“Disease-causing microbes have threatened human health for centuries. The ... committee... believes that this threat will continue and may even intensify in coming years.”

Institute of Medicine, NAS
Committee on Emerging Microbial Threats

Recommendations:
“...to prepare, recognize and respond to Emerging Infectious Diseases.”

- Recognition –
  - Surveillance, diagnostics, information and communication
- Intervention –
  - Improve the U.S. Public Health System
  - Expand basic research on infectious diseases
  - Expand the Epidemic Intelligence Service
  - Develop a “National Health Corps”-like service for EIDs
- Vaccine and Drug Development
  - Stockpiles and surge capacity
  - Government supported research, development and production facilities
  - Education re. drug resistance and development of new antimicrobials
- Vector Control
  - Development, stockpiling and appropriate use of insecticides
- Public Education and Behavioral Change
  - Community health practices and disease transmission
  - Education on health-promoting behavior
The mother for all EIDs occurred almost 100 years ago...

**BSL-4 VIRUSES: 1995-2000**
- 1995 Hendra virus: Australians discover new paramyxovirus
- 1995 Ebola virus: Zaire, Gabon epidemics, Zaire subtype
- 1996 Ebola virus: "Exported" to South Africa
- 1996 Andes virus: Person-to-person transmission hantavirus
- 1997 HPS: SA totals reach 229: Argentina, Bolivia, Brazil, Chile, Paraguay, Uruguay
- 1997 Rift Valley: East African epidemic; ENSO
- 1997-8 Nipah virus: Discovered in Malaysia: 289 cases, 37% fatal
- 1998 Smallpox: Role in bioterrorism?
- 1998-99 HPS: ENSO in SW US: increased rodents, human cases
- 1999 Marburg: Active in DR Congo; multiple genotypes
- 1999 CCHF: Reports of activity in Central Asia, Russia
- 2000 Ebola: Ugandan epidemic, Sudan subtype
- 2000 Rift Valley: Introduction into Yemen, Saudi

**Bioterrorism Syndromes**
- Encephalitis
- Hemorrhagic mediastinitis
- Pneumonia w/ abnormal liver function
- Papulopustular rash
- Hemorrhagic fever
- Descending paralysis
- Nausea, vomiting & diarrhea

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**CDC EID Priority Issues 1999-2000**
- Antimicrobial resistance
- Food and water safety
- Vectors and animal health
- Blood safety
- Infections that cause chronic diseases
- Opportunistic infections
- Maternal and child health
- Health of travelers and refugees
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Prevention of EIDs will require:

- Surveillance and Response
- Applied Research
- Infrastructure and Training
- Prevention and Control

Factors driving emergence have not moved in our favor...

Why Bioterrorism in the US Today?

- We’re the nation to beat
- Looking for a great equalizer
- Biological warfare expertise is available
- Dual-use nature makes it hard to detect
- We’re still vulnerable
- Biotechnology may make it easier
- But, fortunately, it’s still not simple...

The Way Ahead... for Bioterrorism Defense

- Surveillance (diagnostics and communication)
- Education
- Proactive Deterrence....i.e. changing intent
- Public Health Infrastructure
- HUMINT (intelligence)
- Biomedical Research
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An absolute fundamental in preparing for an unknown future threat (BT or EID)

Good Public Health is Good Domestic Preparedness

- Exercises
- Education
- Leadership
- Public Trust
- Threat Awareness
- Organization
- Communication
- Surveillance
- Media
- Understanding & Support
- Contacts
- Training
- Collaboration
- Stockpiles
- Equipment

...and more Education

Challenges to Public Health

<table>
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<th>Funding Shortages</th>
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<td>Risk of Bioterrorism</td>
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Therefore, unique or expensive preparations may be all but impossible in many communities.

Preparing our Communities

A Case for Education & Teamwork

What’s good for public health is good for bioterrorism preparedness!

Protecting Americans

- Think Public Health, “heavy”
- Think Dual-use Investments
- Think Tech-base, not Materiel... at least for now
- Think Tech-base for Attribution
- Think Education and Awareness
- Think Benefit & Cost
- Think Changing Intent
- Think Long-Term
Protecting Americans from EIDs

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The Bioterrorism Threat is unique:

- Broad
- Dynamic
- Easily Hidden
- Not Necessarily Easy for Terrorist
- Probably Low-likelihood
- Potentially Very High-impact
- Potentially Not Attributable
- Potentially Outpacing the Defense

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So....what is Special about Biological Weapons?

- Agents and tools are and will therefore be:
  - Ubiquitous
  - Legal
  - Important to our well-being
- Therefore....INTENT becomes extremely important

We’re in this together... the American people must win this war too!
We’re in this together... the American people must win this war, too!

The amazing strength of the spirit of free peoples...