The Future of Public Health Emergency Preparedness

Like, I Would Know?

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Introduction

- “… what’s past is prologue …”
  --- W. Shakespeare

- Today’s actions and inactions cast long but imprecise shadows into the future.

- Where we’ve been says a lot about where we’re going.
Issues Re Funding Levels (1)

- What is the proper role for the federal government re S&L public health infrastructure?

- What is the proper role of the federal government re S&L emergency preparedness?
Issues Re Funding Levels (2)

- What competes with S&L public health activities for federal government support?

- Which investments in state and local public health emergency preparedness are best done centrally rather than through the cooperative agreements?
Issues Re Funding Levels (3)

Centrally Funded Investments
In S&L Emergency Preparedness

Strategic National Stockpile
BioSense
Quarantine Stations
Cities Readiness Initiative
Impressive Gains Since 2002

- Workforce: quality and quantity
- Laboratories: maturation of LRN
- Information Technology
- Incident Management Systems
Differential Gains

- Between States

- Within States

- Which part of “emergency” didn’t you understand?
High-Compliance Milestones

- At Least One Epidemiologist for Every Metropolitan Area with Population Greater than 500,000

- Health Alert Network Coverage for Greater than 90% of Population
Low-Compliance Milestones

- 24/7 Receipt of Emergency Case Reports

- Gap Analysis of Statutes, Regulations, and Ordinances re quarantine, isolation, and movement restrictions

- Local Distribution and Dispensing of Materiel from Strategic National Stockpile
Compliance Correlation

- The greater the expected benefit for public health infrastructure overall, the higher the compliance.

- The sharper the focus on emergency preparedness, the lower the compliance.
Foci for Differing Perspectives

- Likelihood of a Terrorist Act That Will Result in Mass Casualties

- Balance of Investment between General Enhancement of Public Health Infrastructure and Emergency Response

- Balance of Investment among Local, State, and Federal Government Assets
“Commenting on the public health preparedness side, I would say that the greatest challenge is getting and keeping agreement on threats and priorities of the threats.”

W.F. Raub, Congressional Hearing on BioDefense Strategy, June, 2004

Cited in “Ready or Not: Protecting the Public’s Health in the Age of Bioterrorism”, Trust for America’s Health, 2004
When a public health emergency outstrips local and State resources, mayors and governors call the President for help.

The President is pledged to fulfill that expectation.

History will judge harshly any President who fails to prepare to answer the call.
Some types of events are more likely than others to overwhelm local and State assets:

- Category 4 hurricane
- Richter 6.5 earthquake
- Pandemic influenza
- Bioterrorism with smallpox or anthrax
- Explosion of nuclear device
Bioterrorism and nuclear events are especially worrisome because the terrorists get to decide where and when.

Further, unlike Mother Nature, terrorists can act without warning and can reload quickly.
The federal government must be prepared to augment local and state assets with materiel and people.

The federal government response must mesh readily with the local and state response – hence

National Response Plan

National Incident Management System
Smallpox as BioThreat (1)

- Highly communicable; highly lethal
- Few Americans have immunity.
- Causative agent (Variola major) likely is in terrorists’ hands.
Smallpox as BioThreat (2)

- Highly effective vaccine
- No effective treatment
- New antiviral countermeasures are a high priority for NIH research.
Effective biodefense requires

- prompt detection
- accurate diagnosis
- prompt mass immunoprophylaxis

Federal Government has ample supply of smallpox vaccine and the means to deliver it rapidly anywhere in the U.S.
Municipalities and States should have the infrastructure in place to provide smallpox vaccination to the symptomatic individuals and their known or likely contacts within 3 days to the rest of the potentially at-risk individuals – possibly the entire jurisdiction – within 10 days.
HHS sees mass immunoprophylaxis as a high-priority performance objective to be met at the municipal and substate regional level.

If you had to meet this objective, could you?

If not, what are you telling your community?
Anthrax as BioThreat (1)

- Lends itself to terrorist use

- Spore form (vegetative state) can be made into a powder with some difficulty

- N.B.: 2001 Mailings; USPS BDS System
Anthrax as BioThreat (2)

- Ubiquitous; easy to obtain
- Easy to grow in large quantities
- Easy to work with surreptitiously
Antibiotics are effective if given before symptoms appear.

Effective vaccine exists but supply is too small to allow mass immunization.

Effective vincetoxic countermeasures – e.g., monoclonal antibody therapeutics – still are undergoing development.
Anthrax countermeasures are the highest priority for Project BioShield.

A contract is in place for 75 million doses of a new anthrax vaccine for addition to Strategic National Stockpile.

Contract proposals for candidate anthrax treatments are under review.
A new twist on an old threat:

B. anthracis can be prepared as a slurry of spores and crystalline toxin molecules. The slurry can be dispersed efficiently as an aerosol with commercially available equipment – such as crop dusters.
B. thuringensis in slurry form has been sprayed over large areas for pest control – e.g., gypsy moth eradication in forests.

- Plume can cover many square miles.
Terrorists have ready means to expose densely populated areas to aerosolized slurry of B. anthracis spores and toxins.

Those who inhale an infectious dose will be at high risk for inhalational anthrax.
Symptoms of inhalational anthrax will be the first sign of inhalation of infectious dose.

No rapid way to define at-risk population quickly.

The first cases of inhalational anthrax are likely to occur within 48 hours.
Untreated, inhalational anthrax is about 90% fatal.

Even with intensive care, survival is about 50% at best.

A hundred cases could overwhelm the healthcare system of a typical large city.
A large outdoor release of aerosolized B. anthracis spores could put hundreds of thousands (and possibly millions) of people at risk.

With healthcare facilities overwhelmed, fatalities could number in the tens of thousands.
Mass chemoprophylaxis is the only means to prevent catastrophic loss of life following such an exposure.

Given the characteristics of the anthrax organism, the entire at-risk community should receive chemoprophylaxis as soon as possible after exposure.
Municipalities and substate regions should have the infrastructure to provide antibiotics to the at-risk population within 48 hours of the decision to do so.

This at-risk population could be the entire municipality or region – plus commuters and transients.
HHS sees mass chemoprophylaxis as a high-priority performance objective to be met at the municipal and substate regional level.

- If you had to meet this objective, could you?

- If not, what are you telling your community?
Preparedness is Asymmetrical

- Preparing for catastrophic events almost guarantees readiness for lesser – and more likely – challenges.

- It doesn’t work the other way round.
Several calls for improved performance – e.g.,

Homeland Security Presidential Directive (HSPD #8)
General Accountability Office
HHS Office of the Inspector General
Trust for America’s Health
Focus of HHS Contract with RAND – e.g.,

- Assessing HHS objectives
- Testing proficiency in handling emergency case reports
- Identifying useful exercises
- Identifying exemplary practices
- Fostering continuous quality improvement
“Whereof what’s past is prologue, what to come in yours and my discharge.”

--- W. Shakespeare, The Tempest