WHO Activities to Strengthen Global Public Health Diagnostics and Biosafety

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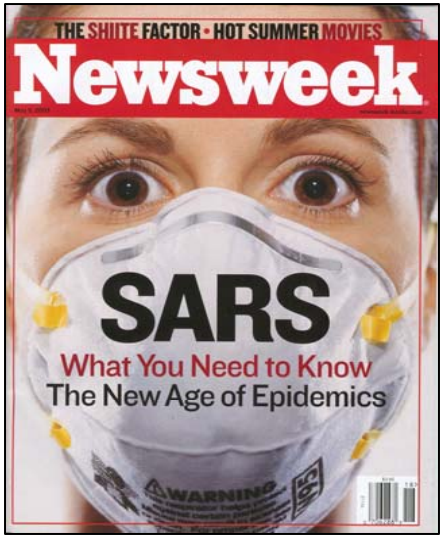
Global Health Security: Everyone Participates

- **Communicable diseases**
  - Naturally acquired
  - Accidentally acquired
  - Deliberately released
- **Impacts**
  - Mortality and morbidity
  - Destabilize disease prevention and control programs
  - Disrupt travel, trade and tourism
  - Economic consequences
  - Social instability
  - Political instability



Disease Early Warning Systems Must be Address Diverse Needs

Refugees

Natural disasters

Bio terrorism

Epidemics

Pilgrimage

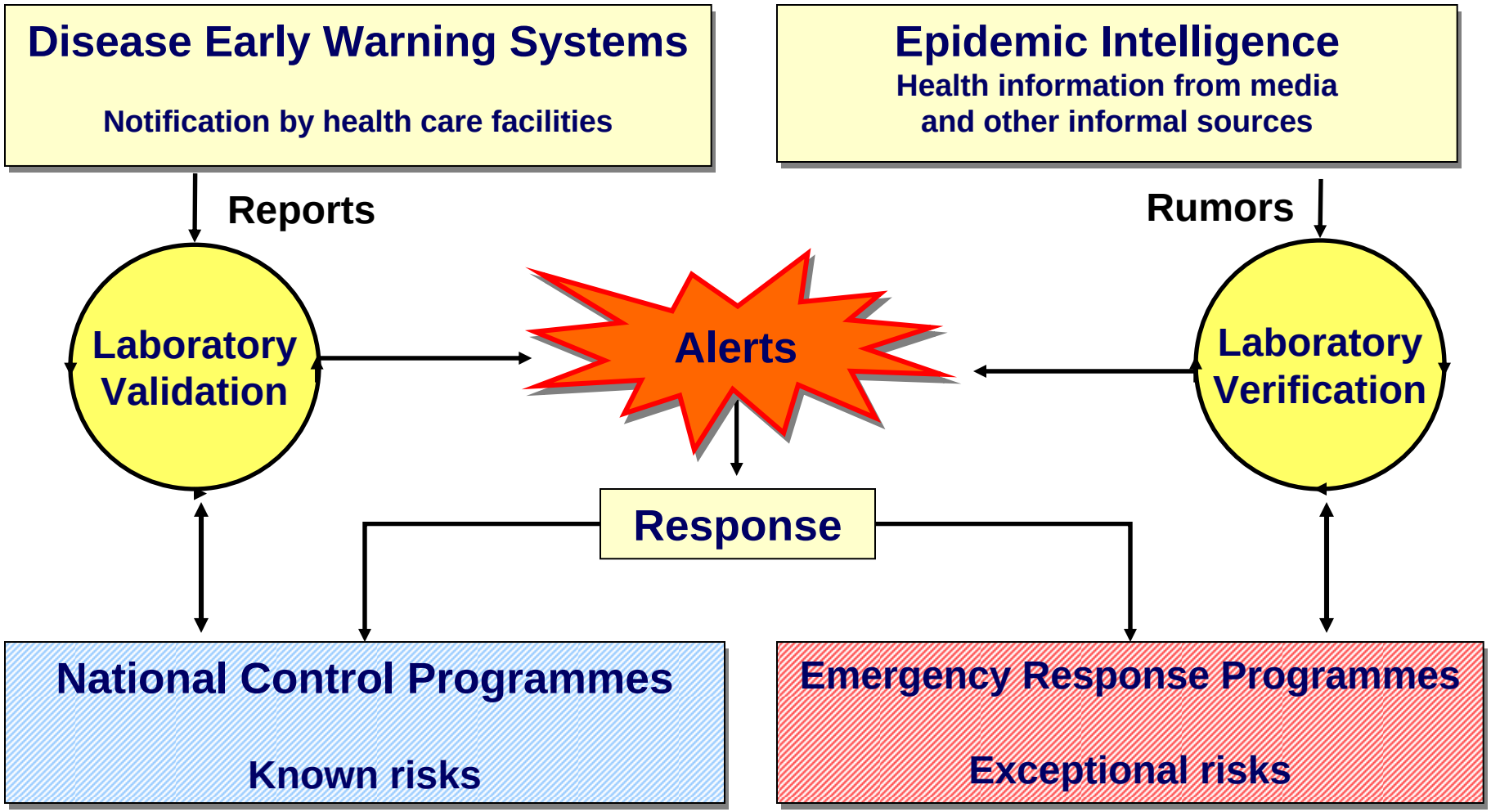
Sporting events

International trade, travel

International Health Regulations

