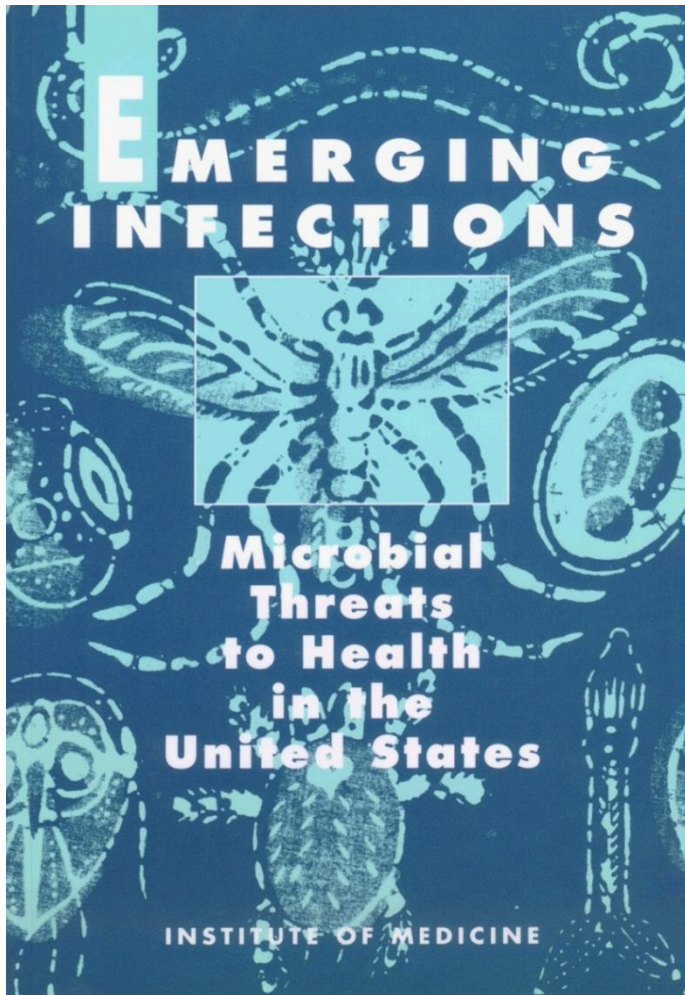


Public Health Perspectives: Coordinating the Response to Imported Infectious Disease Threats in New York City



Marci Layton, MD
New York City Department of Health



Factors leading to (re-)emergence of new diseases:

- A. Human Behavior (*HIV*)
- B. Technology & Industry (*Legionella*)
- C. Economic Development (*Lyme*)
- D. Travel & Commerce (*SARS*)**
- E. Microbial Adaptation (*MRSA*)
- F. Public Health Deficiencies (TB)
- G. *Bioterrorism threat (anthrax) – added in 2003 report*

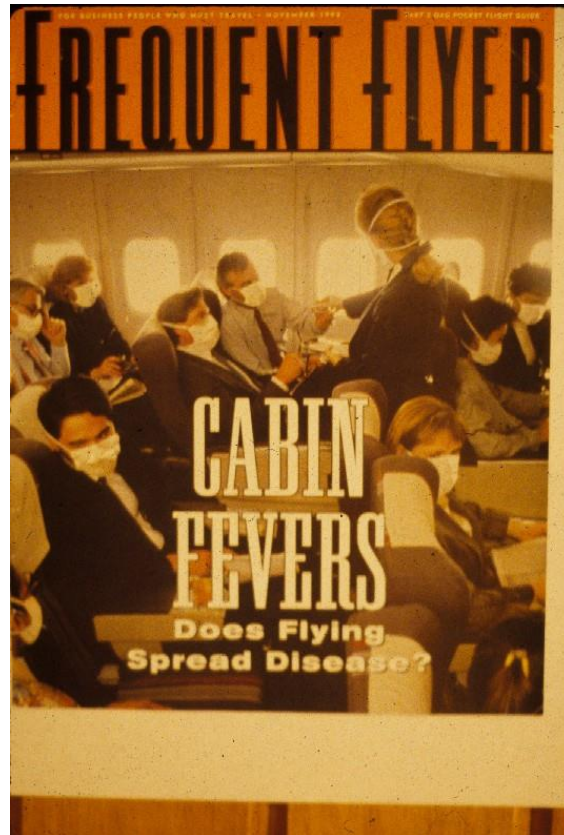
1992

NYC's Vulnerability to Emerging Infections

- Demographics
 - High population density
 - Large immigrant/refugee population
 - High rates of HIV/AIDS
- Environment
 - Unfiltered surface water supply
- **International travel/commerce**
 - **Major port of entry into US**
- Will always be a potential terrorist target

