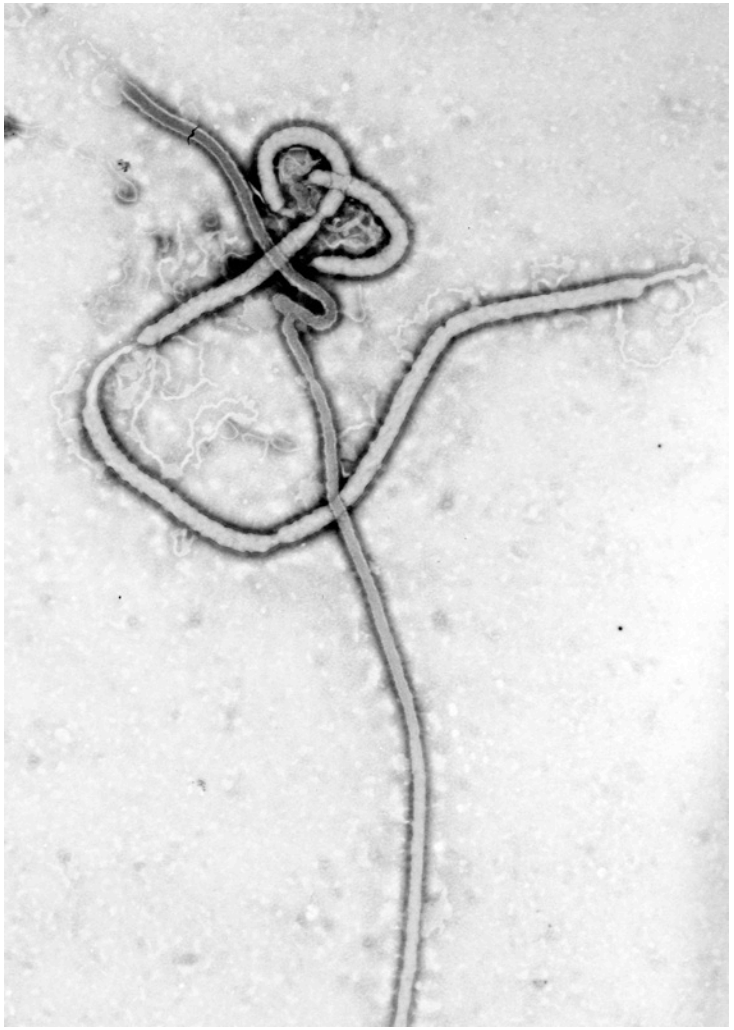
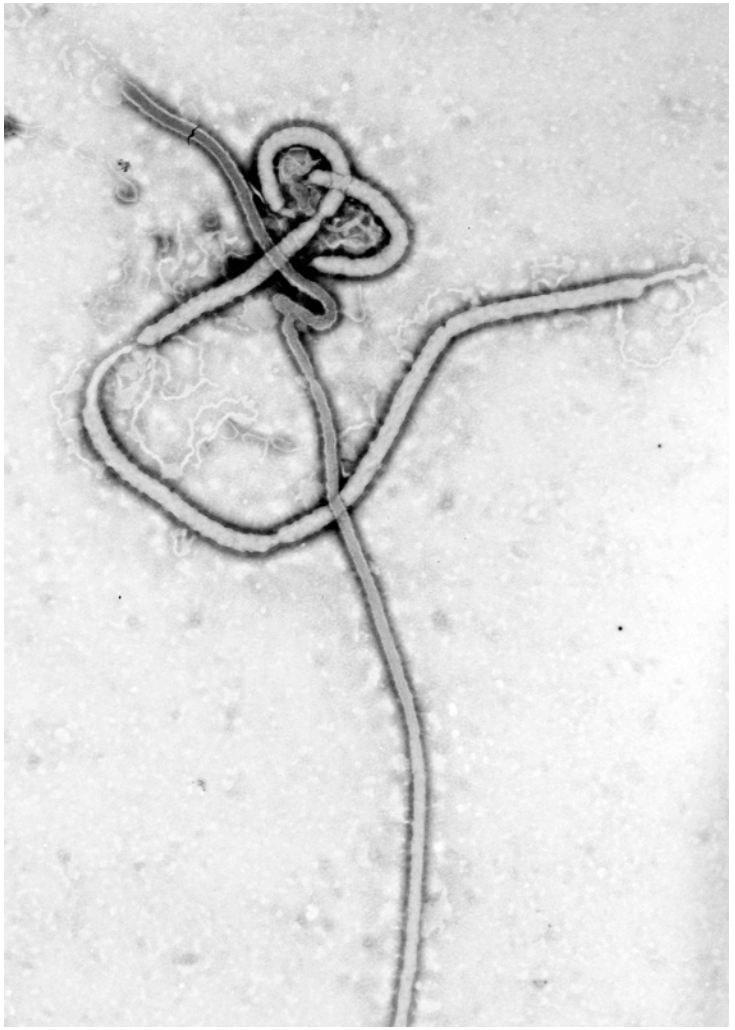
Education: Serious Pathogens

