

Bioterrorism

Practical realities of a new challenge

D.A. Henderson, MD, MPH

Rothermere American Institute
Oxford University
3 April 2003

A vantage point on bioterrorism

- 1990-93 – Science Adviser to President Bush
- 1994-95 – Senior Science Adviser,
Dept of Health & Human Services
- 1998-2001 – Director, Johns Hopkins Center
Civilian Biodefense Strategies
- 2001-02 – Director
Office of Public Health Preparedness
- 2002+ Principal Science Adviser to Secretary
Dept of Health & Human Services

Biological Weapons

- A threat, largely ignored until 1995
 - Too difficult to grow
 - Technologically difficult to disseminate
 - Seldom used because of an inherent moral barrier
that none would transgress
 - So potentially destructive as to be unthinkable

Biological weapons use –1900-72

- 1940-44 – Japanese used weapons on many
occasions to attack Chinese cities and troops
 - Anthrax, botulism, brucellosis, cholera,
dysentery, gas gangrene, plague,
paratyphoid, typhoid
- 1942 --Russians used Tularemia at Stalingrad

Biological weapons –1973-95

- Biological Weapons Convention –1973
 - Countries pledged to destroy weapons and cease
all research on offensive weapons
 - Signed by US, UK, USSR, Iraq, et al
- Academia -- Medicine and Public Health
 - Activity of any sort re: biological or chemical
weapons shunned
 - Little research or training re: exotic diseases that
are prime candidates for use as weapons

1995 Watershed Events Iraq

- Hussein Kamal deserts
 - Research reports reveal a much more
extensive and sophisticated program than
UNSCOM had been able to uncover
- Concern: If so much activity could continue
undiscovered despite UNSCOM and other
intelligence, how many other countries might
be similarly engaged?

1995 Watershed Events Aum Shinrikyo (Japan)

- Religious cult releases Sarin gas in Tokyo subway
 - Cult - previously unknown to intelligence
 - Thousands of members, well-funded
 - Tried to aerosolize anthrax and botulinum toxin throughout city at least 8 times
 - Organized team to Congo to obtain Ebola virus
- Concern – unknown, non-state sponsored organization, acting without concern for possible moral deterrents

1995 Watershed Events USSR

- Essentially unknown until 1989 deserter
- 1992 – Ken Alibek, Deputy Director of USSR bioweapons program, deserts to U.S. and by 1995, information he provides is widely known and confirmed
- Bioweapons program consisted of 60,000+ persons in 50 different labs.

"On May 8, 1980, WHO announced that smallpox had been eradicated..Soon after, smallpox was included in a list of biological weapons targeted for improvement in the 1981-85 Five-Year Plan..."

Where other governments saw a medical victory, the Kremlin perceived a military opportunity...the military command issued an order to maintain an annual stockpile of 20 tons (of smallpox virus)."

Alibek, 1998

Russia today

- More than half of the scientists are no longer working in the old biological weapons labs. Many have gone abroad
- The major production lab for smallpox virus, at Sergiyev Posad, remains a secret facility
- The major viral weapons research lab continues work on smallpox, Ebola, et al
- Former Vice-Minister of Health Burgasov admits (2002) aerosolized smallpox was released on Voz Island in 1971 for studies

Criterion Rating of Bioagents

Anatoliy Voroboyov –April 1994

■ Smallpox	26
■ Plague	23
■ Anthrax	21
■ Botulism	21
■ VEE	20
■ Q fever	20

Bio Agents of Greatest Concern

- | | |
|------------|--|
| ■ Smallpox | ■ Tularemia |
| ■ Anthrax | ■ Botulinum Toxin |
| ■ Plague | ■ Hemorrhagic fevers
Ebola, Marburg, etc. |

Agents that, if released, could threaten the integrity of civil government

Methods for Dissemination

- Water
- Food or beverage
- Aerosol
 - Ventilation systems
 - Crop dusters and other ambient sprayers
 - Mail system