International Travel into NYC

- 22.1 million international passengers arrive annually via all 3 international airports
- 12.7 million international visitors in 2016
- 290 foreign missions and consulates
- Over 1/3 of NYC population (38%) is foreign-born



Pneumonic Plague in India, September, 1994

CDC
CENTERS FOR DISEASE CONTROL
AND PREVENTION

November 11, 1994 / Vol. 43 / No. 44

MMWR

MORBIDITY AND MORTALITY WEEKLY REPORT

- 805 Detection of Notifiable Diseases Through Surveillance for Imported Plague — New York, 1994
- 807 Erythromycin-Resistant *Bordetella pertussis* — Yuma County, Arizona
- 810 Prevalence of Self-Reported Epilepsy — United States, 1986–1990
- 818 Prevalence of Overweight Among Adolescents — United States, 1988–91
- 821 Notices to Readers
- 822 Monthly Immunization Table

Emerging Infectious Diseases

Detection of Notifiable Diseases Through Surveillance for Imported Plague — New York, September–October 1994

Recent reports of bubonic and pneumonic plague outbreaks in India (1,2) prompted the New York City Department of Health (NYCDOH) and the New York State Department of Health (NYSDOH), in conjunction with CDC, to develop an emergency response plan to detect and manage suspected cases imported by international air travel. This report describes the surveillance system implemented by CDC on September 27 and supplemental efforts by NYC/NYSDOH to guide and inform physicians about the outbreak, and summarizes clinical findings for 11 travelers who had symptoms suggestive of plague.

NYC Health Department Response to Threat of Imported Plague, 1994

- Initially unsubstantiated reports of large outbreak of pneumonic plague in India
- Increased concern in NYC since > 2,000 passengers/day arrived at JFK from India
- Active coordination with the CDC Quarantine staff at JFK to work with airport agencies to:
 - Enhance recognition of suspect cases on arrival
 - Rapidly triage and if indicated, transport to NYC hospital for medical evaluation

NYC Health Department Response to Threat of Imported Plague, 1994

- From September 27 – October 27, 1994, 11 travelers from India with respiratory symptoms required evaluation in NYC
 - 7 cases reported by hospitals in patients who became ill after arrival
 - 4 cases detected at the airport, with reporting by:
 - 1 by airline crew prior to plane arrival
 - 2 by customs officials
 - 1 at check-in for connecting flight

NYC Health Department Response to Threat of Imported Plague, 1994

- 9 of the 11 patients required hospitalization
 - Only one had clinical presentation c/w plague and tested to rule out plague
 - Other diagnoses included:
 - Viral syndrome (n=4)
 - Malaria (n=3)
 - Malaria/Dengue (n=1)
 - Typhoid (n=1)
 - Liver disease (n=1)
 - Chewing **betelnut** (n=1)

