Initial Management of Infectious Diseases of Public Health Concern

EBOLA AND OTHER INFECTIOUS BADNESS

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Outline

- Recent infectious disease responses
  - Lessons learned
- Infection control and healthcare preparedness
- Patient screening and isolation
- Management of other “special pathogens”
“...as we know, there are known knowns; these are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns – the ones we don't know we don't know. And if one looks throughout the history of our country and other free countries, it is the latter category that tend to be the difficult ones.”

- Donald Rumsfeld, 2002
Preparing for Infectious Diseases of Public Health Concern

MARY FOOTE, MD, MPH
BUREAU OF HEALTHCARE SYSTEM READINESS
OFFICE OF EMERGENCY PREPAREDNESS AND RESPONSE
New York City = High Risk

**Regional Transportation Hub**
- 1.4M people commute into Manhattan
- 4.9M ride the subway each work day

**International Transportation Hub**
- 2 international airports
- 100 million travelers annually

**International Icons/Landmarks**
- Statue of Liberty, United Nations, Empire State Building, World Trade Center, etc.

**Large Planned Events**
- United National General Assembly, New Year’s Eve, Thanksgiving Day Parade, 2014 Super Bowl, other sporting events.
<table>
<thead>
<tr>
<th>Event</th>
<th>Year</th>
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<tbody>
<tr>
<td>Bioterrorism</td>
<td>2001</td>
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<tr>
<td>SARS</td>
<td>2003</td>
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<td>&quot;Swine Flu&quot;</td>
<td>(H1N1) 2009</td>
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<tr>
<td>MERS-CoV</td>
<td>2012–present</td>
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<tr>
<td>Ebola</td>
<td>2014</td>
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<td>Zika</td>
<td>2015</td>
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Ebola hasn’t gone away

- 2 recent outbreaks in DRC
  - one ongoing in northeast

- Robust international response but significant challenges
  - Conflict zones, porous border region, community resistance, healthcare transmission (19 HCW cases)

- Cases (likely + confirmed) = 216
  - Deaths = 139 (64% CFR)

- WHO meeting today to assess

Confirmed and probable Ebola virus disease cases by health zone in North Kivu and Ituri provinces, DRC
Measles

- **Current outbreak in NYC/NYS**
  - Travel to Israel or contacts
  - NYC = 6 cases (orthodox community)
  - NYS = 7 cases

- **1st NYC cased not initially recognized**
  - Was not isolated in ED for ~12 hrs
  - Significant efforts required to manage exposures

- **Highlights importance of screening for fever + rash at points of entry**
What Other Outbreaks Have Been Reported?

- NYC: WNV, Legionnaires’ disease, r/o MERS
- US: Salmonellosis, hepatitis A, murine typhus, acute flaccid myelitis, listeriosis
- Central/South America and Caribbean: dengue, chikungunya, malaria, cholera, diphtheria
- Europe: WNV, Legionnaires’ disease, tick-borne encephalitis
- Mideast: Leptospirosis, MERS, cholera, diphtheria
- Asia: dengue, chikungunya, malaria, leptospirosis, CCHF, Japanese encephalitis, diphtheria, avian influenza (H5N6)
- Africa: cholera, monkeypox, lassa fever, EVD, YF, chikungunya, typhoid
The Landscape has Changed

- 2014 Ebola Outbreak was a harbinger of thing to come
- Disease patterns are changing
  - Increased likelihood of previously isolated outbreaks to have wider impact
  - Travel much easier
  - World economy reliant on import/export
  - More human interface with the natural world
Ongoing health system Preparedness

EBOLA AND BEYOND
Healthcare System Preparedness Goals

- Prepare to **detect** in hospitals or clinics
  - Surveillance
  - Laboratory Reporting
  - Screening protocols

- Prepare to **protect** the public, patients and healthcare workers
  - Guidance, Plans and Protocol Development

- Prepare to **respond** → Communicate – Coordinate – Collaborate
  - Train & Exercise
  - Coordination between public health and healthcare is critical
How do you get ready and stay ready?

