

Severe Acute Respiratory Syndrome: The U.S. Experience

James M. Hughes, M.D.

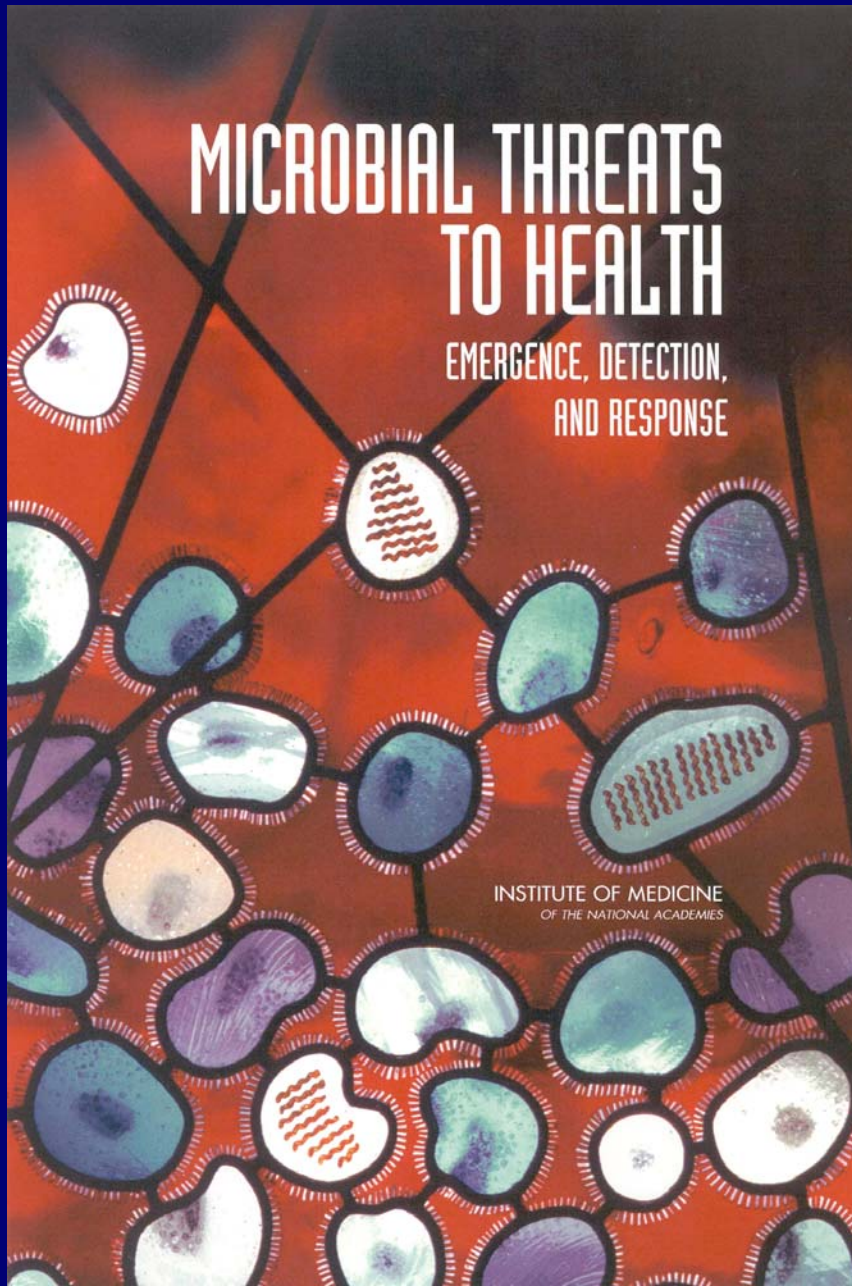
Director, National Center for Infectious Diseases
Centers for Disease Control and Prevention