NYC Health Department Response to Threat of Imported Plague, 1994

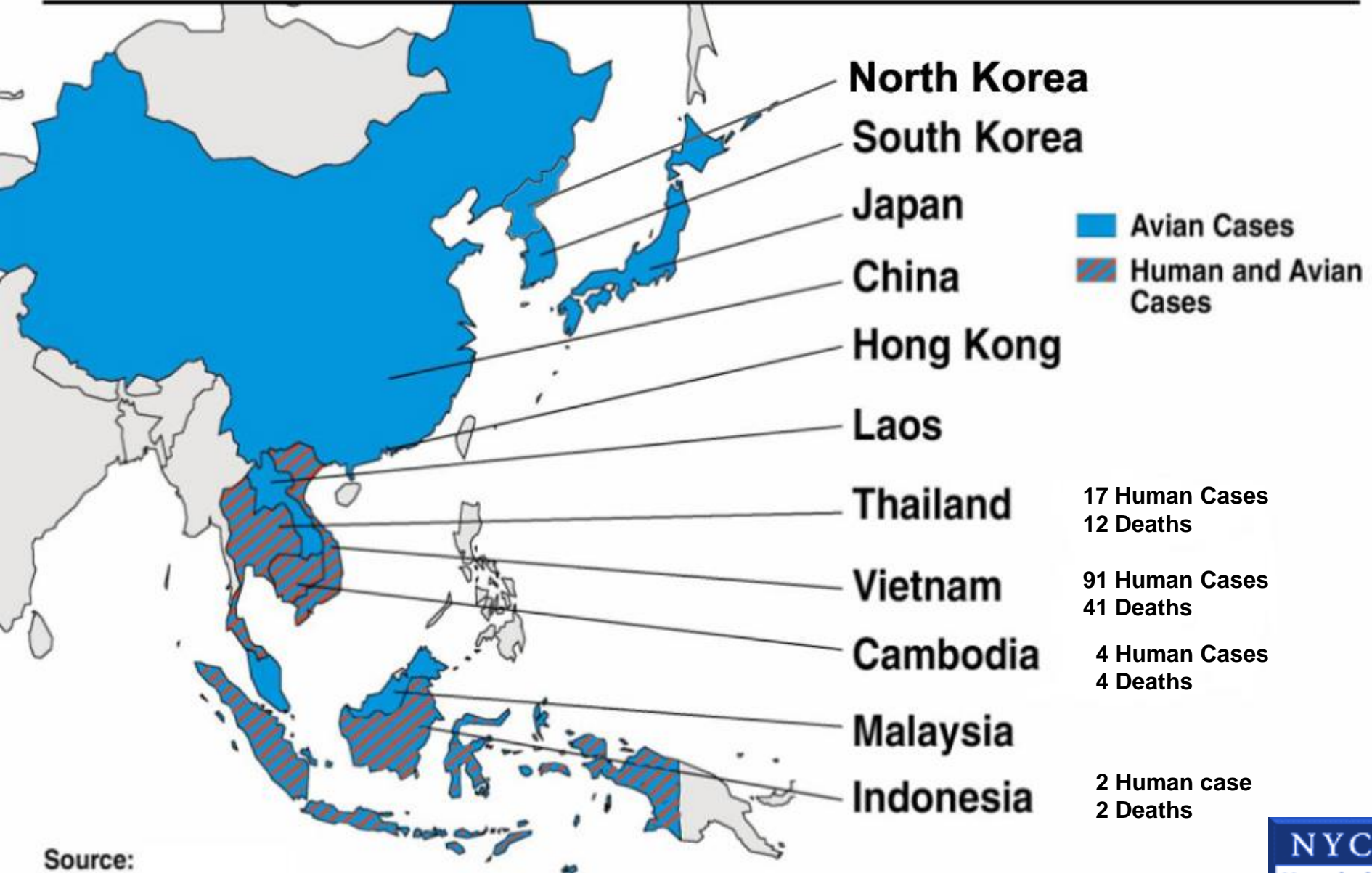
- Lessons learned
 - Importance of local public health and CDC
Quarantine staff having relationships in place prior to incidents
 - Need to pre-identify hospitals for evaluation of patients with more concerning communicable diseases

