Severe Acute Respiratory Syndrome: The U.S. Experience

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Spectrum of Microbial Threats

- The global burden of AIDS, tuberculosis, and malaria
- Emerging infectious diseases
- Antimicrobial-resistant infections
- Chronic diseases with infectious etiology
- Microbes intentionally used for harm
Microbial Threats to Health

Case in Point: SARS
Initial SARS Involvement

• February 10
  – A report posted on ProMed describes a problem of pneumonia in China’s Guangdong Province
  – CDC receives a call from a U.S. medical missionary who described reports of 400 deaths due to “pneumonic plague” in Guangdong; CDC contacts colleagues at WHO

• February 19
  – Conference call between WHO, HHS, and CDC about cases of H5N1 in Hong Kong and the Guangdong situation

• March 5-11
  – CDC learns of spread of the disease to large numbers of HCWs in Hong Kong and Vietnam following alert to WHO from Dr. Urbani
  – CDC informed of Vietnam’s request for WHO assistance and deploys medical epidemiologist to Hanoi
Initial SARS Involvement (cont.)

• March 12
  – WHO issues global alert about cases of severe atypical pneumonia in Hong Kong and Vietnam
  – CDC offers assistance to WHO
• March 14
  – CDC activates Emergency Operations Center
• March 15
  – CDC issues travel advisory, suggesting postponement of nonessential travel to Hong Kong, Guangdong Province, and Hanoi
  – CDC issues a preliminary case definition for suspected SARS and initiates domestic surveillance
  – First suspected U.S. case is identified
• March 16
  – CDC begins distributing health alert cards to airline passengers arriving from Hong Kong at 4 international airports.
Emergency Operations Center
Guidance

- Surveillance and reporting
- Diagnosis
- Infection control
- Travel advisories and health alerts
- Exposure management in health-care settings, the workplace, and schools
- Biosafety, environmental sampling, clean up
- Specimen handling, collection, and shipment
- Information for U.S. citizens living abroad and for international adoptions
Severe Acute Respiratory Syndrome (SARS)

Information for Specific Groups & Settings

What Everyone Should Know
Basic information about the disease & answers to frequently asked questions...

Clinicians
Other Languages
Patients & Their Close Contacts
Schools, Colleges, etc.

Travelers
Workplace
Americans Living Abroad

Specific Topics

Diagnosis/Evaluation
Infection Control & Exposure Management
Laboratory & Specimens
MMWR mGuide
Quarantine

Training & Reference Materials
Transport of Patients
Travel
Treatment

WHO & Other Related Sites

http://www.cdc.gov/ncidod/sars/
Distributed to >1.6 million airline passengers

Distributed at 13 US-Canada land crossings and the Toronto airport
Number of Probable and Suspect SARS Cases by Date of Illness Onset*
United States - 2003
N = 393

*Includes two suspect cases with illness onset before 2/2/03
U.S. Probable SARS Cases
N = 70

• 68 (97%) reported travel*
  – 35 (51%) mainland China
  – 17 (25%) Hong Kong
  – 14 (21%) Toronto
  – 5 (7%) Taiwan
  – 5 (7%) Singapore
  – 1 (1%) Hanoi

• 1 (1%) HCW caring for SARS patient
• 1 (1%) household contact of SARS patient

*7 persons reported travel to more than one of these areas

MMWR 2003;52:550.  Data as of 6/11/03
# SARS-CoV Antibody Testing
## United States, 2003

<table>
<thead>
<tr>
<th>Type of Case</th>
<th>CoV+</th>
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</thead>
<tbody>
<tr>
<td>Probable</td>
<td>8/41 (19.5%)</td>
</tr>
<tr>
<td>Suspect</td>
<td>0/134 (0%)</td>
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</tbody>
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Data through 6/11/03
US SARS Response

*Lessons learned*

- Importance of preparedness planning
  - Activation of EOC
- Contribution of response “teams”
  - Mobilized experts
  - Enabled rapid modification of responses
- Value of collaboration with external partners, including other federal agencies (e.g., NIH, FDA, DoD), academia (e.g., UCSF), and industry
US SARS Response

Lessons learned

• Need for proactive communications
  – Rapid dissemination of information through Health Alert Network, Epi-X, MMWRs, the Web
  – Educational webcasts and videoconferences
  – Regular conference calls with constituency and advisory groups, and other professional organizations
    - State health officers and epidemiologists
    - Public health laboratorians
    - Clinicians and nurses
    - Infection-control practitioners
  – Press conferences and other interactions with the media
US SARS Response

Lessons learned

• Gaps identified
  – Transport of specimens
  – Staff training and preparation (e.g., fit-testing of respirators)
  – Increased involvement of state/local public health departments and public health laboratories in response planning
  – Travel/migration issues
    • Access to airline passenger manifests
    • Staffing of ports of entry
Global SARS Response

*Lessons learned*

- Reinforced need for strong national and international collaborations
  - Forged new partnerships; strengthened many existing ones
  - Resulted in unprecedented, timely sharing of data; rapid publication of peer-reviewed articles; far-reaching exchange of public information
  - Enabled rapid identification, evaluation, and sequencing of SARS-CoV by multiple groups
  - Highlighted need to strengthen WHO collaborating centers and networks
Addressing SARS and Other Global Microbial Threats

- Enhance global response capacity and strengthen surveillance systems
- Educate and train multidisciplinary workforce
- Address research needs: natural history, risk factors, source, pathogenesis, diagnostics, vaccines, effective therapies
- Strengthen collaborations and partnerships among national and international clinical, public health, and veterinary communities
Responding to Global Microbial Threats

Expect the unexpected

Monkeypox

Basics
- Monkeypox Fact Sheet (Jun 9, 2003, 10:00 PM ET)
- Questions & Answers (Jun 10, 2003, 1:50 AM ET)

CDC Guidelines and Resources
- Interim Case Definition for Human Case of Monkeypox (Jun 11, 2003, 8:00 AM ET)
- Interim Infection Control & Exposure Management Guidance in the Health-Care & Community Setting for Patients with Possible Monkeypox Virus Infection (Jun 9, 2003, 2:00 AM ET)
- Monkeypox Infections In Animals: Interim Guidance for Veterinarians & Pet Owners (Jun 9, 2003, 4:00 AM ET)
- Interim Field Specimen Collection Form (Human) (Jun 10, 2003, 7:00 PM ET)
  - PDF (111 KB/6 pages)
  - Word (55 KB/6 pages)
- Interim Field Specimen Collection Form (Animal) (Jun 10, 2003, 2:00 PM ET)
  - PDF (167 KB/3 pages)
  - Word (62 KB/3 pages)
- Outbreak of Human Monkeypox, Democratic Republic of Congo (Mar-Apr 2003)
- Smallpox Laboratory Testing
  Refer to these guidelines for information on collecting serum specimens & testing

Related Links
- Electron microscopy images of the virus
  From the Marshfield Clinic, in Marshfield, Wisconsin
- State Epidemiologists
  Council of State & Territorial Epidemiologists
- State Health Laboratories
  Association of Public Health Laboratories

http://www.cdc.gov/ncidod/monkeypox/index.htm