Re-negotiating a global agreement on how to coordinate the response to disease threats of international concern.

Diagnostic Capacities are Essential Elements of Health Security



Situation

Many countries lack:

- Epidemiological capacities
  - Structured epidemic intelligence systems
  - Action-oriented outbreak indicators and thresholds
  - Structured response mechanisms
  - Confirmation capabilities
- Public health diagnostics
  - Laboratory involvement in disease surveillance
  - Appropriate roles
  - Advocacy or resources
  - Supporting infrastructures (national and global)
  - Biosafety awareness and practices
  - Pathogen security practices

Member States requested WHO to:

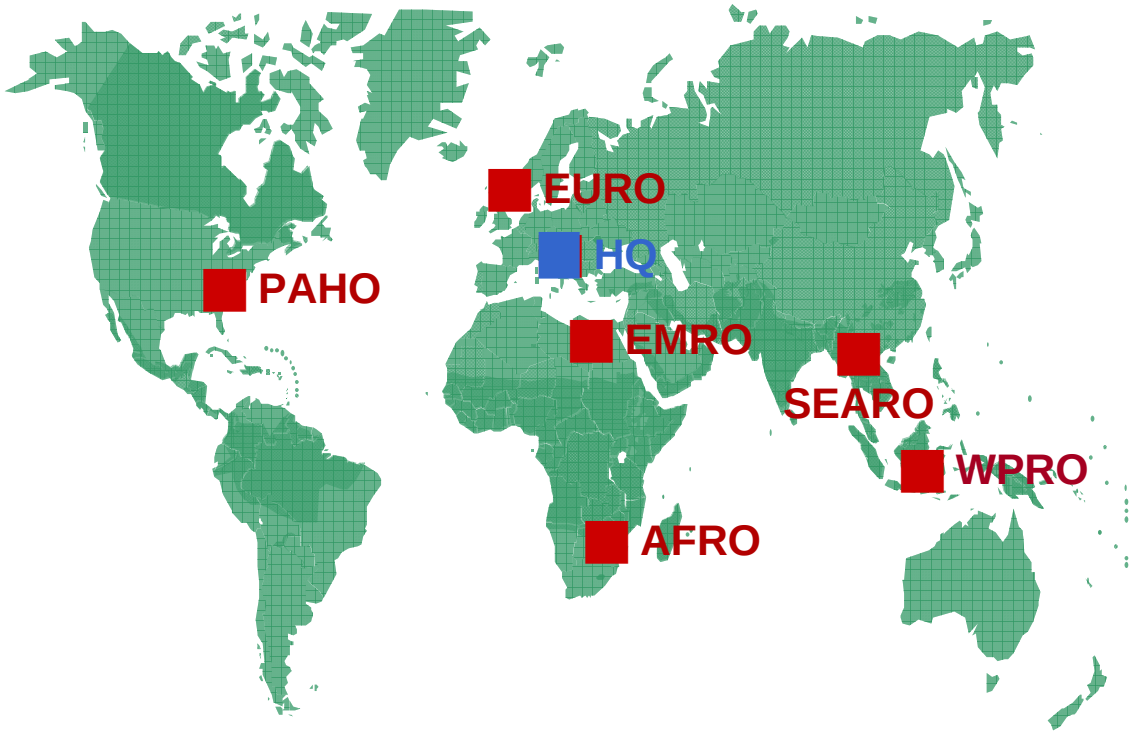
World Health Assembly Resolution:

WHA55.16,

18 May 2002

- Strengthen global surveillance
- Assist emergency preparedness and response
- Provide guidance and technical information
- Develop new tools

WHO: A global network with privileged access to countries



192 Member States, 6 Regional Offices, 141 Country Offices

The WHO CSR* Strategy

- National
  - Strengthen epidemiology
  - Strengthen surveillance and reference diagnostics
  - Integration of surveillance, reporting
- Regional
  - Regional reference centers
  - Information sharing
  - Integration of surveillance activities
- Global
  - Disease alert and response

**Communicable Disease Surveillance and Response*

CSR Capacity Strengthening Activities

Advocacy and development of political commitment

Assessment of national capacities

Epidemiology	Public health laboratories
Disease prioritization	Standard diagnostic tools
Epidemic intelligence systems	Lab infrastructure, resources
Early warning systems	Management
Monitoring and evaluation	Quality assurance/quality control
Response activities	Biosafety

Data management, analysis, and information dissemination, training, partnerships, evaluation

Laboratory Capacity Strengthening Unit

Lyon-based personnel

Programme activities

- **Training**
- **External Quality Assessment**
- **Country Infrastructure Development**
- **Distance Learning and Follow-up**
- **Partnership Development**

Geneva-based personnel

Programme activities

- **Biosafety**
- **Preparedness For Deliberate Epidemics**

Programme Targets

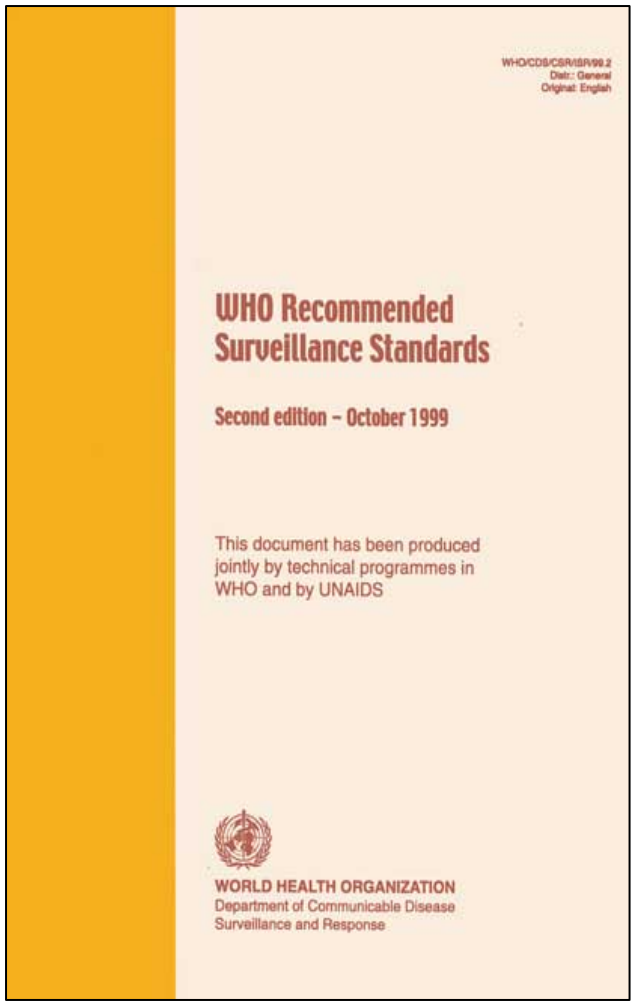
Development of globally relevant programmes and tools that strengthen:

- Public health and national referral laboratories
- Biological safety and pathogen security
- National health security

Consensus standards, guidelines and practical tools

Strengthening Epidemiological Practices

- Surveillance standards
- National Assessments
- Instructional case studies
- Training modules
- Field epidemiology training (TEPHINET,EPIET,FETP)
- Identify national surveillance priorities
- Monitor and evaluate



Global Outbreak Alert and Response Network
A “network of networks”

- 110 institutions and networks who pool resources for outbreak alert and response
  - Daily assessment of disease outbreaks (Global Public Health Information Network)
  - Rapid assistance (identification, verification and communication)
  - Global outbreak preparedness and response strategies