Avian Influenza A (H5N1) in Hong Kong, 1997

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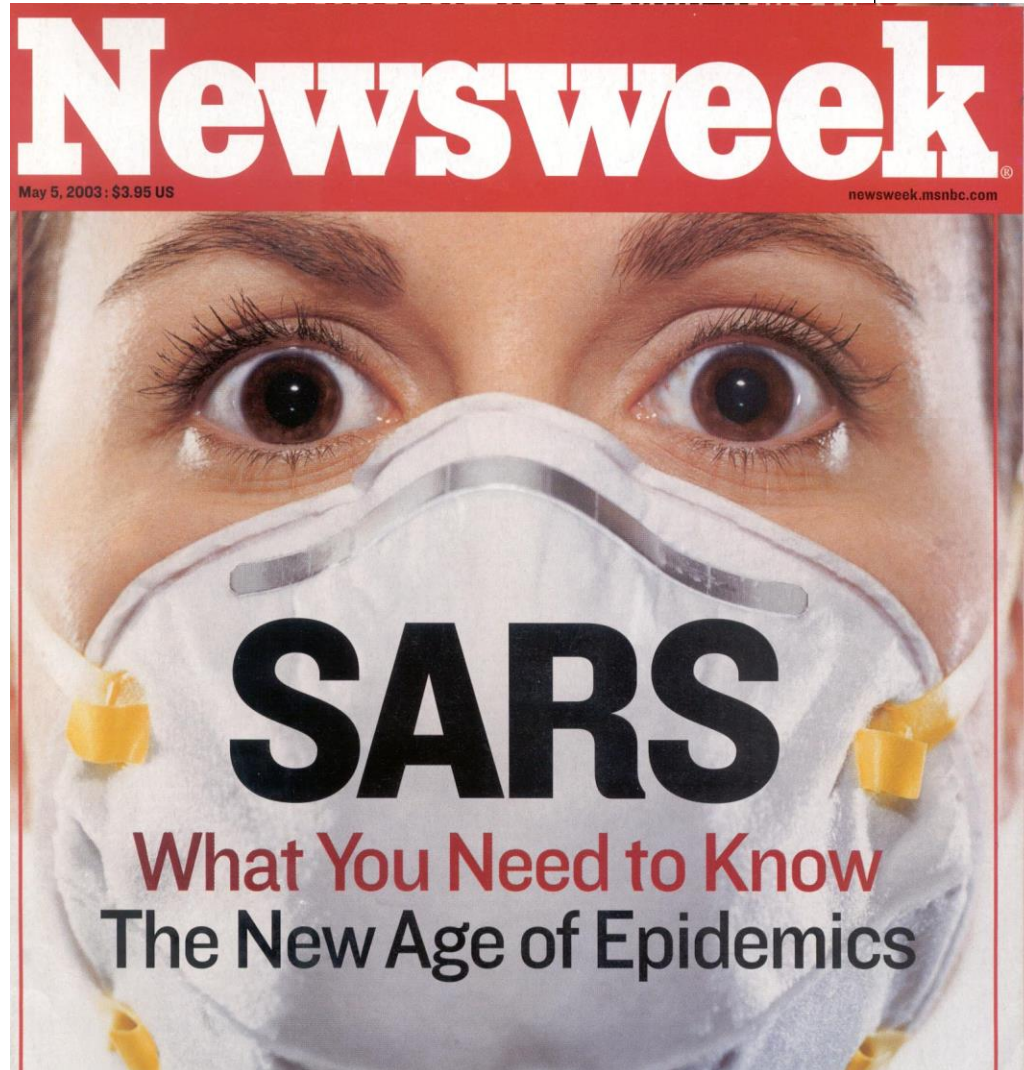


H5N1 Influenza in Asia, 2004-2005



Source:

Severe Acute Respiratory Syndrome 2003 Outbreak



NYC's Response to 2003 SARS Outbreak

- Surveillance – Rapid identification and isolation of all potential cases
- **Coordination with CDC Quarantine station to triage cases identified at NYC airports**
- Contact tracing and monitoring
- Issued detention orders, when indicated
- Healthcare guidance and provider education
- Public outreach – esp in Asian community
- Contingency planning for community or large scale local transmission

SARS Experience in Spring 2003: New York City

- > 300 calls regarding potential cases
- 24 suspect and 3 probable cases
 - All travelers to Asia or Toronto
 - Mostly mild illness and all fully recovered
 - None tested positive for SARS virus
 - None first identified at the airport
- 3 “near misses”
 - Index SARS case in Vietnam was NYC business man
 - Singapore physician became symptomatic with SARS during visit to NYC
 - Index SARS case in Toronto flew through NYC on her way home from Hong Kong

NYC Department of Health

Planning for Next Imported Disease Threat

2003 to Present

- Designated hospital for management of persons with suspected highly infectious disease
- Formalized protocol for coordination and management of international passengers suspected to have a potential highly infectious/quarantinable disease
- Strengthened our legal authority to isolate our authority to isolate cases and quarantine contacts for highly infectious diseases, while ensuring full due process protections

Designated Bellevue Hospital for Management of Suspected Highly Infectious Diseases



- Use existing secure isolation ward
 - Separate from other areas in hospital
 - Large number of airborne infection isolation rooms
- Formal contractual agreement to care for patients with more concerning highly infectious disease (e.g., viral hemorrhagic fever, smallpox) referred by NYC DOH
 - Clinically stable patient identified at airports
 - Inter-hospital transfers only if approved by DOH

NYC Guidelines for Management of Passengers Arriving at NYC Airport with Suspect Quarantinable Disease

Guideline for the Management of Persons Arriving at a New York City Airport From Overseas Who Are Suspected to Have a Quarantinable Disease

