

International Aspects of Biosafety

AfBSA-2009

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Biosafety around the Globe

- Global perspective
- Emerging diseases
- Proliferation of containment laboratories
- Laboratory acquired infections
- Management
- The “other” biosafety
- Needs

Biosafety & Biosecurity = Biorisk

- Laboratory biorisk management is directly related to laboratory capacity and disease surveillance
- Laboratory biorisk management is a matter of public and agriculture health

Global Perspective

- Infrastructure
- Hierarchy of Controls
- Biosafety & Biosecurity Relevance
- Legislation & Guidelines

Infrastructure & Logistics

- A global divide or “who has what”?



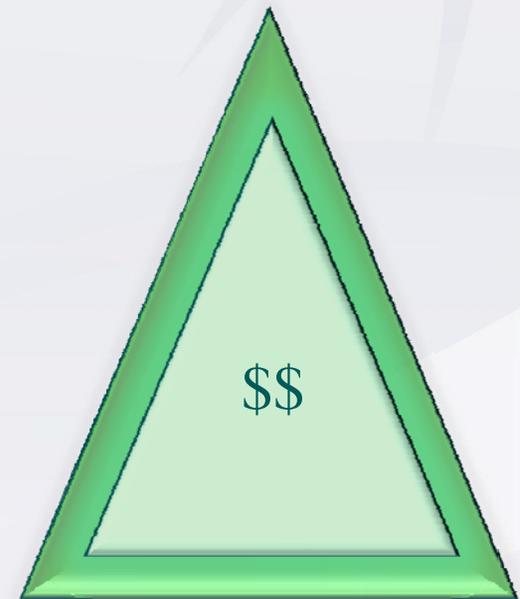
Infrastructure & Logistics

- **Percentage of respondents who will do the experiment anyway if they do not have a particular item of safety equipment**
 - Nearly 50% in Asia
 - ~ 45% in the Middle East,
 - ~ 30% in Eastern Europe
 - 20% in Latin America

(Jennifer Gaudioso, Sandia National Laboratories, Survey: 2007/08)

Hierarchy of Controls

1. Elimination/Substitution
2. Engineering Controls
3. Administrative Controls
4. Practices and Procedures
5. Personal Protective Equipment



Hierarchy of Controls

1. Practices & Procedures
2. Personal Protective Equipment
3. Administrative Controls
4. Engineering Controls



Anti-Plague Suit

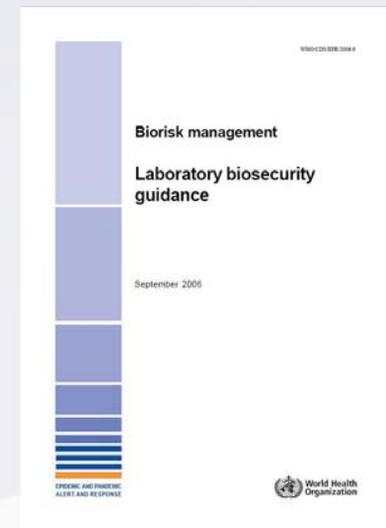
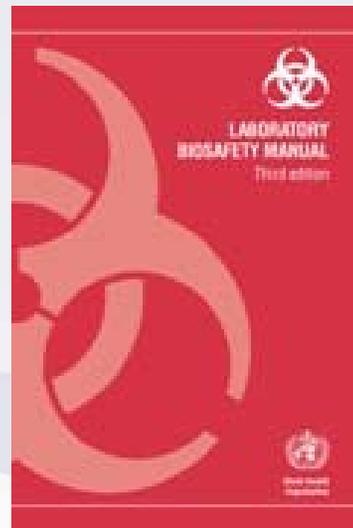
Relevance

- Unless we establish and sustain a basic laboratory environment, biosafety and biosecurity become irrelevant
 - What are minimal standards?
 - Science versus safety?
 - Bioethics