- Back to the basics...Infection Control!
- Preparedness cycle
  - Plan
  - Train
  - Test/Exercise
  - Evaluate
Ebola was a story about Infection Prevention and Control

S. Korea MERS outbreak: 2nd hospital closed, interest rate cut

By Tim Hume, KJ Kwon, Sol Han and Juang-eun Kim, CNN
Updated 11:58 PM ET, Thu June 11, 2015

Even strong healthcare systems are vulnerable
16% of MERS cases occurred in healthcare workers
Infection Control as a Tool for Preparedness

Elevating everyday infection control practices

- Reduce risk of outbreaks
- Protect patients and staff
- Decrease spread of infections between healthcare settings and community
- Support ‘all infectious hazard’ preparedness
  - Pandemic-flu vs. seasonal flu
    → tools are the same!
Planning

- Plans don’t need to be pathogen specific
  - Can focus on groups with common characteristics
  - E.g. Ebola-like, airborne transmission, droplet transmission, etc.

- Planning should be interdisciplinary
  - Infection control, medical, admin, environmental, facilities, emergency management, etc.

- Utilize quick reference tools
  - Checklists, algorithms, job action sheets, etc.
Ebola Virus Disease (EVD) Evaluation Algorithm

(last updated September 3, 2014)

FEVER (≥ 101.5°F) and compatible symptoms* for EVD in patient who has traveled to an Ebola affected area** in the 21 days before illness onset.

* Severe headache, myalgia, vomiting, diarrhea, abdominal pain or unexplained hemorrhage

Yes

1. Isolate patient in single room with private bathroom.
2. Implement standard, contact and droplet precautions.
3. Identify any risk exposures for EVD.
4. Notify appropriate hospital staff, including Infection Control Program.
5. IMMEDIATELY report to New York City Department of Health (NYC DOH) at 1-866-692-3641.

HIGH-RISK EXPOSURE

- Percutaneous, mucous membrane or direct skin contact with blood or body fluids from a confirmed or suspected EVD patient without appropriate PPE.
- Laboratory handling of body fluids from a confirmed or suspected EVD patient without appropriate PPE or biosafety precautions.
- Participation in funeral rites which include direct exposure to human remains in the geographic area where outbreak is occurring without appropriate PPE.

LOW-RISK EXPOSURE

- Healthcare workers in facilities that have treated confirmed or suspected EVD patients.
- Household members or others with direct contact to confirmed or suspected EVD patient.

OR

- Residence or travel to affected areas** without HIGH or LOW-risk exposure.

NO KNOWN EXPOSURE

Review Case with NYC DOHMH Using Additional Evaluation Criteria:

- Severity of illness
- Abnormal blood work:
  - Platelet count < 150,000/µL
  - Elevated hepatic transaminases
  - Abnormal coagulation studies
- Possible or likely alternative diagnosis

EVD SUSPECTED-TESTING INDICATED

- NYC DOHMH will arrange specimen transport and testing at Public Health Laboratory and CDC.
- NYC DOHMH, in consultation with New York State DOH and CDC, will provide guidance to hospital on all aspects of patient care and management.

EVD UNLIKELY, TESTING NOT CURRENTLY INDICATED

If patient requires in-hospital management:
- Admit to single patient room with private bathroom.
- Implement standard, contact, and droplet infection control precautions.
- Evaluate for other likely illnesses, e.g., malaria and typhoid fever.
- Observe clinical course for 24-48 hours and if patient has improved or an alternate diagnosis is made then EVD ruled out.
- If patient’s symptoms progress, re-assess need for testing with NYC DOH.

If patient does not require in-hospital management:
- Alert NYC DOHMH prior to discharge to arrange home isolation and monitoring by NYC DOHMH to ensure symptoms improve.

No need to call NYC DOHMH.
Adviser patient to continue to check temperature daily until 21 days after return from Africa.
Consult with a physician at the first signs of illness.