The following guideline addresses the interagency coordination required in the response to an arriving international air traveler suspected to have a potentially contagious quarantinable disease. Responding agencies and institutions would include the U.S. Centers for Disease Control and Prevention's (CDC) Division of Global Migration and Quarantine (DGMQ) staff at John F. Kennedy International Airport (JFK), the New York City Department of Health and Mental Hygiene (DOHMH), the Fire Department of New York's Emergency Medical Services (EMS), the New York Police Department (NYPD), the Port Authority of New York and New Jersey (PANYNJ) and the four New York City hospitals that have signed Memoranda of Understanding (MOU) with the CDC to evaluate and admit such patients. This guideline is applicable and relevant to any disease that is currently listed in Executive Order 13295, as amended April 4, 2003. It addresses incidents that involve up to 34 passengers/crew¹ who would need to be isolated and/or quarantined for a suspected federally quarantined disease. Incidents involving the isolation and/or quarantine of larger numbers of persons will need to use other guidance documents that are currently being developed by the Mass Isolation and Quarantine Working Group at DOHMH.

NYC Guidelines for Management of Airline Passengers with Quarantinable Diseases

- Initially developed in 2006 to formalize coordination between agencies potentially involved in incident at JFK/LaGuardia Airport:
 - CDC Division of Global Migration & Quarantine
 - Port Authority of New York and New Jersey – including police and EMS
 - Custom and Border Protection (CBP)
 - NYC Department of Health
 - FDNY-EMS
 - Likely referral hospitals for ill passengers (Bellevue and closest hospital to airport)

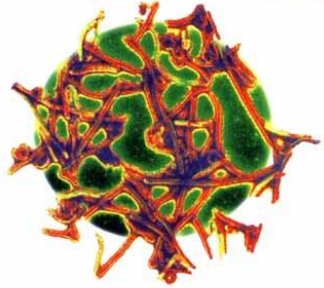
NYC Guidelines for Management of Airline Passengers with Quarantinable Diseases

- Surveillance for ill passengers at the airport
 - CDC DGMQ working with airlines and CBP
- Initial evaluation of ill passenger (CDC DGMQ)
- Early notification to NYC DOH and receiving hospital prior to EMS transport or en route
- If indicated, transport to local hospital – Bellevue preferred unless patient unstable
- Involuntary detention if indicated
- Management of exposed contacts, including responding agencies at airport and EMS

NYC Guidelines for Management of Airline Passengers with Quarantinable Diseases

- Have been revised every few years to update contact information and address newly emerging diseases (e.g., MERS) or issues
- In person meetings at Port Authority/JFK done every few years including tabletop exercise on MERS in December 2013

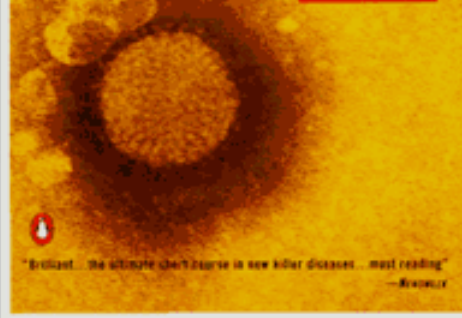
THE HOT ZONE



A TERRIFYING TRUE STORY
RICHARD PRESTON

THE COMING PLAGUE

NEWLY EMERGING DISEASES IN A WORLD OUT OF BALANCE



"Brilliant... the ultimate do-it-yourself course in new killer diseases... most reading" —*Rolling Stone*

Laurie Garrett



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NOTHING SPREADS LIKE FEAR
CONTAGION

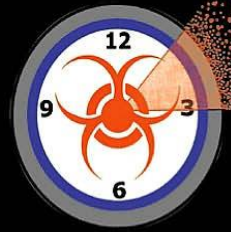
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NEW YORK TIMES BESTSELLER

MICHAEL CRICHTON

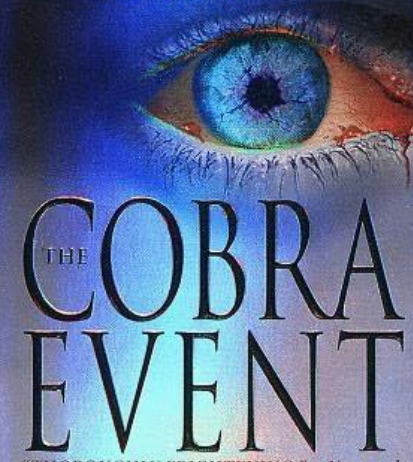
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THE ANDROMEDA STRAIN

AUTHOR OF THE NEW YORK TIMES #1 BESTSELLER THE HOT ZONE

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A DOUBLE FEATURE FILMS PRESENTS "OUTBREAK" DUSTIN HOFFMAN MORGAN FREEMAN