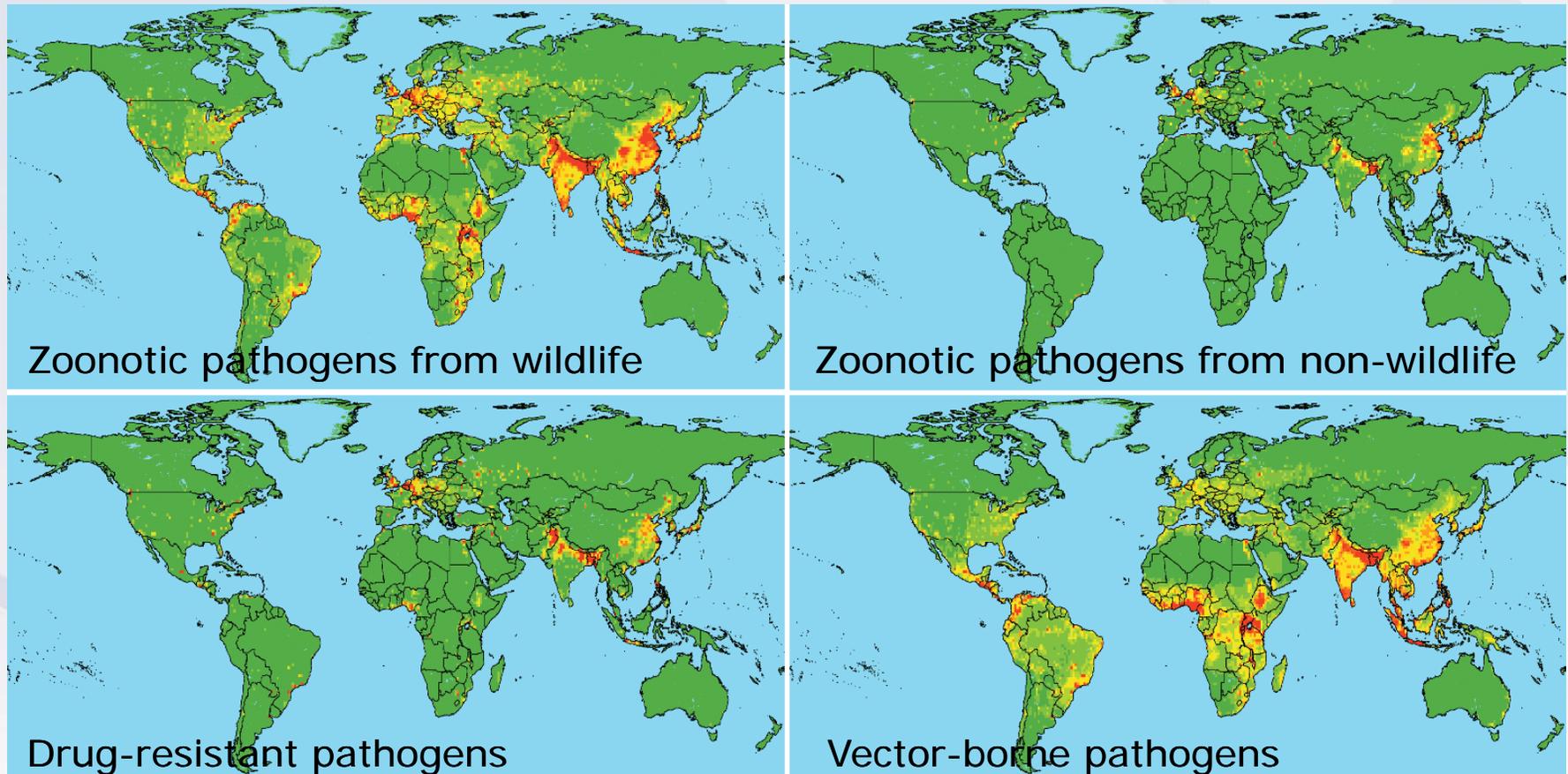


Legislation & Guidance

- Most countries do not have a national regulatory framework for biosafety or biosecurity



Relative risk of an EID event "The Future"



Nature Vol 451/21 February 2008: "Global trends in emerging infectious diseases"

Proliferation of Containment Laboratories

- Global disease surveillance and outbreak response
- Lack of coordination
 - Prestige
 - Financial benefits
- Staffing, training, oversight are of great concern

Laboratory acquired Infections

- Lack of national and international monitoring
- Increase with increasing laboratory activities likely
- Human factor is key
- Significant potential for international impact

Laboratory acquired Infections

- Clinical (diagnostic) and research laboratories account for ~50% of LAIs
- Relative increase of LAIs in clinical laboratories:
 - improved employee health surveillance programs that are able to detect sub-clinical infections
 - the use of inadequate containment procedures during the early stages of culture identification.