A goal for national public health laboratories

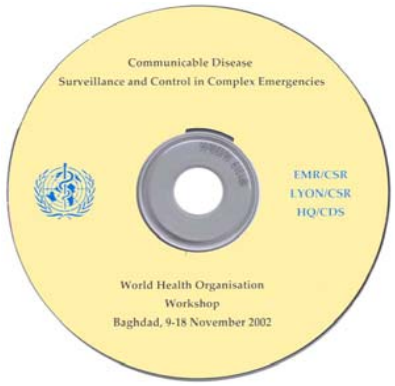
Sustainable support for health security through good laboratory practices

Summary of Core Diagnostic Functions

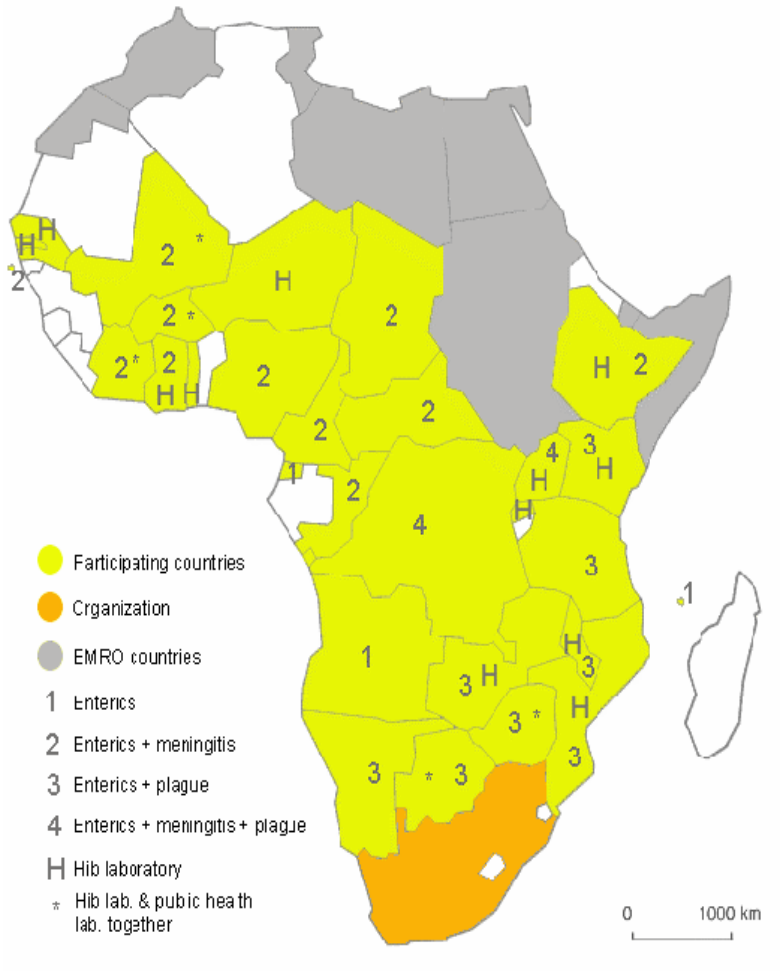
- **Identification/characterization of priority agents**
  Timely, scalable, with adequate collection and transport
- **Microbiology of food and water**
  Routine and outbreak-associated specimens
- **Quality assurance/quality assessment**
  Internal and external with performance indicators and feedback
- **Information management and communications**
  Regular, timely reporting to and from all levels
- **Training and continuing laboratory education**
  Continuing education in technical and managerial issues
- **Policy and advocacy for public health labs**
  Needs and evidence-based, integration of lab with epidemiology
- **Biosafety and biosecurity practices**

Distance Learning and Information Resources

- Distance learning
  - On-line networks
  - E-learning materials
- Information resources
  - CD-ROM training materials
  - Help desk functions
  - Internet resource center
    - Documents
    - Links
    - User groups



EQA as Part of Strengthening National Referral Labs



46 national labs

3 programs

- plague
- enterics
- bacterial meningitis

3 languages

3 shipments/year

Regionally-based Two-year Programme for National Laboratory Specialists

Training Group 1

- Cape Verde
- Chad
- Congo
- Comoros
- Equatorial Guinea
- Central African Republic
- Democratic Republic of Congo