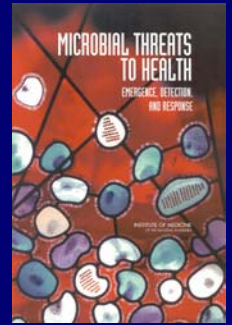
MICROBIAL THREATS TO HEALTH

EMERGENCE, DETECTION,
AND RESPONSE

INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES



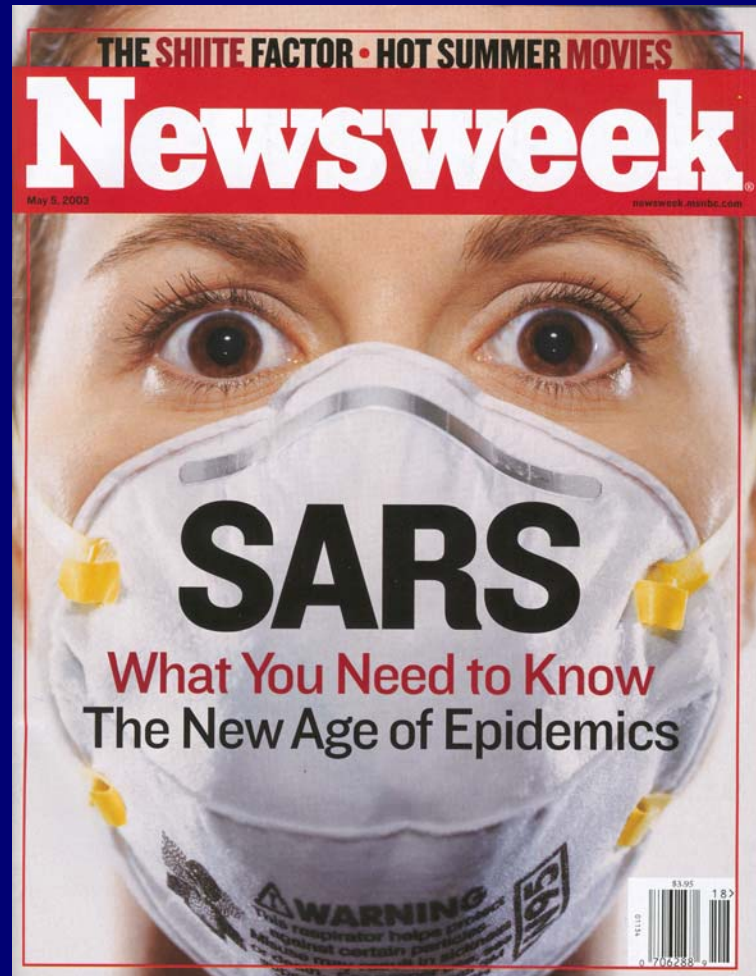
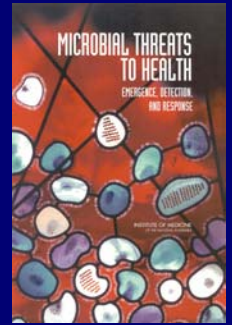
Spectrum of Microbial Threats



- 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.*)