Laboratory acquired Infections

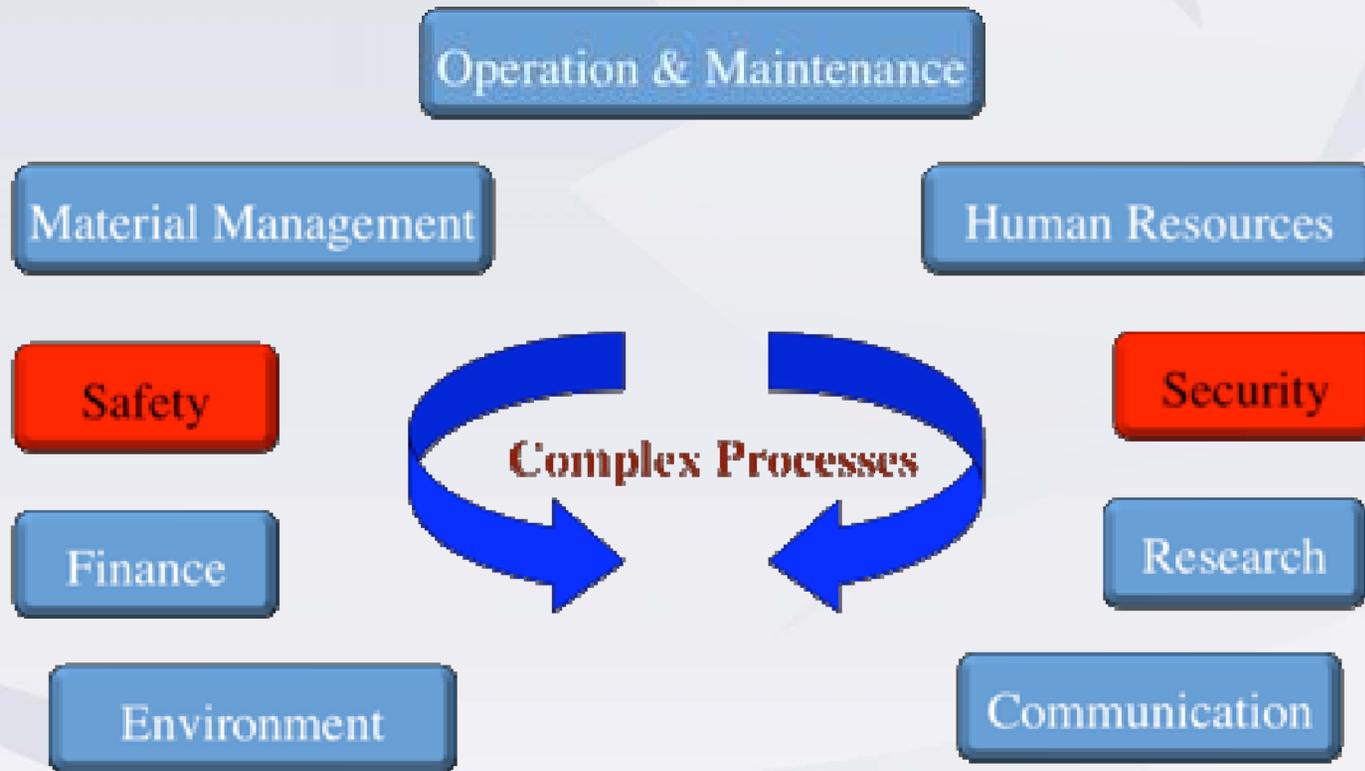
LAI's 1930 - 2001

(Harding & Byers)