- Nature of the disease
- Routes of transmission
- Infection control
- Immunization, prophylaxis, post-exposure prophylaxis
- Treatment



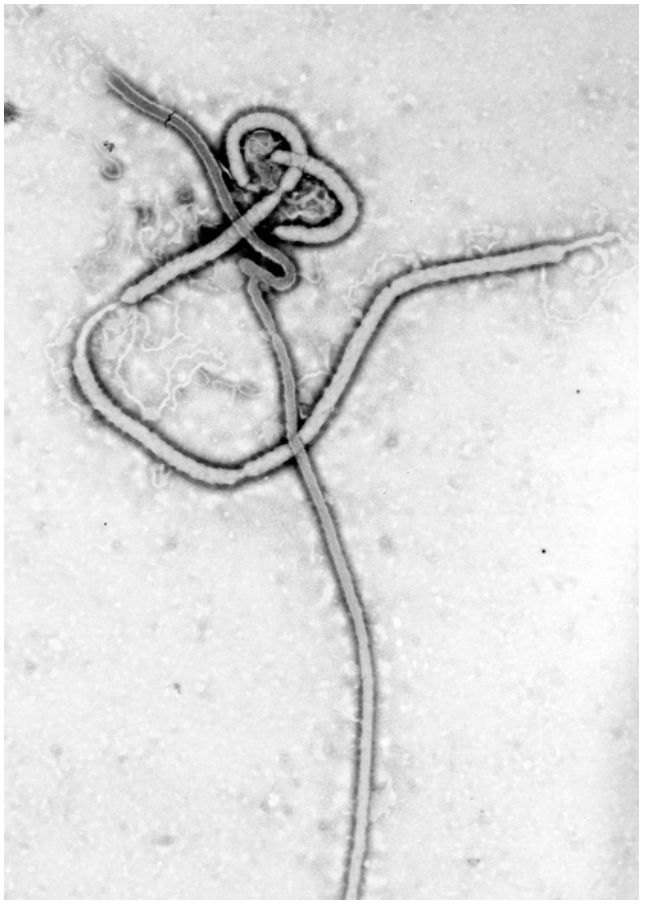
Education: Serious Pathogens

- Viral Hemorrhagic Fever
  - Animal reservoir
  - Usually geographically restricted to where the host species lives
  - Human outbreaks occur sporadically