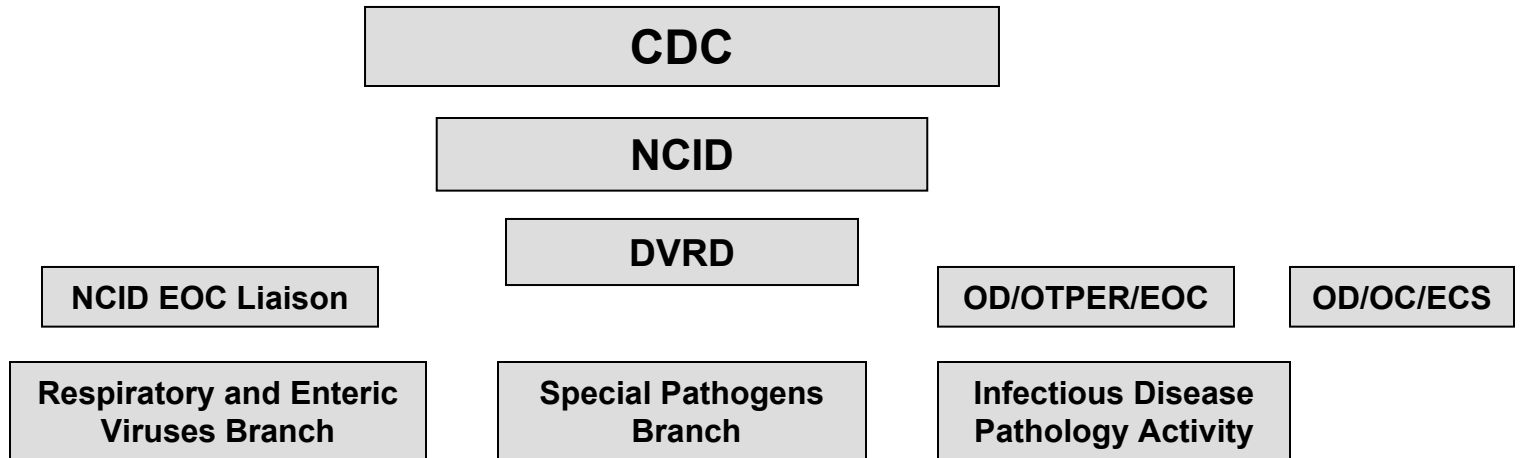
- **March 12**
 - WHO issues global alert about cases of severe atypical pneumonia in Hong Kong and Vietnam
 - CDC offers assistance to WHO
- **March 14**
 - CDC activates Emergency Operations Center
- **March 15**
 - CDC issues travel advisory, suggesting postponement of nonessential travel to Hong 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.