Training Group 2

- Jordan
- Lebanon
- Yemen
- Syria
- Sudan
- Iran
- Iraq

Training Group 3

- Russia
- Ukraine
- Belarus
- Moldova
- Romania
- Bulgaria
- Turkey

Training Group 4

- Benin
- Mali
- Niger
- Burkina Faso
- Mauritania
- Senegal
- Djibouti

- Technical methods
- Management principles
- Applied epidemiology
- Quality assurance
- Access to on-line resources
- Biosafety/biosecurity
- Advocacy materials

Twinning National Laboratories and Specialized Institutions

- **Establish strong professional relationships**
- **Strengthen laboratory functions through:**
  - **Exchange of information**
  - **Mentoring**
  - **Joint research**
  - **WHO follow-up and assistance**
  - **Networking potential**

Successes with Lab Capacity Programme

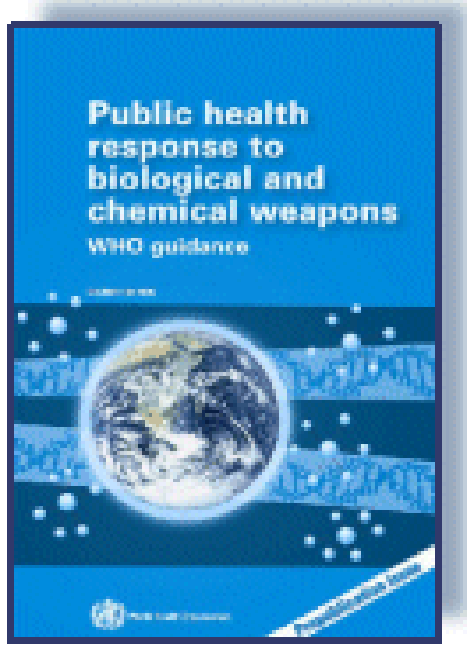
- Document on Core Capacities of National Referral Laboratories
- Laboratory assessment tool keyed to core diagnostic capacities
- Lab training modules
- Workshops “in a box” (SARS, cholera, meningitis, antibiograms, EQA…)
- Regional EQA model programs (AFRO, EMRO)
- Functional lab networks in AFRO, EMRO, EURO
- Electronic communications capabilities
- Web-based resources and distance learning tools through Internet
- Expanding partner base for sustainability

WHO Biosafety Programme

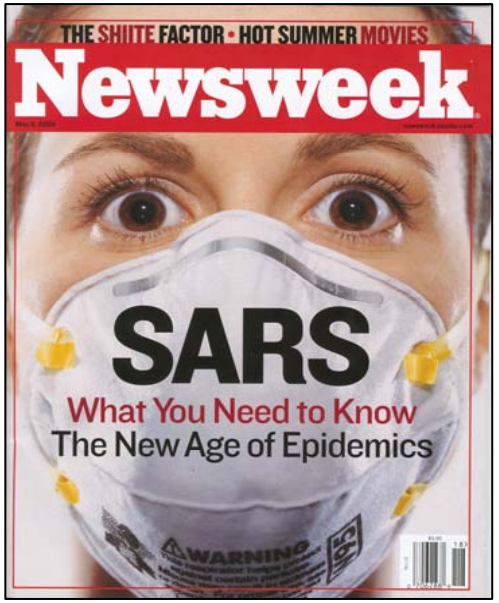
- **Coordination of global WHO biosafety activities**
  - Biosafety Advisory Group (BAG) and Regional focal points
  - Coordination with international agencies, organizations and programmes
- **Technical assistance**
  - Biosafety collaborating centres
  - Global biosafety issues (SARS, smallpox, polio, etc.)
- **Publications**
  - Laboratory Biosafety Manual, 3rd ed.
  - Transport Guidelines for Infectious Substances
- **Biosafety training materials**
  - Train-the-trainer materials
- **Regulatory issues**
  - UN model regulations for transport of infectious substances
  - Coordination with regulatory and industry organizations

Preparedness for Deliberate Epidemics

- **Strengthening national prepared**
  - Policy guidance
  - National preparedness assessment
  - Informal networks
  - Disease-specific networks
    (Anthrax, *Brucella*, Tularemia, smallpox, plague…)
  - Coordination (FAO, OIE, OPCW, UN, BWC...)