* CDC Website to check current affected areas: www.cdc.gov/ebola
Training

- **Job-specific** based on expected roles during response
- **Competency-based training** is ‘gold standard’
  - Allows learner to demonstrate knowledge and/or ability
  - Aided by checklists, job-action sheets, etc.
- **Skills-based**
  - Hands-on training with demonstration of competency
- **Knowledge-based**
  - Can utilizes quizzes, scenario-based discussions, etc.
- **Annual competencies vs. just-in time**
Infectious Disease Exercises

- Opportunity to test protocols and staff competencies
- Often led by emergency management → Infection control involvement is crucial

- All NYC hospital networks have required annual exercises
  - Have tested VHF\s, coronaviruses, avian influenza

- DOHMH programs supports primary care and long-term care exercise programs
  - Often have ID focus
Mystery Patient Drills

- Test screening and isolation protocols and capabilities
- DOHMH conducted unannounced “mystery patient drills” (MPD) (2016)
  - 98 drills in 50 NYC Emergency Departments
- Two scenarios
  - Fever + travel + respiratory = MERS
  - Fever + travel + rash = measles
- MPD Toolkit ([http://on.nyc.gov/IDPrep](http://on.nyc.gov/IDPrep))
- Commissioner’s Order still in effect requiring annual ID drills
  - [https://www.health.ny.gov/diseases/communicable/ebola/](https://www.health.ny.gov/diseases/communicable/ebola/)

Foote et al, MMWR, 2017: [https://www.cdc.gov/mmwr/volumes/66/wr/mm6636a2.htm](https://www.cdc.gov/mmwr/volumes/66/wr/mm6636a2.htm)
Initial Screening and Isolation

IDENTIFY, ISOLATE, INFORM
“Identify, Isolate and Inform”

Consequences when there is a “miss”

- SARS in Toronto
- Ebola in W. Africa
- Ebola in Dallas
- MERS in KSA and S. Korea

*Early screening and rapid implementation of infection control measures are key
Screening in Acute Care Settings

- Aim to quickly identify potentially infectious patients
  - implement source control
  - reduce transmission to staff and patients
    - “Mask first, ask questions later”

- Start with identifying
  - Points of entry into your facility/system
  - Staff most likely to have initial contact with patients
  - Best screening tool (e.g. electronic medical record, paper, etc.)
Screening and Isolation Protocols

- Develop **simple algorithms** with clear **triggers** and **actions**
- Screen based on febrile syndromes
  - fever + respiratory, fever + rash
  - Don’t forget travel history
  - Keep staff informed of significant outbreaks and where they can look for more information
- Ensure supplies are available to staff and patients
  - Masks, hand sanitizer, disinfectant wipes, trash bins
- Easily visible signage
High Consequence Infectious Disease (HCID) Screening Guidance

All patients should be screened for cough, respiratory symptoms, fever, rash, and travel

Symptom questions:
1. New cough, other respiratory symptoms?
2. Recent fever documented at the healthcare facility?
3. New rash?

Travel questions:
1. Did patient travel internationally during the past 30 days?

Determine need for respiratory etiquette: Implement and maintain respiratory etiquette measures throughout remainder of healthcare encounter for all patients with either:
1) cough or other respiratory symptoms, or 2) fever & rash

Record presence or absence of travel, including destinations and dates in chart

Subjective or documented fever?

No
Yes

Fever
(no rash or respiratory symptoms)
and travel?

No
Yes

Vomiting or diarrhea?

No
Yes

Exposed to measles, chickenpox, or zoster in past 30 days?

No
Yes

Fever & rash
and travel?

No
Yes

Close contact with a person with a highly respiratory illness that developed within 14 days of returning from international travel?

No
Yes

Does patient appear sick or have any signs or symptoms of viral hemorrhagic fever?

No
Yes

Does patient appear to possibly have measles, chickenpox, zoster, smallpox, or meningococcal infection?

