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WHO Strategies on Public Health Response to Deliberate Use of Biological Agents

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World Health Day 2007: International Health Security

"The theme of this year’s World Health Day – international health security – reminds us that threats to public health know no borders. The spread of diseases, natural disasters, environmental change, bioterrorism or chemical spills can all have a major impact on people, their societies and economies around the world. Such threats present new challenges and require an urgent and collaborative response...."

Ban Ki-moon
Secretary-General
United Nations
WHO’s Mandate
Basic Documents

Preamble of the WHO Constitution of 1948

- “THE STATES Parties to this Constitution declare, in conformity with
the Charter of the United Nations, that the following principles are
basic to the happiness, harmonious relations and security of all
peoples.”

- article 2(d) WHO shall “... furnish appropriate technical assistance
and, in emergencies, necessary aid upon the request or
acceptance of Governments;...”

International Health Regulations

- Draft revised IHR:
  • “public health emergencies of international concern”
Early WHO efforts on CBW

**early 1950s:** UN approached WHO to investigate allegations of BW use during Korean War. The investigation was not carried out.

**1959:** WHO contributed to the First Pugwash International Conference of Scientists to assess chemical and biological weapons.

**1968:** UN requested WHO’s contribution for the UN report *Chemical and Bacteriological (Biological) Weapons and the Effects of their Possible use*.

**1970:** WHO publishes the First edition of *Health aspects of chemical and biological weapons*.

Since **1972** has been interacting with the Biological and Chemical Weapons Convention.

**1992** after the 3rd Review Conference and establishment of VEREX WHO has been involved in the negotiations as observer.
“Global public health response to natural occurrence, accidental release or deliberate use of biological and chemical agents or radionuclear material that affect health” WHA55.16 (18 May 2002)

URGES Member States

- to treat any deliberate use as a global public health threat, and to respond to such a threat in other countries by sharing expertise, supplies and resources;

REQUESTS the Director-General

- to strengthen global surveillance;
- to provide tools and support for Member States, particularly developing countries, in strengthening their national health systems;
- to continue to issue international guidance and technical information;
- to examine the possible development of new tools.”
Deliberate use of BC agents: a threat to public health

The threat of use CBW by armed forces of states has changed in the last 30 years. However, the risk of non-state actor using CBW remains a possibility in most areas.

“Low probability, high consequence event” (mortality, morbidity, panic and fear).

New technology – biotechnology and genetic engineering – contributes to combat CBW; however, it could also be potentially used for non-peaceful purposes.

The BWC and CWC include provision for assistance in the event of attack or threat of attack.

- OPCW, IAEA
- As yet there is no similar organization for BW. WHO, among other actors, can provide technical assistance to Member States on public health aspects.
Why deliberately caused epidemics are different?

Fundamentally transform the context in which public health services must be delivered in order to ensure human safety and security.

- Need for national and international roles, responsibilities, and mechanisms to be clearly defined before such incidents occur as a prerequisite for responding with the requisite speed and effectiveness.
Characteristics of biological agents

- Agents easy to procure
- Inexpensive to acquire
- Simple to use
- Can disseminate at great distance
- Agent clouds invisible
- Detection quite difficult
- Overwhelms medical capabilities
- Simple threat creates panic
- Perpetrators escape before effects
- Ideal terrorist weapon
## Examples of weaponizable Agents and Toxins

<table>
<thead>
<tr>
<th>Disease</th>
<th>Agent</th>
<th>Incubation</th>
<th>Fatality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumonic Anthrax symptoms</td>
<td>Bacteria</td>
<td>1-7 days, up to 60d</td>
<td>High fatality rate if antibiotics started after symptoms</td>
</tr>
<tr>
<td>Cholera</td>
<td>Bacteria</td>
<td>12-48h</td>
<td>High fatality without fluid replacement</td>
</tr>
<tr>
<td>Pneumonic Plague</td>
<td>Bacteria</td>
<td>2-3 days</td>
<td>Fatal w/o antibiotics</td>
</tr>
<tr>
<td>Pneumonic Tularemia</td>
<td>Bacteria</td>
<td>3-5 days</td>
<td>up to 60% fatality w/o antibiotics</td>
</tr>
<tr>
<td>Typhus</td>
<td>Bacteria</td>
<td>7-14 days</td>
<td>up to 40% fatality w/o antibiotics</td>
</tr>
<tr>
<td>Ebola</td>
<td>Virus</td>
<td>2-21 days</td>
<td>50-90% fatality, no effective antiviral treatment</td>
</tr>
<tr>
<td>Smallpox</td>
<td>Virus</td>
<td>10-14 days</td>
<td>overall 30% fatality</td>
</tr>
<tr>
<td>Botulinum</td>
<td>Toxin</td>
<td>12h-5 days</td>
<td>High fatality w/o respiratory support, antitoxin</td>
</tr>
<tr>
<td>Ricin</td>
<td>Toxin</td>
<td>8-24 hours</td>
<td>High morality rate</td>
</tr>
</tbody>
</table>
Deliberate Use of Biological Agents represents a challenge to both Public Health and Security