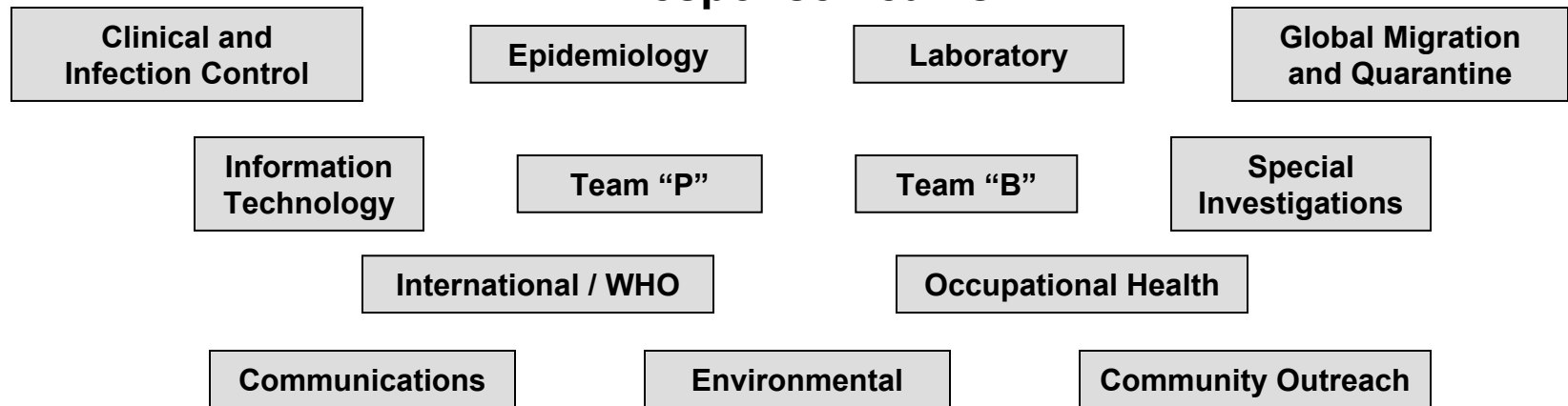
Emergency Operations Center



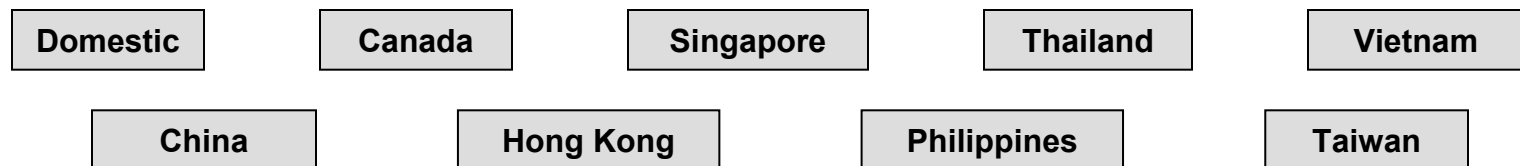
CDC SARS Investigation 2003



Response Teams



Field Teams



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





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- ▶ [What's New](#)
- ▶ [Travel](#)
- ▶ [Info for Clinicians](#)
- ▶ [Info for the Workplace](#)
- ▶ [Diagnosis/Evaluation](#)
- ▶ [Lab & Specimens](#)
- ▶ [Infection Control & Exposure Management](#)
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 TTY (866) 874-2646
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Information for Specific Groups & Settings

[What Everyone Should Know](#)

Basic information about the disease & answers to frequently asked questions...

[Clinicians](#)

[Travelers](#)

[Other Languages](#)

[Workplace](#)

[Patients & Their Close Contacts](#)

[Americans Living Abroad](#)

[Schools, Colleges, etc.,](#)

Specific Topics

[Diagnosis/Evaluation](#)

[Training & Reference Materials](#)

[Infection Control & Exposure Management](#)

[Transport of Patients](#)

[Laboratory & Specimens](#)

[Travel](#)

[MMWR mGuide](#)

[Treatment](#)

[Quarantine](#)

[WHO & Other Related Sites](#)

[Reporting](#)

[繁體中文](#)
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NEWS & HIGHLIGHTS

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[What's New](#)

MMWR Update: SARS – U.S., June 11, 2003 (June 12, 2003)

MMWR Update: SARS – Toronto, Canada (June 12, 2003)

Updated Case Definition (June 5, 2003)

Travel Notifications for Singapore & Hong Kong Eased (June 4, 2003)

Travel Alert: Hong Kong (Jun 4, 2003)

Travel Alert Removed: Singapore (Jun 4, 2003)

[More news...](#)

<http://www.cdc.gov/ncidod/sars/>



Distributed to >1.6 million airline passengers

Health Alert Notice
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DEPARTMENT OF HEALTH AND HUMAN SERVICES

HEALTH ALERT NOTICE
FOR INTERNATIONAL TRAVELERS ARRIVING IN OR RETURNING TO THE
USA FROM HONG KONG AND GUANGDONG PROVINCE, PEOPLE'S
REPUBLIC OF CHINA, AND HANOI, VIETNAM

TO THE TRAVELER: During your recent travel, you may have been exposed to cases of severe acute respiratory disease syndrome. You should monitor your health for at least 7 days. If you become ill with fever accompanied by cough or difficulty in breathing, you should consult a physician. To help your physician make a diagnosis, tell him or her about your recent travel to these regions and whether you were in contact with someone who had these symptoms. Please save this card and give it to your physician if you become ill.

TO THE PHYSICIAN: The patient presenting this card may have recently traveled to Hong Kong or Guangdong Province in the People's Republic of China or Hanoi, Vietnam, where cases of atypical pneumonia have been identified. If you suspect atypical pneumonia (also being called severe acute respiratory disease syndrome [SARS]), please contact your city, county, or state health officer (see <http://www.cdc.gov> or call the CDC Emergency Operations Center 770-488-7100).