Probable Perpetrator

- Nation-state
- Dissident group acting for nation-state
- Independent religious or political group
- Individual or small group

Acquisition

- Until 18 months ago, instructions for the weaponization of several major agents were detailed on the internet
- Anthrax was available from 46 labs in many parts of the world

Policy decision Overall response

- Need for development of sustainable systems for dealing with catastrophic events of whatever cause
 - Biological – deliberate and natural
 - Nuclear –
 - Chemical
 - Explosives
 - Major accidents (e.g. plane and train)

- *Not a program for response to bio terrorism – new office created – reports to deputy office of Public Health Preparedness*
- *Budget*

Policy decision State and local areas are priority

- Speed and effectiveness of detection, diagnosis, response and recovery depend heavily on state and local resources
- Integrated planning is required involving civil authority, public health, hospital, law enforcement, voluntary agencies, others
- Public health and medical resources are limited. Substantial resources needed

Benchmarks for each state

- Full-time Director of Program at state
- Planning and oversight committee to embrace all constituencies
- Special committee for region-wide (within state) hospital planning to accommodate 500+ patients
- All hospitals to have negative pressure rooms in ERs
- Plan for distribution of antibiotics or vaccines to all in a state within 10 days
- Plans for risk communication and information dissemination to community

- *Funding to schools of public health and to academic centers for education, research, and participation*

Special needs at national level

- Surveillance
 - Command Centers on 24/7 alert
 - National health alert network
 - Laboratory response network
- Response
 - Emergency teams available for public health, medical, veterinary, mortuary need
 - 12 emergency stock piles
 - Smallpox vaccine
 - Antibiotics for anthrax, plague, tularemia

Recent enigmas

Were they natural occurrences?

- West Nile encephalitis – U.S.
- Foot and mouth disease
- H1N1 influenza
- Canine parvovirus
- Coronavirus

A Fertile Ground for New Microbial Agents

- Rapidly growing urban populations
 - 1800 2 %
 - 1950 20 %
 - **2010 67 %**
- Urban areas with a population
 - >7.5 million – 1950 – 2 cities
 - **2003 – 30 cities**
 - >15 million – **2003 – 7 cities**

Transmitters of New Agents

- Hospitals
- International travel
- An industrialized food supply

Policy Decision Long-term Solutions

- Problems we are now addressing will be with us indefinitely
- Better global knowledge of diseases
 - International surveillance
 - Intelligence
- Sustained medical and public health preparedness
- Expanded research program for infectious diseases
- Rapidly responsive biotech industry

- Man's only competitors for the dominion of the planet are the viruses – and the ultimate outcome is not foreordained.

Joshua Lederberg

Not prepared for any emergency + never can be;
① Bioengineered organisms –
② Contingent on other threats

challenges and problems posed by

Appropriate invitation to talk with you about ~~the~~ biological weapons —
at least as perceived on the other side of the Atlantic — and the policies we are pursuing.

As you know, WMD are conventionally considered to be nuclear, chemical, biological.
~~Bio~~ — essentially ignored until 4 years ago — will describe why.

Colin Powell — Senate —

U.S. National Commission (1999) —

Nuclear — not readily acquired or transported — ^{geographically} ~~where~~ ^{denied} the extent of damage is finite, ~~the only defense~~ ^{passive defense}.

Chemical — very large quantities required to affect any significant area.
— like nuclear, more readily detected ~~the only defense~~
— experience with many chemical releases — ~~highly~~ ^{highly} ~~not~~ ^{not} ~~well~~ ^{well} ~~known~~ ^{known} ~~to~~ ^{to} ~~many~~ ^{many} ~~people~~ ^{people} ~~in~~ ⁱⁿ ~~the~~ ^{the} ~~US~~ ^{US} ~~and~~ ^{and} ~~other~~ ^{other} ~~countries~~ ^{countries}.