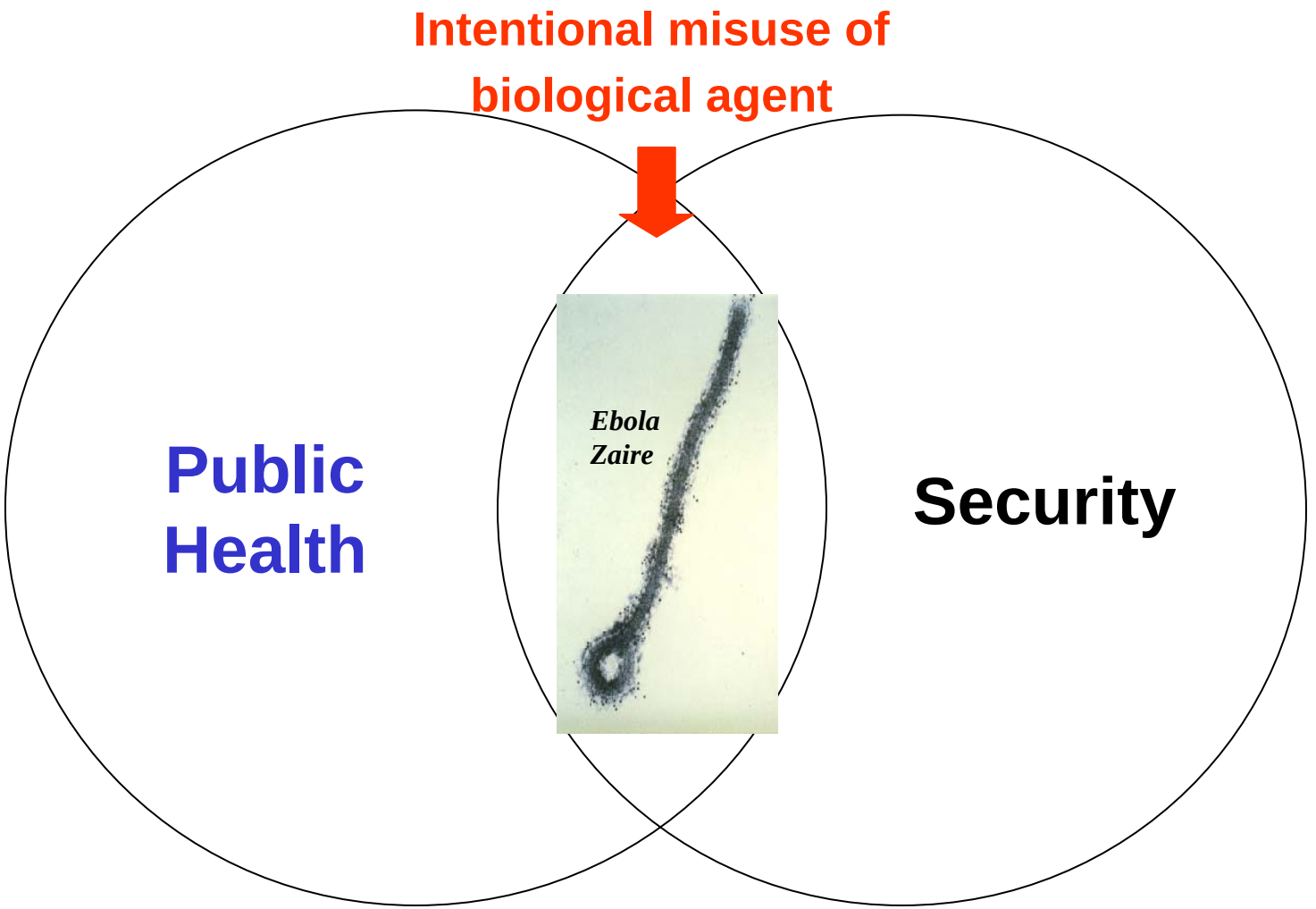
Public Health and security activities have traditionally had minimal overlap



Public Health issues

Security issues

Challenges to health and security



Biosecurity issues for public health

- **Diseases (natural) continue to dominate global health, social, political and economic structures**
- **Strong public health structures for disease surveillance and response are the foundation of biosecurity**
- **Biosafety (working safely with pathogens) is an essential component of biosecurity (keeping pathogens from misuse)**
- **Developing countries have few resources for biosafety or biosecurity issues**
- **Sustainable, global biosecurity measures must be developed through consensus with clear advantages to participants**