*For public inquiries, call Centers for Disease Control and Prevention (CDC) hotline:
English 888-246-2675, Español 888-246-2857, TTY 866-874-2646.*

Distributed at 13 US-Canada land crossings and the Toronto airport

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AVIS D'ALERTE MÉDICALE
AVISO DE ALERTA DE SALUD
緊急保健通告
緊急保健通告



DEPARTMENT OF HEALTH AND HUMAN SERVICES

HEALTH ALERT NOTICE
For International Travelers
Arriving in the United States
from Toronto, Ontario, Canada

TO THE TRAVELER: During your recent travel to areas affected by severe acute respiratory disease syndrome (SARS), including Toronto, you may have been exposed to cases of SARS. You should monitor your health for at least 10 days. If you become ill with fever, cough, or difficulty in breathing, you should consult a physician. In advance of your visit to the physician, tell him or her about your recent travel to these regions and whether you were in contact with someone who had these symptoms. Please save this card and give it to your physician if you become ill.

TO THE PHYSICIAN: The patient presenting this card may have recently traveled to SARS-affected areas, including Toronto, where cases of SARS have been identified. If you suspect that this patient may have SARS, please contact your city, county, or state health officer (see <http://www.cdc.gov> or call the CDC Emergency Operations Center at 770-488-7100).