Concern re: Imported Ebola in NYC (Summer 2014)

- **Growing Ebola outbreak in West Africa in mid-2014**
 - Outbreak in Nigeria after an ill traveler arrived from Liberia
 - Two US aid workers in Liberia became infected with Ebola
 - Highlighted possibility of Ebola being imported into US
- **Travel from West Africa to New York City**
 - NYC receives 17% of travelers from affected areas
 - Many more transit through JFK Airport
 - Home to both medical and humanitarian aid workers

Initial Preparations

- Extensive planning began early August 2014
- Key decisions made at outset:
 - Strengthen internal surveillance protocols and train key staff (on call physicians)
 - Intensive focus on providing guidance and training for hospitals and providers
 - Develop dedicated Ebola treatment unit for NYC with Bellevue Hospital
 - Review and revise quarantine policies
 - Proactive outreach to and engagement of affected communities from West Africa
 - Ensure effective interagency collaboration

Inter-Agency Coordination

- CDC Quarantine Station/Port Authority
 - 1st planning call in August 2014
- FDNY-EMS and NYPD
- Office of Chief Medical Examiner
- Medical volunteer organizations (MSF)
- United Nations Medical Office
- Departments of Emergency Management, Education, Homeless Services, Corrections, Environmental Protection and Sanitation

HEALTH

415 COMMENTS

Ebola Is Diagnosed in Texas, First Case Found in the U.S.

By DENISE GRADY SEPT. 30, 2014

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A man who took a commercial flight from Liberia that landed in Dallas on Sept. 20 has been found to have the Ebola virus, the Centers for Disease Control and Prevention reported on Tuesday. He is the first traveler to have brought the virus to the United States on a passenger plane and the first in whom Ebola has been diagnosed outside of Africa in the current outbreak.

As the disease has swept across West Africa, many health experts said it would be only a matter of time before it reached the United States. Hospitals and health departments around the country have been preparing for it, and a number of false alarms have occurred. But this time, the case is real.



Dr. Thomas R. Frieden, director of the Centers for Disease Control and Prevention, said the infected individual came to the United States from Liberia. Video by Associated Press on September 30, 2014.

The Dallas Morning News

Texas' Leading Newspaper

\$1.50

Dallas, Texas, Monday, October 13, 2014

dallasnews.com

EBOLA IN NORTH TEXAS

2nd case rattles Dallas

Presbyterian nurse tests positive; others who treated first patient to be monitored



Health officials cite breach of protective procedures

By JEFFREY WEISS
Staff Writer
jweiss@dallasnews.com

Shaken by America's second case of Ebola, health officials in Dallas and across the nation are escalating efforts to control the disease — and public concern.

Experts had warned that another case was possible. But the infection disclosed Sunday was not where most had been looking. It wasn't among 48 individuals being watched because of their contact with Thomas Eric Duncan, the Liberian who died of Ebola last week in Dallas.

Instead, it was a nurse at Texas Health Presbyterian Hospital Dallas who became the first person infected with Ebola on American soil. While protected by a gown, mask, shield and gloves, she had extensive contact on multiple oc-



JFK AIRPORT INTERAGENCY RESPONSE TO TRAVELER SUSPECTED OF HAVING EBOLA VIRUS DISEASE (EVD)

Draft 11/10/2014

Airline Carrier, Customs Border Protection (CBP), or Airfield Operations notify CDC JFK Quarantine Station staff (CDC) regarding suspect EVD patient

CDC notifies Port Authority (PA) EMS and CBP; together they meet flight or meet patient in Federal Inspection Area to assess clinical presentation and epidemiological risk factors for EVD

PATIENT HAS

Measured or subjective fever **OR** compatible signs/symptoms for EVD (including headache, myalgias, weakness, vomiting, diarrhea, abdominal pain or unexplained hemorrhage)

AND

Travel to an affected area in Africa **OR** contact with a confirmed EVD case, within the 21 days before illness onset (currently affected countries include **Liberia, Guinea, and Sierra Leone**, as well as the city of Kayes, Mali)

YES

- CDC to promptly notify DOHMH of suspect EVD case and to further assess risk for EVD*
- CDC to notify Port Authority of suspect EVD case
- Port Authority to notify FDNY EMS of suspect EVD case
- If patient clinically stable, DOHMH to request FDNY EMS telemetry MD permission to transport to Bellevue or other EVD designated hospital
- If patient not clinically stable; FDNY EMS will transport to nearest hospital—likely Jamaica
- DOHMH and CDC to promptly contact receiving hospital