Biosecurity issues for public health

- Bioscience facilities are potential sources of pathogens and toxins
  - Health care and public health laboratories
  - Research universities
  - Pharmaceutical and industry laboratories
- Bioscience community not uniformly accustomed to security issues
- Global norms and standards for professional conduct do not exist
- Global regulatory mechanisms for biological materials do not exist
- Control of certain biological materials is necessary
- Security measures must be in balance with other priority public goods

Access to pathogens is necessary for global health security

Education

Evaluation

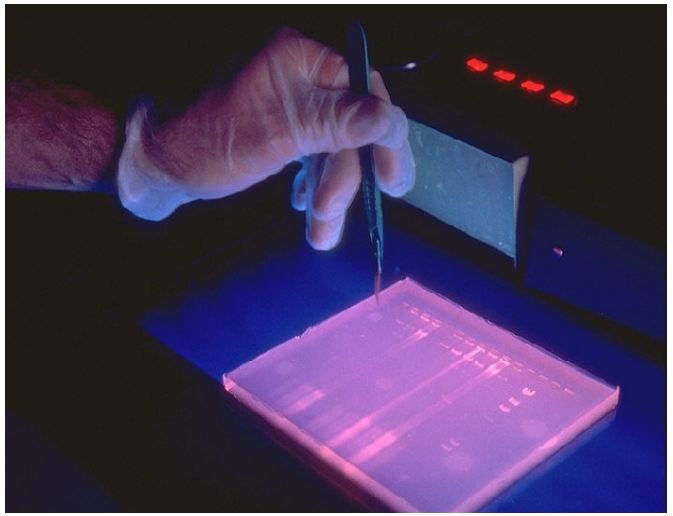
- Internal quality
- External assessment

Basic research

Applied research

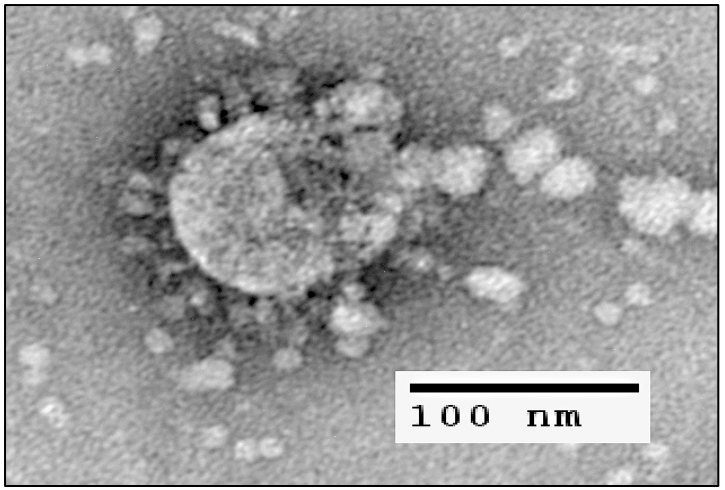
Culture collections

Pharmaceutical and manufacturing



Control of biological agents

- Microbes are ubiquitous, naturally occurring
- Traditional security measures (gates, guards and guns), can be ineffective
- Minute amounts are significant
- Origin can be difficult to trace
- Travel and trade promote ease and speed of spread
- No international means to control pathogens or to monitor distribution
- Uncertainty about forum to address global issues of biological security



Needed: Norms and Standards

Consensus standards for professional conduct

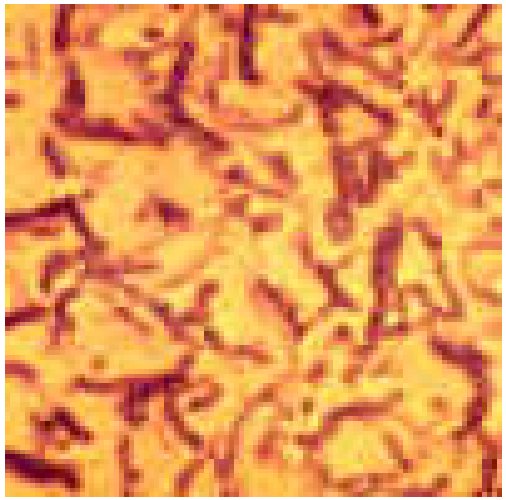
Protection from theft and loss

Transfer and/or export mechanism

Recognition of facilities (registration/licensing?)

