Location, Location, Location!
EMS and Emergency Department

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Learning Objectives

- Recognize the vital role that each team member plays in response to a public health emergency
- Identify unique challenges to infection control in each setting
- Formulate effective strategies to protect healthcare providers and staff

Overview

- Challenges associated with EMS management of patients with serious communicable disease
- Biosafety transport program preparation and execution
- Considerations for EMS, ED, and community preparedness
Take-Home Points: EMS & ED

- A dynamic environment that is focused on triage, evaluation, and stabilization
- “3-I” model = Identify, Isolate, Inform
- Decontamination and isolation: prevent or decrease transmission
- Triage: prioritization of incoming patients/identification of suspect cases
- Personnel safety and staging: scene resource management

Photo: Michelle Lin, MD

EVD: What Was So Special?

“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”

Photo courtesy of the CDC.

Infection Control: What’s Wrong?

Similar to what is found in the hospital setting:

- EMS crews do not adhere to hand hygiene recommendations
- Adherence to standard infection control precautions and disinfection of equipment has been described as suboptimal
- Collections of environmental samples from ambulances have grown methicillin-resistant *Staphylococcus aureus* and other MDROs

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Education: Serious Pathogens

- Route of transmission
- **Infection control**
- Immunization, prophylaxis
- Post-exposure prophylaxis
- Treatment

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Competency-Based Training: Donning/Doffing PPE

Protecting Environmental Surfaces
Selection of PPE should be based on:

- CDC-recommended standard and transmission-based guidelines
- Risk of exposure to bodily fluids
- Operating environment
- Competencies to use the PPE ensemble
Patient Destination

Photos courtesy of Alex Isakov.

PPE and Patient Decontamination

- Depends on suspect exposure
- “In most cases, decontamination will not be necessary”
- Must be integrated with screening and isolation procedures
- OSHA recommendations

CDC: www.cdc.gov/vhf/ebola/healthcare-us/ppe/guidance.html
California EMSA: Patient Decontamination Recommendations for Hospitals
www.emsa.ca.gov/Media/Default/PPS/PPS%20BRCA%20%281%29.pdf
Photo: Clement Yeh
Ambulance Disinfection Mission Recovery

- Driver compartment isolation and patient compartment barrier drapes
- Decontamination, disinfection of ambulance, PPE doffing, and waste removal ALL SUPERVISED
- Post-mission medical surveillance

Decontamination

Multiple triage/decon schema exist:
- HOT/RED/“Dirty”
- WARM/YELLOW/“Less Dirty”
- COLD/GREEN/BLUE “Clean”


California EMSA Patient Decontamination Recommendations for Hospitals. www.emsa.ca.gov/Media/Details/3704133.html
Decontamination (cont.)

- Challenges
  - Time to set up
  - Delay in care
  - Provider fatigue
  - PPE
  - Environmental impact
- Mitigation
  - Establish standard donning/doffing procedures
  - Frequent drills/exercises
  - Infection control involvement

Ideal Decontamination Location

- Space for vehicles and work area for wiping-down of equipment, collecting biomedical waste, and doffing PPE
- Protection from weather elements
- Secure from bystanders/media/photo ops
- Clear separation of clean and dirty areas
- Bathroom facilities—running water

Photo: Clement Teh

CDC. [www.cdc.gov/vhf/ebola/healthcare-us/emergency-services/ambulance-decontamination.html]
Community Considerations

Interim Guidance for Emergency Medical Services (EMS) Systems and 9-1-1 Public Safety Answering Points (PSAPs) for Management of Patients with Known or Suspected Ebola Virus Disease in the United States

Identify, Isolate, Inform: Emergency Department Evaluation and Management of Patients with Possible Ebola Virus Disease
Important Themes

- Vigilance and good infection control practice
- Identify, isolate, and inform
- Education and training
- PPE should reflect patient condition and operating environment
- Maintenance of competencies
- Supervised PPE doffing and disinfection may guard against exposure
- Regionalization of care
The ED Environment?

Characteristics of EDs

- **Accessible**: To public and EMS
- **Dynamic**: Fluctuating volume and activity over 24-hour period
- **Diverse** (**acuity**): Both low- and high-severity patients in close proximity
- **Interconnected** (**provider**): Interactions with many other hospital services
- **Crowded**: Unscheduled care and system constraints
3-I: Identify, Isolate, Inform

- **Identify:**
  - Exposure history
  - Signs and symptoms

- **Challenge:**
  - Triage process

- **Isolate:**
  - Don PPE
  - Isolate/cohort patient
  - Decontamination as needed

- **Challenge:**
  - Transmission prevention
3-I: Identify, Isolate, Inform (cont.)

- **Inform:**
  - Notification of:
    - Hospital infection control
    - Public Health Dept.

- **Challenge:**
  - Communication
  - Response coordination

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**Triage**

- **Triage process**
  - Sorting
    - Emergency Severity Index
    - START/jumpSTART
    - SALT
  - Prioritization and cohorting to ED location
  - Initial identification of suspect cases
    - Exposure + symptom
    - Screening tools (EMR)
  - Re-triage from EMS

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Photo: Clement Yeh
Triage (cont.)

- **Challenges**
  - Incorporating identification of suspect cases into process
  - Interoperability of triage schemes
  - Throughput bottleneck
  - Walk-in vs EMS triage
  - Shortage of isolation locations

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Triage (cont.)

- **Mitigation Strategies**
  - Clear case definitions
  - PPE
  - Consistent triage process
  - Pre-arrival notification by EMS
  - Identify isolation areas for suspect cases
Replaced image with image from slide 4 (cropped 2nd paramedic)
Stephanie Stowell Wenick, 4/28/2017
Safety and Staging

- Staging: gathering people and equipment before use
- ED is a high-traffic area
- Often overcrowded
- During a disaster, may be further overwhelmed with personnel
- Risks to patients and providers

Safety and Staging (cont.)

- Challenges
  - Routine risk of contact with potentially infectious bodily fluids
  - Multiple patient-provider contacts
  - Time constraints
  - Access to PPE
  - Training
Safety and Staging (cont.)

- Mitigation
  - Infection-control procedures
    - PPE
    - Access control
    - Health screening for personnel
    - Mass prophylaxis/vaccination for staff
  - Locate staging area for personnel away from ED
  - Security ingress/egress control for area

Key Questions

- How does your ED identify and triage suspect cases?
- What is the decontamination and isolation procedure?
- How does your ED manage provider/staff resources?
- How do you minimize risk to ED providers?
Additional Resources: EMS


Additional Resources: Emergency Department

THANK YOU!

Questions?
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