Infection Prevention and Emergency Management

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Objectives
• Impact of infectious diseases during disasters
• Interventions for infection prevention during disasters
  – All healthcare settings
• How to assess organization’s response plan r/t infection prevention

9/11: Food Safety at the Pentagon

Hurricane Katrina

Biggest Threat r/t Infectious Diseases

Impact of 2003 SARS Outbreak

SARS Demographics 2003 Outbreak

<table>
<thead>
<tr>
<th>Total cases: 8,096</th>
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<tbody>
<tr>
<td>Mortality rate: 9.6%</td>
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<tr>
<td>Nosocomial transmission: 55 - 72%</td>
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<tr>
<td>72% of cases in Canada were HCWs</td>
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<tr>
<td>Costs: $18 billion in Asia; $1.5 - $2.1 billion in Canada</td>
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HCW infection associated with aerosolizing procedures & poor infection prevention practices, including PPE use/removal
H1N1 pandemic: Real life test of preparedness for infectious disease disasters

Diseases travel globally

Mr. D

Mr. P

Mr. T

Diseases travel locally

Diseases travel globally

The Environment Plays Role in Infection Transmission

Index Case: Case A (Mother) Case B (Son)

Mr. P's wife in waiting room

Mr. P

Healthcare

Public

How are Infection Prevention Interventions Different During a Disaster?

Difference: Scope

Biosurveillance

We need rapid identification of an incident
Screening & Triage Best Practices

- Screen all visitors & staff
  - Consider limiting visitors
- Limit number of entrances
- Separate staff entrance

Train screeners well

Isolation

- Follow HICPAC guidelines when possible
- Undiagnosed: transmission based precautions

**Symptoms Isolation Precautions Needed**

Cough, runny nose, watery eyes = Standard
Fever & cough (adults) = Droplet
Fever & cough (kids) = Droplet & Contact
Fever, cough, bloody sputum, & wt loss = Airborne
Eye infection or drainage = Standard

See table in APIC document

Better to over-isolate

SARS Outbreak in Canada

Infected person

10 HCW’s infected per day that infected case was not identified & isolated

Improvised Isolation Area

- Improvising isolation area
  - Physically separate the pt
  - Building or area outside can be used
  - Best if room/area has walls & a door
  - Makeshift walls/doors
    - Plastic or other barrier material
  - Hang isolation sign near entrance

H1N1 in NYC*

26 H1N1 pts associated with 277 unprotected staff exposures

*Banach, et al., 2011
May Need Negative Pressure Surge Capacity

Discontinuing Isolation
• Do not D/C isolation until anti-infective therapy sensitivity is verified

Exposure to Anthrax spores:
Need soap & water

Exposure to patient with anthrax:
alcohol-based gels/foams are OK

Cohort Staff
• Assign dedicated staff
• Use vaccinated staff

Social Distancing Principles

3 feet

Bed/stretcher/cot configuration in surge areas

Hand Hygiene

NEJM: Med student tied to MRSA outbreak
- Failure to wash hands
Need PPE
- Adequate amounts
- Teach healthcare personnel how to use it

<table>
<thead>
<tr>
<th>Category of Staff</th>
<th>Respirator Gown</th>
<th>Gloves</th>
<th>Goggles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Little to no exposure</td>
<td>1 disposable per contact/exposure</td>
<td>1 per exposure</td>
<td>None</td>
</tr>
<tr>
<td>Prolonged exposure</td>
<td>1 reusable per outbreak (plus 2 cartridges/month*)</td>
<td>1 per exposure</td>
<td>1 per contact</td>
</tr>
<tr>
<td>Infrequent exposure(s)</td>
<td>1 reusable per outbreak (plus 2 cartridges/month*)</td>
<td>1 per shift</td>
<td>1 per contact</td>
</tr>
</tbody>
</table>

*Disposable respiratory cartridges are needed for reusable respirators.
Radonovich et al. (2009)

Remove Mask/Respirator

Don’t

Do: Remove from behind

Extending the Use/Reusing Respirators
- APIC Guidance
  - APIC website
  - Free

Linens Management
- Laundry staff need PPE
- Consider using disposable linens
- Bag at point of use
Smallpox is a major risk for laundry personnel

Hard to be compliant with N95s over long periods of time
Need Rapid Mass Distribution of Medical Countermeasures
- Meds: 48 hours
- Vaccine: 4 – 6 days

Push:
Mail carriers

Pull:
PODs

Innovative POD Design
If you build it, they will come...

Drive through vaccine program

No adverse events in 15 years
(> 50,000 shots & 2,000 intranasal vaccines administered)
Carrico et al. (2012)

Infection Prevention in PODs
- Published in AJIC

Need liberal sick leave policy for disasters
HCW role in disease spread

True or False:
25% of unvaccinated HCWs claim they don’t have a role in disease bx

SARS Outbreak in Taiwan

Infected laundry worker

137 Secondary Cases

Planning Documents
- Free of charge on APIC Website
www.apic.org

Infection Prevention and Control for Shelters During Disasters

APIC/OSHA/NAEMTO Joint Emergency Preparedness Subcommittee

APIC: American Public Health Association 
OSHA: Occupational Safety and Health Administration 
NAEMTO: North American Emergency Medical Treatment Organization
More Free Planning Products

Assessing Hospital Plans (in AJIC)

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<th>Hospital Emergency Management Plan and Biological Attacks</th>
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<tr>
<td>1. Infection Prevention Comp. of a Hospital Emergency Management Plan</td>
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<td>2. Assessing Hospital Plans (in AJIC)</td>
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<tr>
<td>3. Practice Makes…. Better</td>
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Assessing Hospital Plans (in AJIC)

Infection Prevention Comp. of a Hospital Emergency Management Plan

- Infection Prevention Plan and its structure
- The plan and the organizational structure that will be used
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Practice Makes…. Better

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<th>Bioterrorism scenario tests coordination with law enforcement</th>
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Infectious Disease Scenarios

Smallpox moulage

Measles moulage

Conclusions

- Risk of disease spread during IDDs is high
- Disaster planning r/t infection prevention is essential
- We need to test our plans
References