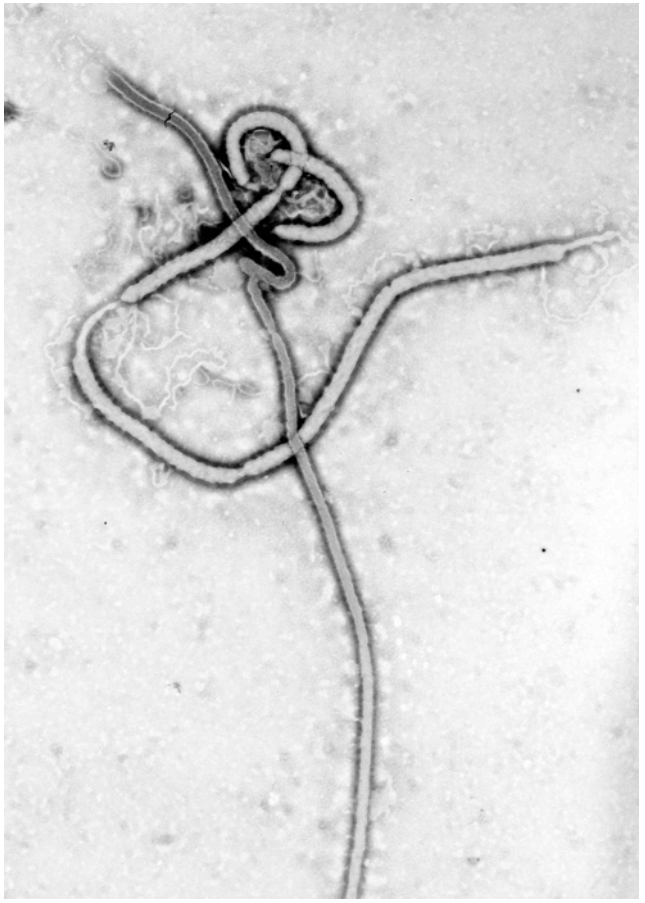
Ebola Virus Disease

- Exposure
  - Close Contact
    - Blood or infected fluids of host animal or person ill with EVD
  - Incubation
    - 2-21 days
    - More typically 8-10 days



Ebola Virus Disease

- Signs and symptoms
  - Sudden fever, chills, muscle aches, with diarrhea, nausea, vomiting, abdominal pain
  - Also headache, shortness of breath, chest pain
  - More severe
    - Internal and external bleeding, mental status changes, multi-system organ failure, shock



Ebola Virus Disease

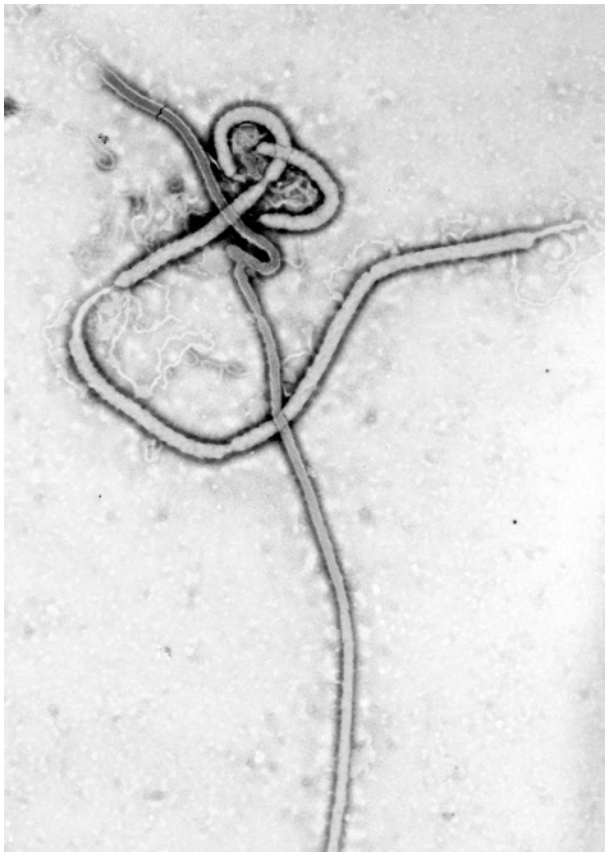
- Transmission
  - Exposure to blood or infected bodily fluids

  -Infection control posture

  STANDARD,CONTACT,DROPLET

  People who contract the illness are not contagious until symptoms develop

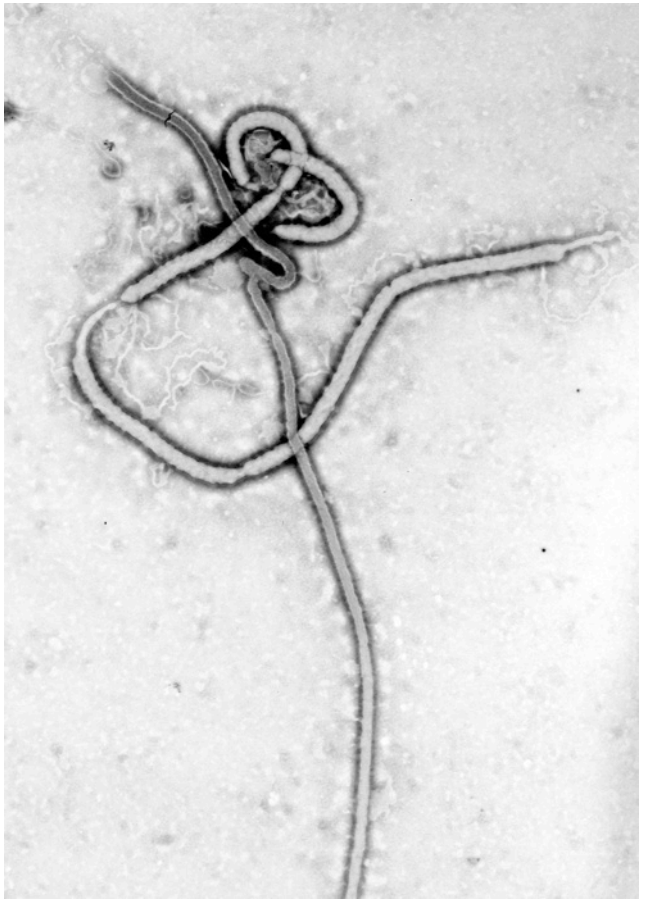
  People are more contagious later in the course of their disease