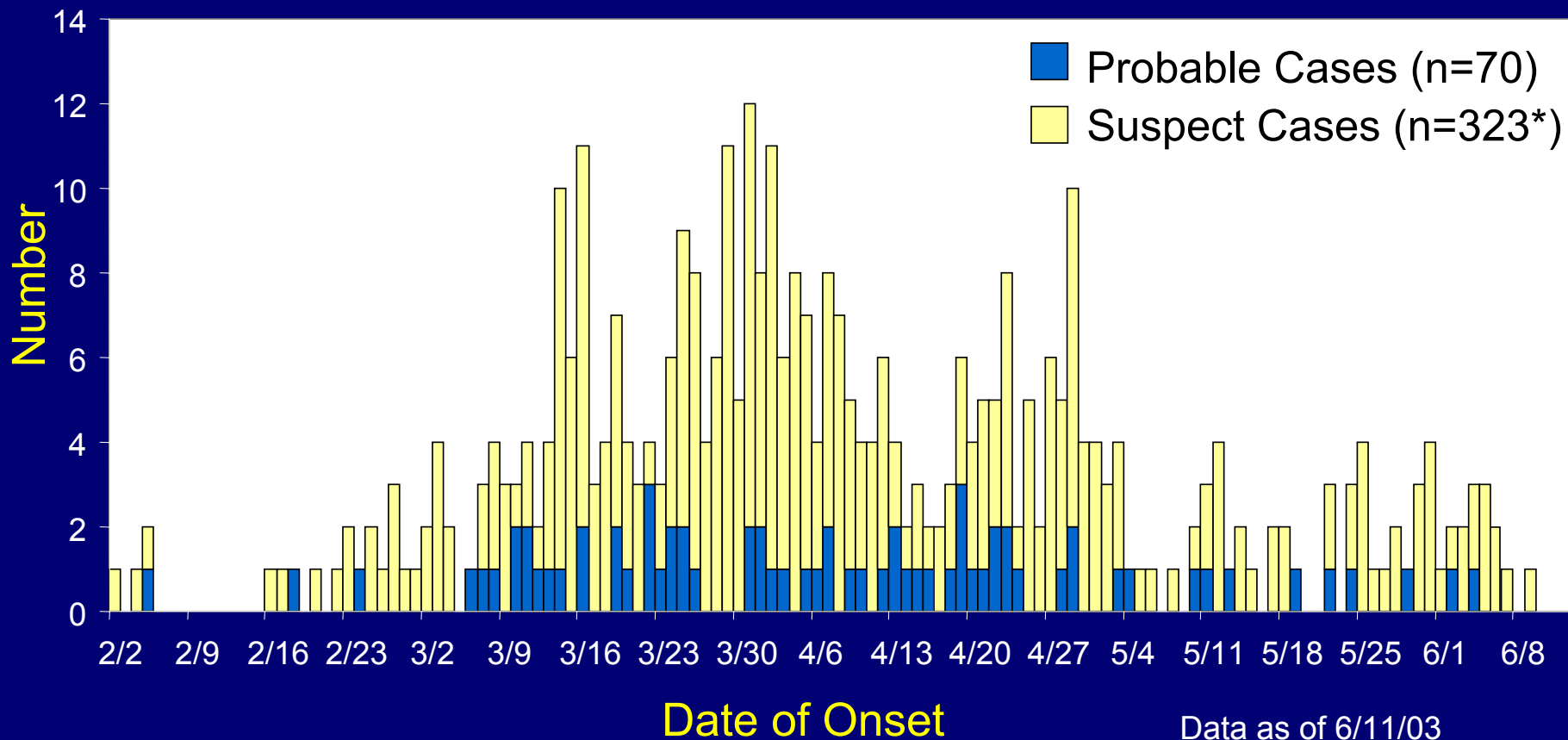
English



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

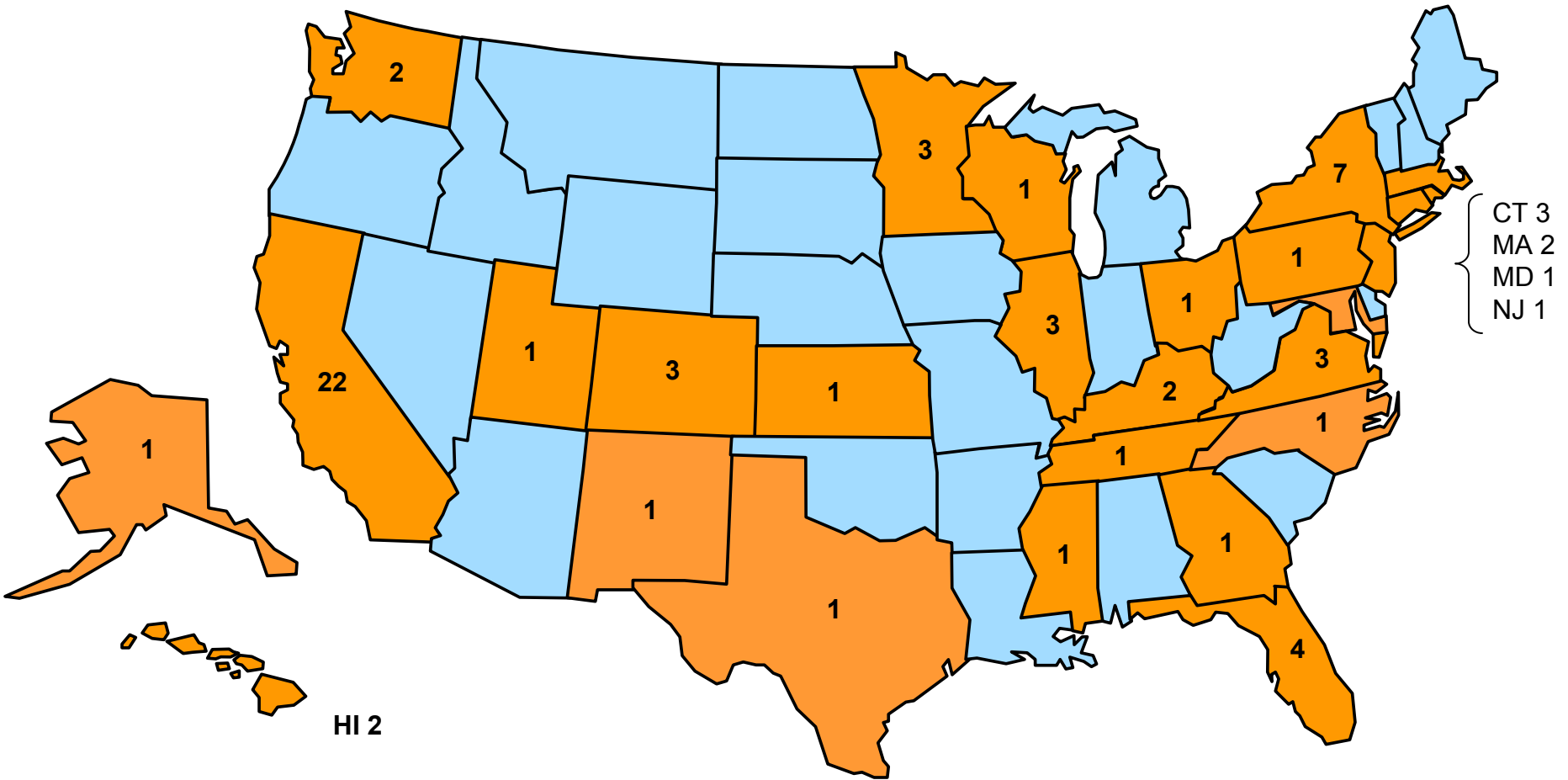
- 68 (97%) reported travel*
 - 35 (51%) mainland China
 - 17 (25%) Hong Kong
 - 14 (21%) Toronto
 - 5 (7%) Taiwan
 - 5 (7%) Singapore
 - 1 (1%) Hanoi
- 1 (1%) HCW caring for SARS patient
- 1 (1%) household contact of SARS patient