NO

- EMS to assess and transport patient according to usual protocols
- CDC to call DOHMH and receiving hospital to let them know that patient NOT suspected of having EVD

*Questions to identify a potential EVD exposure:

During the past 21 days, did the patient:

1. Serve as a health care worker who cared for confirmed or suspect EVD patients?
2. Work in a laboratory that processes specimens from confirmed or suspect EVD patients?
3. Have direct contact with a confirmed or suspect EVD patient and or their blood or bodily fluids?
4. Participate in funeral rites or have contact with human remains in a location with EVD transmission?
5. Live with an EVD patient.

If yes to any of the above determine when and where

For complete explanation of risk factors to consider, see the CDC guidance

<http://www.cdc.gov/vhf/ebola/exposure/risk-factors-when-evaluating-person-for-exposure.html>

All Emergency Contact Information on reverse side

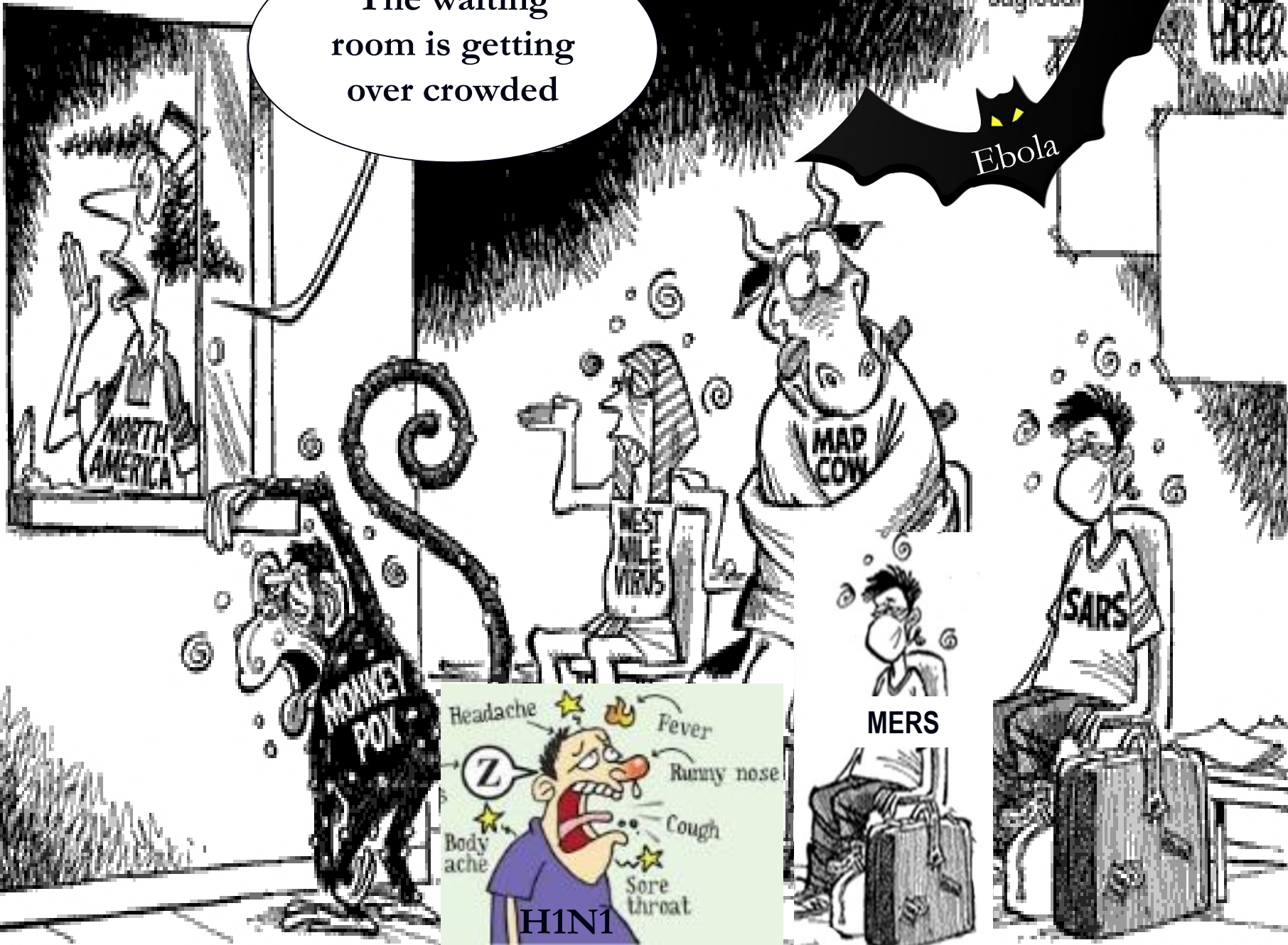
Active Monitoring for Ebola, NYC

October 25, 2014 to December 29, 2015

- Mid October 2014 - CDC recommends active monitoring for all returning travelers for 21 days
- All passengers from affected countries diverted to 5 US airports: JFK, Newark, DC, Chicago, Atlanta
 - On arrival, passengers screened for fever and risk exposures
- Type of monitoring based on exposure risk
 - SOME/HIGH risk - Direct active monitoring (≥ 1 visit per day)
 - LOW risk – Telephone call daily