Ebola Virus Disease

- Vaccine
  - In development
- Treatment
  - Supportive therapy
    - Fluid and electrolytes
    - BP and oxygenation
    - Management of other infections
  - Experimental treatment
    - ???

Case fatality rate is reported high – but experience in the US health system will be different



PPE

	Symptoms Presented		
Ebola Exposure Level	**Asymptomatic**	**Fever**	**Body Fluids**
Known of Suspected Exposure	**Low Risk***	**Low Risk**	**High Risk**
Possible Exposure	**SOP**	**Low Risk**	**Low Risk**
No Known Exposure	**SOP**	**SOP**	**SOP**

*PPE requirements will be determined by the situation. SOP may be also be appropriate if the risk is acceptable.

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Doffing PPE

CDC | CDC Home | Search | Health Topics A-Z

MMWR

Weekly

May 16, 2003 / 52(19);433-436

Cluster of Severe Acute Respiratory Syndrome Cases Among Protected Health-Care Workers --- Toronto, Canada, April 2003

Donning and Doffing PPE

SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

1. GOWN

- Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
- Fasten in back of neck and waist

2. MASK OR RESPIRATOR

- Secure ties or elastic bands at middle of head and neck
- Fit flexible band to nose bridge
- Fit snug to face and below chin
- Fit-check respirator

3. GOGGLES OR FACE SHIELD

- Place over face and eyes and adjust to fit

4. GLOVES

- Extend to cover wrist of isolation gown

USE SAFE WORK PRACTICES TO PROTECT YOURSELF AND LIMIT THE SPREAD OF CONTAMINATION

- Keep hands away from face
- Limit surfaces touched
- Change gloves when torn or heavily contaminated
- Perform hand hygiene

SEQUENCE FOR REMOVING PERSONAL PROTECTIVE EQUIPMENT (PPE)

Except for respirator, remove PPE at doorway or in anteroom. Remove respirator after leaving patient room and closing door.

1. GLOVES

- Outside of gloves is contaminated!
- Grasp outside of glove with opposite gloved hand; peel off
- Hold removed glove in gloved hand
- Slide fingers of ungloved hand under remaining glove at wrist
- Peel glove off over first glovet
- Discard gloves in waste container

2. GOGGLES OR FACE SHIELD

- Outside of goggles or face shield is contaminated!
- To remove, handle by head band or ear pieces
- Place in designated receptacle for reprocessing or in waste container

3. GOWN

- Gown front and sleeves are contaminated!
- Unfasten ties
- Pull away from neck and shoulders, touching inside of gown only
- Turn gown inside out
- Fold or roll into a bundle and discard