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



U.S. Probable SARS Cases

N = 70



Data as of 6/11/03



SARS-CoV Antibody Testing United States, 2003

<u>Type of Case</u>	<u>CoV+</u>
Probable	8/41 (19.5%)
Suspect	0/134 (0%)



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



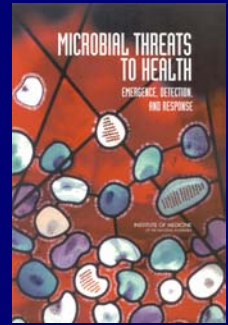
Global SARS Response

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





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- Home
- Countries
- Health topics
- Publications
- Research tools
- WHO sites
- CSR Home**
- Alert & Response Operations
- Diseases
- Drug Resistance
- Global Outbreak Alert & Response Network
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Communicable Disease Surveillance & Response (CSR)

[About CSR](#) | [Country Activities](#) | [Outbreak News](#) | [Resources](#) | [Media Centre](#)

Location: [WHO](#) > [WHO sites](#) > [CSR Home](#) > Severe Acute Respiratory Syndrome (SARS)

Severe Acute Respiratory Syndrome (SARS)

- [WHO Global Conference on SARS](#)

Latest information:

- [Update 80 - Change in travel recommendations for parts of China, situation in Toronto - 13 June](#)
 - [Cumulative number of reported probable cases - 13 June](#)
 - [Case definitions for surveillance of SARS](#)
 - [SARS Travel Recommendations, Summary Table - 13 June](#)
 - [Map of current probable cases - 13 June](#)
 - [China: Daily Report of SARS Cases - 13 June \(.pdf\)](#)
 - [China: SARS Case Distribution by Prefecture\(City\) - 12 June \(.pdf\)](#)
- As provided by Ministry of Health, People's Republic of China
- As provided by Ministry of Health
- [Map of current probable cases](#)

As of 7 June, WHO will no longer issue cumulative numbers of SARS update on Saturdays. Daily updates will continue to be issued from Monday through Friday.