Uniform procedures for screening laboratory personnel

Uniform procedures for threat and risk assessments



Desired outcomes

"Bottom up" security oversight and regulatory mechanisms

Common national benchmarks for the security of biological materials

Consensus on research standards and code of professional conduct

Harmonization of national approaches to biosecurity

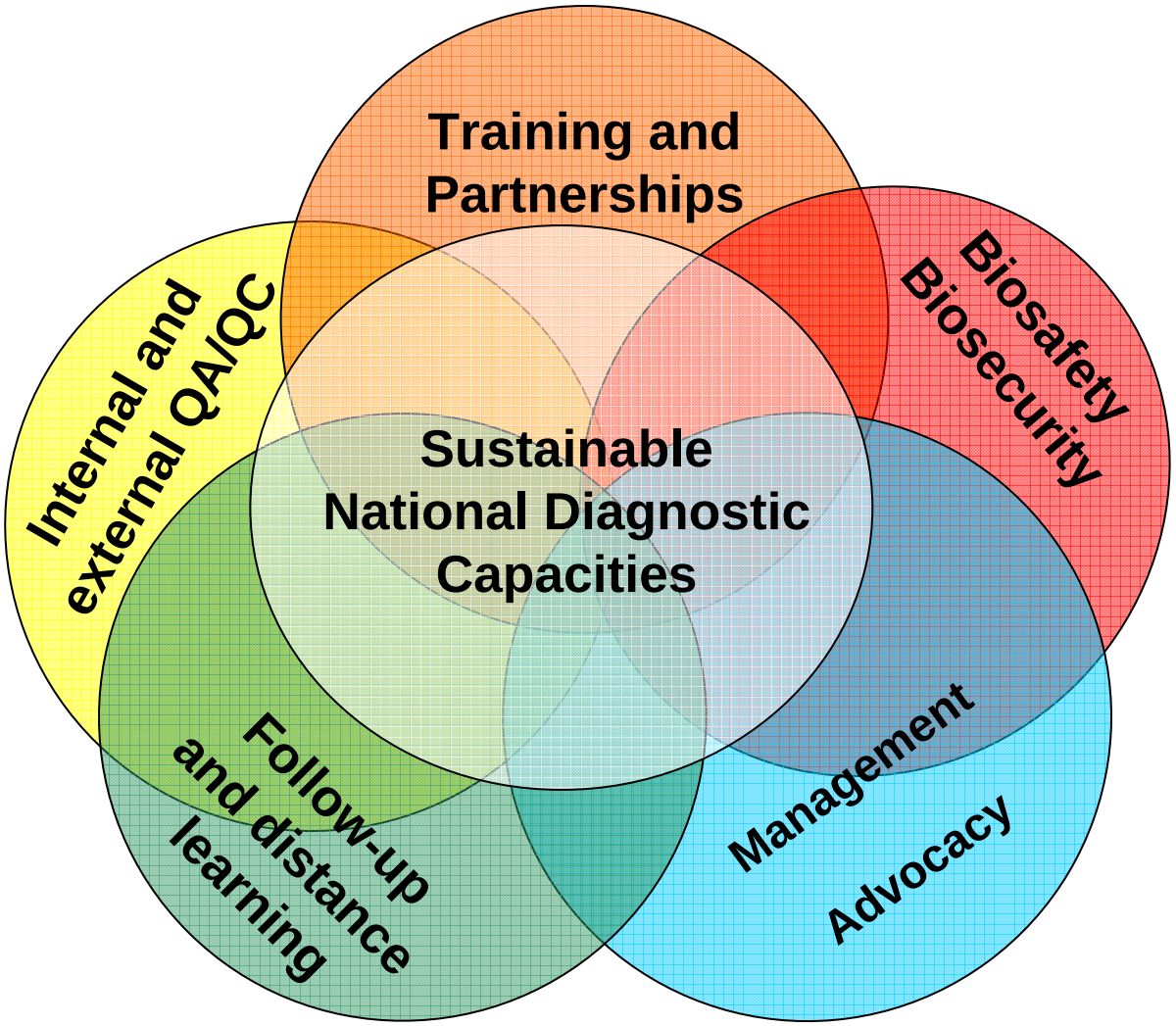
Facilitation of research and collaboration

Common mechanisms for exchange of sensitive biological materials to authorized users

Continued access to basic and applied scientific information

Improved global biosecurity through proactive involvement of scientific community

Strengthening Labs



Thank you