4. MASK OR RESPIRATOR

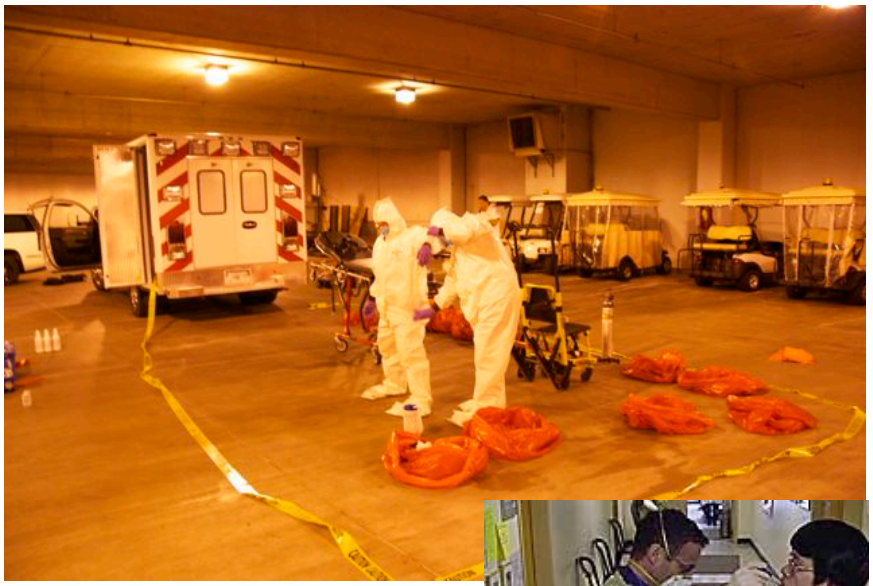
- Front of mask/respirator is contaminated — DO NOT TOUCH!
- Grasp bottom, then top ties or elastics and remove
- Discard in waste container

PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS BECOME CONTAMINATED AND IMMEDIATELY AFTER REMOVING ALL PPE

Receiving facility

Ambulance disinfection
Mission recovery

- Driver compartment isolation and patient compartment barrier drapes
- Decon, disinfection of ambulance, PPE doffing and waste removal
  ALL SUPERVISED
- Surveillance



What you saw on CNN

Vehicle preparation

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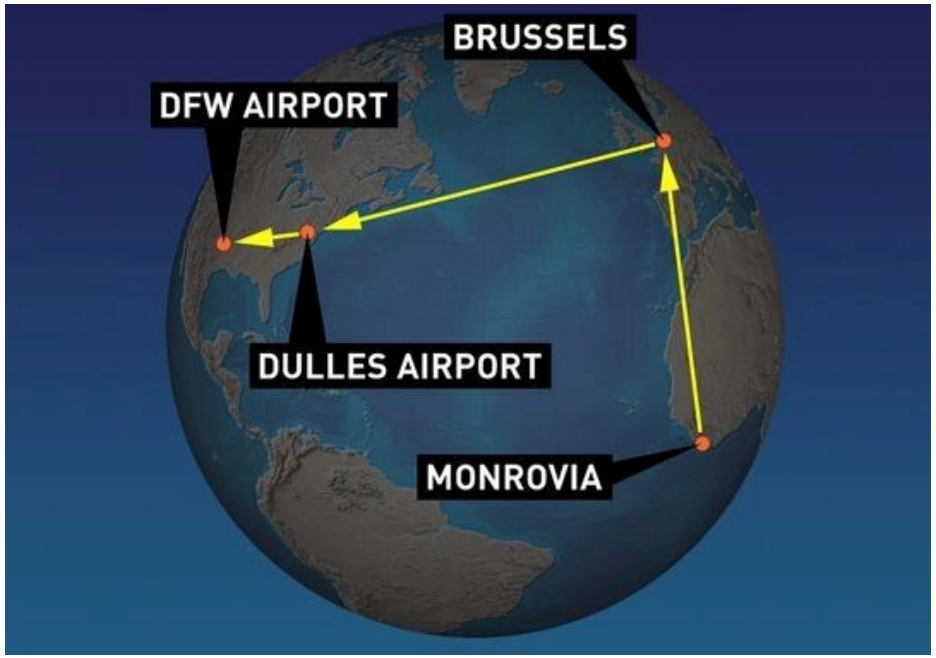
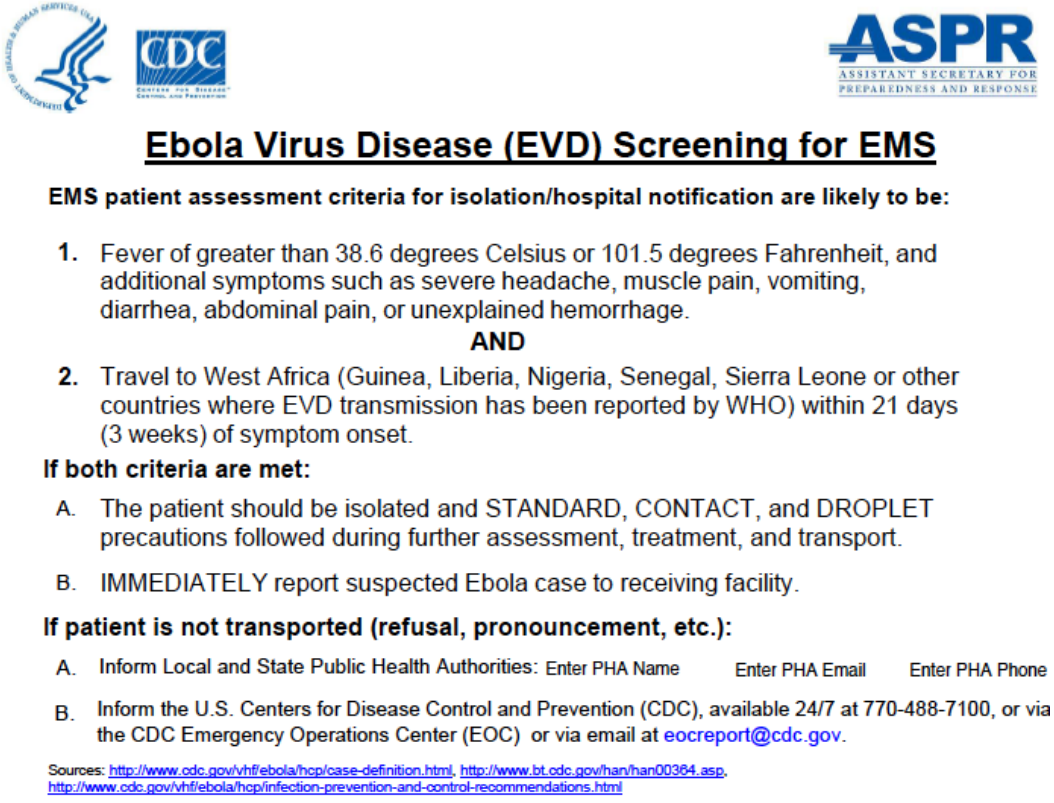
Other Considerations