No
Yes

Is patient part of an epidemiologically linked group of patients presenting with severe acute respiratory illness of unknown etiology, or does the provider have any other suspicion for a HCID or tuberculosis?

No
Yes

Move patient to private room with closed door or to an airborne infection isolation (AII) room & control access to patient; post appropriate isolation signage

Assess for HCID risk identified

Fever & respiratory symptoms (no rash)
and travel?

No
Yes

Fever & respiratory symptoms
(plus rash)
and travel?

No
Yes

Assess by medical provider after patient has been screened

http://www.health.state.mn.us/divs/idepc/dtopics/hcid/
Table 2: Examples of travel-related communicable diseases

<table>
<thead>
<tr>
<th>Recent travel destination</th>
<th>Symptoms, signs</th>
<th>Emerging Infectious Disease(s) to Consider</th>
<th>Infection Control Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>China, Southeast Asia</td>
<td>Respiratory infection</td>
<td>Avian or other novel influenza virus (<em>risk factor: exposure to poultry and/or live animal markets</em>)</td>
<td>Airborne,¹ contact, and droplet isolation</td>
</tr>
<tr>
<td>Middle East/Arabian Peninsula</td>
<td>Respiratory infection</td>
<td>MERS-CoV</td>
<td>Airborne,¹ contact, and droplet isolation</td>
</tr>
<tr>
<td>West or Central Africa</td>
<td>Symptoms and/or signs compatible with viral hemorrhagic fever</td>
<td>Ebola, Lassa Fever, other viral hemorrhagic fever (e.g., Marburg)</td>
<td>Implement Ebola protocol²</td>
</tr>
<tr>
<td>Any foreign travel</td>
<td>Febrile rash illness</td>
<td>Measles</td>
<td>Airborne isolation¹</td>
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Screening Considerations in Long-Term Care

- **Screen patients for infectious diseases**
  - New patients and re-admissions after hospitalizations
  - Anticipate infection control or isolation needs

- **Standardize data collection/sharing processes**
  - E.g. Interfacility transfer forms

- **Focus on high-risk transmissible diseases and report**
  - Respiratory infections (e.g. influenza)
  - Antibiotic resistant infections (e.g. *c. auris*, carbapenem-resistant *Enterobacteriaceae*)

- **Visitor screening at points of entry**
DOHMH now providing regular updates of current outbreaks in NYC and around the world: [https://www1.nyc.gov/site/doh/providers/reporting-and-services-main.page](https://www1.nyc.gov/site/doh/providers/reporting-and-services-main.page)

- NYC Health Alerts: [https://www1.nyc.gov/site/doh/providers/resources/health-alert-network.page](https://www1.nyc.gov/site/doh/providers/resources/health-alert-network.page)

You can also refer to the following sites for country specific outbreak information

- ProMed: [https://www.promedmail.org/](https://www.promedmail.org/)
- Travel Clinical Assistant: [https://dph.georgia.gov/TravelClinicalAssistant](https://dph.georgia.gov/TravelClinicalAssistant)
- CDC: cdc.gov/outbreaks

DOHMH Provider Access Line: 1-866-692-3641
Health Care Providers

The Health Department offers a wide variety of resources for health care providers. Learn about reporting platforms and services at both the city and federal level in this section. Call the NYC Provider Access Line at 1-866-692-3641 for immediate consultation on public health issues.

Current New York City, United States, and International Infectious Disease Outbreaks

- Current Infectious Disease Outbreaks for NYC Providers (PDF)
- Infectious Disease Outbreaks for NYC Providers, August 24, 2018 (PDF)
- Infectious Disease Outbreaks for NYC Providers, August 10, 2018 (PDF)

Sign-Up For a NYCMED Account

NYCMED provides members with current information about the City’s ever-changing health landscape, including alerts, advisories and updates. It is the point of entry for providers to access many applications, including reporting portals such as Reporting Central, Citywide Immunization Registry (CIR), and Electronic Vital Events Registration System (EVERS).

https://www1.nyc.gov/site/doh/providers/reporting-and-services-main.page
Questions?

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