Biological — Inexpensive / silent release / spox — spread of disease
— Can be readily produced in a 2 car garage by a few people / ^{as we saw at anthrax} ~~potential for~~ ^{potential for} ~~game~~ ^{game} ~~changing~~ ^{changing} ~~the~~ ^{the} ~~world~~ ^{world} ~~in~~ ⁱⁿ ~~the~~ ^{the} ~~last~~ ^{last} ~~few~~ ^{few} ~~years~~ ^{years}.

Thus — a special concern about a biological agent but this has been very recent

Brief by — to understand from whence we have come

— what are we most concerned about

— what is ~~the~~ role of state and local government.

In brief — a substantial investment is being made

It is an initiative with broad bipartisan support

Difficult for many to accept, however, is that however much we invest, ~~the~~ ^{that} ~~level~~ ^{level} ~~of~~ ^{of} ~~security~~ ^{security} ~~or~~ ^{or} ~~any~~ ^{any} ~~thing~~ ^{thing} ~~like~~ ^{like} ~~it~~ ^{it} ~~will~~ ^{will} ~~not~~ ^{not} ~~and~~ ^{and} ~~cannot~~ ^{cannot} ~~be~~ ^{be} ~~achieved~~ ^{achieved}.

Subj: **Local Government Preparedness-Biodefense**
Date: 4/7/2003 9:57:14 AM Eastern Daylight Time
From: lee.tawney@ukuscenter.org
To: Undisclosed-Recipient:
Sent from the Internet (Details)

UK-US Center for Local Government
at the
Rothermere American Institute

cordially invites you to

LOCAL GOVERNMENT PREPAREDNESS
BIODEFENSE
Seminar

with

Dr. D.A. Henderson

Dr. D.A. Henderson is the Johns Hopkins University Distinguished Service Professor and serving as the Senior Science Advisor to the US Secretary of Health and Human Services. He was the Director of the Office of Public Health Preparedness, Office of the Secretary, US Department of Health and Human Services from November 2001-May 2002. From 1998-2001, Dr. Henderson served as founding director of the Johns Hopkins Center for Civilian Biodefense Studies. From 1990-1993, Dr. Henderson served first as Associate Director of the Office of Science and Technology Policy, Executive Office of the President and later as Deputy Assistant Secretary and Senior Science Advisor in the US Department of Health and Human Services. From 1977 through August 1990, Dr. Henderson was the Dean of the Faculty of the Johns Hopkins School of Public Health. He came to Hopkins after directing the World Health Organization's global smallpox eradication campaign (1966-1977).

Thursday, May 8 at 5:00 p.m.

Seminar Room
Rothermere American Institute
University of Oxford
1A South Parks Road
Oxford

All are welcome

Please let us know whether you plan to attend by e-mail reply form

"Rechnomarks" slide

500+ million pts.

Sources of support:

- executive + Congress
- academic centres / personal - training
- * Commercial - pharmaceutical

← ?? etc: discussion →

- political considerations on an international level - need for WHO + extragovernmental institutes.
- view from Britain / Europe
 - o CDC - eg, ~~to~~ → politicized, withdrawing, etc.
- need for documents of success in WNV outbreaks, etc. in 2002-3

note of ↑ in sustaining public will

- ↑ support (↑ extent of 4.3 bill, eg) level of PHT activity
- role of local health commissioners as focus of Turing/Dwee/Mythen provide data / support initiatives eg needle exchange (Barto) also contribute / ↑ public will issues
- frequently necessary / ~~for~~ "accommodate" "hidden agenda" eg. currently hot button word in US Congress — "homeland ~~national~~ security"
- management component — "top down" a problem in AIDS, TB, etc 1. early 90s; needs of local community handled) "govt works better, eg. even though using Fed. \$"

- training 1. UK - trying to institute
" on national level of dis
consistent, etc.; DA - no models
yet 1. US
- accountability issues ~~in DA~~
bottleneck - ~~at~~ @ local level

DAH:

- dilemma: what is the
published?
on-going debate - who makes
decision?