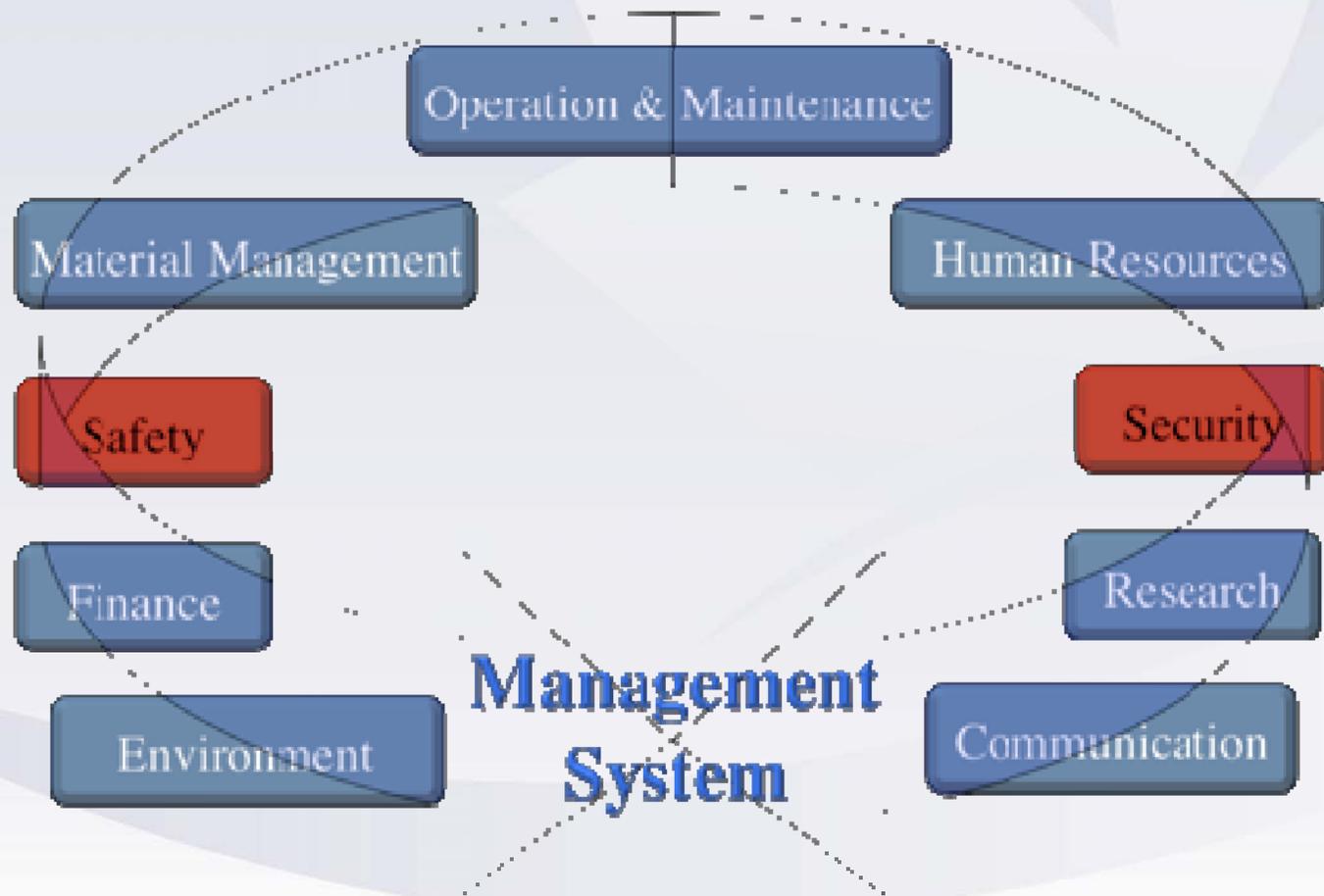
- Total: 5,346 LAI's
- 190 deaths
 - underreporting likely
 - many more sub-clinical infections?



Laboratory Management



Laboratory Management



Management

- Implementation of Management Systems (e.g., ISO, CWA)
 - Self-audit, monitoring, continuous improvement capacity
 - International recognition

CEN **CWA 15793**
WORKSHOP February 2008
AGREEMENT

ICS 07.100.01

English version

Laboratory biorisk management standard

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The “other” Biosafety



- “Biosafety is used to describe efforts to reduce and eliminate the potential risks resulting from biotechnology and its products”
 - Convention on Biological Diversity
 - Cartagena Protocol

<http://www.icgeb.org/~bsafesrv/index.html>



Needs

- **World Health Assembly resolution 55.16 (2002)**
 - "Global public health response to natural occurrence, accidental release or deliberate use of biological and chemical agents or radionuclear material that affect health"
- **World Health Assembly resolution 58.3 (2005)**
 - "Prevention and control of the international spread of disease and public health risks"
- **World Health Assembly resolution 58.29 (2005)**
 - "Enhancement of laboratory biosafety"

Needs...

- Development and implementation of sustainable and appropriate laboratory capacity
- Development and implementation of national policies and legislation on laboratory biosafety
- Appropriate science and safety training
- Implementation of science and safety management systems in laboratories
- Risk assessment based decision making

Thank you!