- Sharps
- Aerosol Producing Procedures
- Volume losses and electrolyte abnormalities
- Cardiac monitoring and IV access
- Exposures

Community Considerations



“My brother just returned from Liberia and has fever and muscle aches”



Ebola Virus Disease (EVD) Screening for EMS

EMS patient assessment criteria for isolation/hospital notification are likely to be:

1. Fever of greater than 38.6 degrees Celsius or 101.5 degrees Fahrenheit, and additional symptoms such as severe headache, muscle pain, vomiting, diarrhea, abdominal pain, or unexplained hemorrhage.

AND

2. Travel to West Africa (Guinea, Liberia, Nigeria, Senegal, Sierra Leone or other countries where EVD transmission has been reported by WHO) within 21 days (3 weeks) of symptom onset.

If both criteria are met:

A. The patient should be isolated and STANDARD, CONTACT, and DROPLET precautions followed during further assessment, treatment, and transport.

B. IMMEDIATELY report suspected Ebola case to receiving facility.

If patient is not transported (refusal, pronouncement, etc.):

A. Inform Local and State Public Health Authorities: Enter PHA Name Enter PHA Email Enter PHA Phone

B. Inform the U.S. Centers for Disease Control and Prevention (CDC), available 24/7 at 770-488-7100, or via the CDC Emergency Operations Center (EOC) or via email at eocreport@cdc.gov.

Sources: http://www.cdc.gov/vhf/ebola/hcp/case-definition.html, http://www.bt.cdc.gov/han/han00364.asp, http://www.cdc.gov/vhf/ebola/hcp/infection-prevention-and-control-recommendations.html

- Screening
  - PSAP
  - HCWs
- Safety
  - Good infection control practice
- Receiving facility
- Mission recovery
  - Disinfection, infectious waste, follow-up

Considerations

- The Ebola epidemic is in Sierra Leone, Guinea and Liberia
- Asymptomatic patients are not contagious
- Risk of transmission of EVD increases with severity of illness
- Primary infection control principle is preventing exposure to blood and infectious bodily fluid
- PPE should reflect patient condition and operating environment
- Supervised PPE doffing and disinfection is advisable
- Regionalization of care

Questions?

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