- In NYC, monitored 5,791 passengers (18% of all travelers to US) – between 100-400 per day
 - 99% considered LOW RISK
 - No cases of Ebola identified but several challenging scenarios, including management of returning healthcare workers

The waiting room is getting over crowded

Ebola



Headache

Fever

Runny nose

Cough

Sore throat

Body ache

Z

H1N1

http://www.cartoonists.com

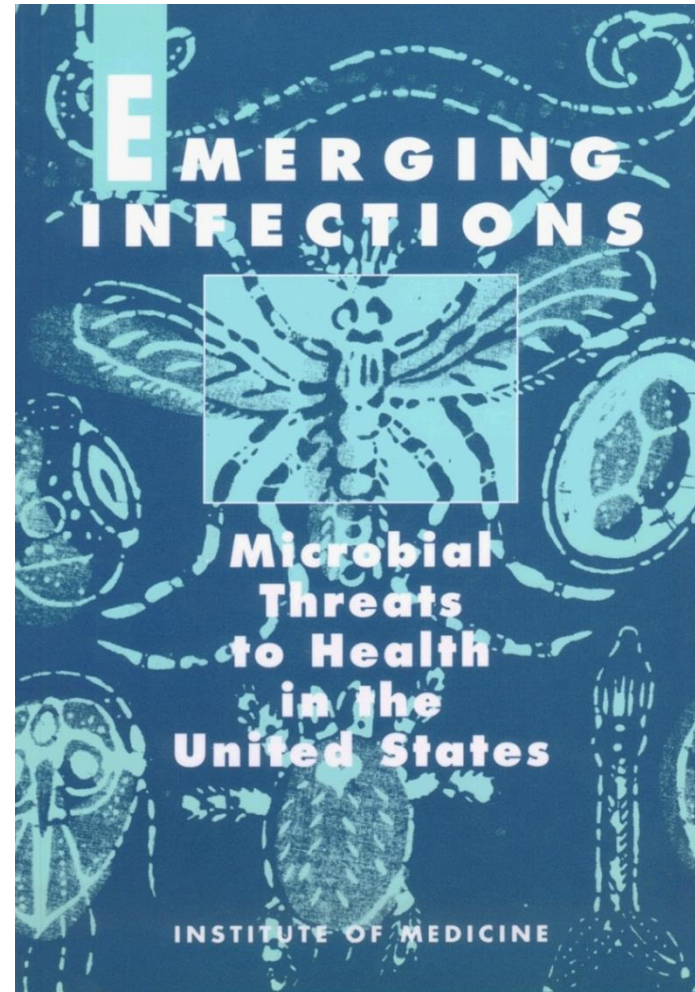
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Lessons Learned/Remaining Challenges

- Most important is maintaining relationships and knowing who to call when something happens
 - Public health officials need to know more than their regional CDC DQMG staff at their local airports
 - Importance of in-person meetings every year or two among key players at each agency
 - Tabletop discussions very useful to work out issues and ensure protocols are realistic and familiar to all
 - Critical to include designated hospitals/EMS in all planning efforts
- Challenges remaining to work out
 - Potential legal and law enforcement issues if passenger(s) not compliant
 - Large scale incidents (e.g., quarantine of 300+ passenger plane)

Institute of Medicine, 1992

“As the human immunodeficiency virus (HIV) epidemic surely should have taught us, in the context of infectious diseases, there is nowhere in the world from which we are remote and no one from whom we are disconnected.”



All Public Health is Local





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