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- ▶ [What Everyone Should Know](#)
- ▶ [What's New](#)
- ▶ [Travel](#)
- ▶ [Info for Clinicians](#)
- ▶ [Info for the Workplace](#)
- ▶ [Diagnosis/Evaluation](#)
- ▶ [Lab & Specimens](#)
- ▶ [Infection Control & Exposure Management](#)
- ▶ [Quarantine](#)
- ▶ [Training & Reference Materials](#)
- ▶ [Reporting](#)
- ▶ [News](#)
- ▶ [WHO & Other Related Sites](#)

HIGHLIGHTS

[Severe Acute Respiratory Syndrome \(SARS\) main page](#)

13 June 2003
Cumulative Number of Reported Probable Cases
[Full text](#)

13 June 2003
Update 80 - Change in travel recommendations for parts of China, situation in Toronto
[Full text](#)

[SARS Travel Recommendations Summary Table](#)

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[What's New](#) | [Search](#) | [Site Index](#) | [Contact Us](#)

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[What Everyone Should Know](#)

Basic information about the disease & answers to frequently asked questions...

[Clinicians](#)

[Other Languages](#)

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[Travelers](#)

[Workplace](#)

[Americans Living Abroad](#)

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[Diagnosis/Evaluation](#)

[Infection Control & Exposure Management](#)

[Laboratory & Specimens](#)

[MMWR mGuide](#)

[Quarantine](#)

[Reporting](#)

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[Travel](#)

[Treatment](#)

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[What's New](#)

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[MMWR Update: SARS – Toronto, Canada](#) (June 12, 2003)

[Updated Case Definition](#) (June 5, 2003)



Responding to Global Microbial Threats


Expect the unexpected



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Monkeypox



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Basics

- ▶ [Monkeypox Fact Sheet](#) (Jun 9, 2003, 10:00 PM ET)
- ▶ [Questions & Answers](#) (Jun 10, 2003, 1:30 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, 9:00 PM ET)
 - ▶ [PDF \(111 KB/6 pages\)](#)
 - ▶ [Word \(89 KB/6 pages\)](#)
- ▶ [Interim Field Specimen Collection Form \(Animal\)](#)
(Jun 10, 2003, 2:30 PM ET)
 - ▶ [PDF \(167 KB/3 pages\)](#)
 - ▶ [Word \(82 KB/3 pages\)](#)
- ▶ [Outbreak of Human Monkeypox, Democratic Republic of Congo](#)
Emerging Infectious Disease 2001 May-Jun;7(3):434-438.
- ▶ [Smallpox Laboratory Testing](#)
Refer to these guidelines for information on collecting serum specimens & lesion

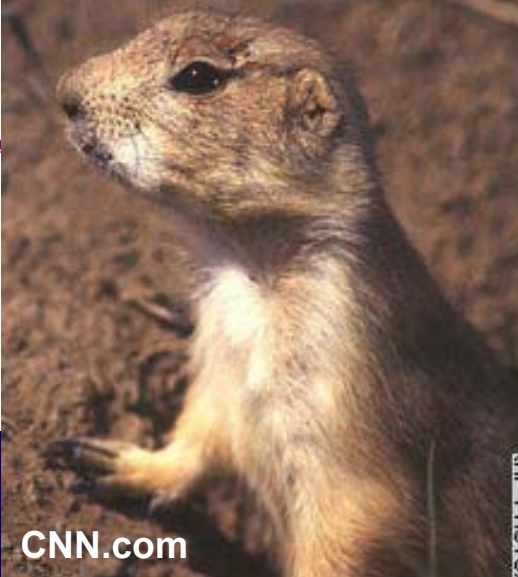
Related Links

- ▶ [Electron microscopy images of the virus](#)
From the Marshfield Clinic, in Marshfield, Wisconsin
- ▶ [State Epidemiologists](#)
Council of State & Territorial Epidemiologists
- ▶ [State Health Laboratories](#)
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NEWS & HIGHLIGHTS
Telebriefing: Update on Monkeypox (Jun 9, 2003)
Preliminary Report: Multistate Outbreak of Monkeypox in Persons Exposed to Pet Prairie Dogs (Jun 9, 2003)



CNN.com

(AP PHOTO)

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





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ICEID 2004

February 29, 2004
through
March 3, 2004

Atlanta, GA