Different roles and responsibilities, different mandates

WHO differs fundamentally from the IAEA and the OPCW as it is not in any way empowered to monitor or to verify compliance with international disarmament or non-proliferation agreements.
WHO will have the responsibility to assist the MS on public Health Preparedness and Response

**Disease specific networks (selected BW agents from 2nd edition WHO publication)**

**BACTERIA**

*Anthrax* (*Bacillus anthracis*)

*Brucellosis* (*Brucella abortus, B. suis and B. melitensis*)

Glanders (*Burkholderia mallei*)

Melioidosis (*Burkholderia pseudomallei*)

*Tularaemia* (*Francisella tularensis*)

*Plague* (*Yersinia pestis*)

Q Fever (*Coxiella burnetii*)

Typhus Fever (*Rickettsia prowazeki*)

**FUNGI**

Coccidioidomycosis (*Coccidiodes immitis*)

**VIRUSES**

Venezuelan equine encephalomyelitis

*Smallpox* (*Variola virus*)
Objectives of activities on Anthrax

1. Contact details
   - Name of laboratory: ________________________________
   - Address: ________________________________________
   - City: ________________________
   - Postal code: ________________________
   - Country: ________________________
   - Telephone: ________________________
   - Fax: ______________________________
   - Email: ____________________________
   - Web site: ___________________________

2. Your laboratory is affiliated to:
   - Ministry of Health
   - Ministry of Agriculture
   - Other ministries (please specify) ______________________________________
   - Universities
   - Private laboratories
   - Other (please specify) _______________________________________________

To establish a global network of anthrax experts and laboratories with defined anthrax capabilities

To establish standard procedures relating to anthrax and disseminate information

To set up and implement training and quality assurance
Policy guidance to Ministries of Health of Member States.

More than 100 experts from all WHO regions contributed to the 2nd edition of the Public health response to biological and chemical weapons: WHO guidance

Interaction with International Organizations, academia and NGOs (FAO, ICRC, OIE, OPCW, WFP, UN, Harvard-Sussex Program, Pugwash).

Development of Guidelines for Assessing National Health Preparedness Programmes for the Deliberate Use of Biological and Chemical Agents
Public health response to biological and chemical weapons: WHO guidance

1. ASSESSING THE THREAT TO PUBLIC HEALTH
2. TYPES AND CHARACTERISTICS OF BIOLOGICAL AND CHEMICAL AGENTS
3. PUBLIC HEALTH PREPAREDNESS AND RESPONSE
4. LEGAL ASPECTS
5. INTERNATIONAL SOURCES OF ASSISTANCE
Elements of guidelines development

Country’s assessment process
- how to organise and carry out an assessment and follow up – final tool will help country’s self assessment

Risk assessment
- Definition of terms, methodology, process, role of the different partners.
- Prioritisation by comparison of risk assessment for preparedness planning for the deliberate use of BC agents with those for naturally and accidentally occurring diseases, chemical accidents and major natural and technological disasters.

Emergency management
- Review of the elements of a preparedness programme. This will include the assessment of the following domains:
  • National Policy
  • Risk, Hazard and Vulnerability
  • Preparedness Planning
  • Capacity Building and Training
  • Monitoring and Evaluation
Guidelines for Assessing National Health Preparedness Programmes for the Deliberate Use of Biological and Chemical Agents

IHR Coordination Programme
Guidelines for Assessing National Health Preparedness Programmes for the Deliberate Use of Biological and Chemical Agents

field testing process

IHR Coordination Programme
Assessment Domains

- Policy Making
- Risk, and Vulnerability
- Preparedness and Planning
- Training and Development

- Monitoring and Evaluation
Guidelines for Assessing National Health Preparedness Programmes for the Deliberate Use of Biological and Chemical Agents
Field testing programme

Thailand, September 2003, with the Organisation for the Prohibition of Chemical Weapons (OPCW), the Asian Disaster Preparedness Centre (ADPC). In addition of MoH, 18 agencies participated.

Jordan, March/April 2004, with the technical contribution of various Jordanian ministries (health, defence, interior, industry, etc.), Jordanian Red Crescent Society, AusAID, Health Canada, OPCW, UNICEF, as well as different technical programmes from WHO HQ and EMRO. More than 55 institutions/agencies participated.

Canada, November-December 2004 (with contribution of OPCW, IAEA).

The Philippines, February 2005

Moldova, 2005

One African country, 2005 (Was not conducted)

is now being modified and tested in Oman for All Hazard part of the WHO-EU project on biorisk Management (a country Demonstration Model)
WHO/IHR Project on Capacity Building Promoting Biosafety and Biosecurity

Project 1 – Promotion of bio-risk reduction management through regional and national outreach (Regional capacity)

Project 2 – Strengthening the safety, security and laboratory management practices against biological risks as well as national all hazards preparedness (one country demonstration model).
Oman Project – Strengthening the safety, security and laboratory management practices against biological risks as well as national all hazards preparedness (one country demonstration model).

- To map public health response capacity, with respect to public health crisis management in particular biological agents and toxins, in the context of enhancing national biological preparedness by connecting the health sector with the sectors of foreign affairs, justice, environment, commerce, agriculture (and animal health), intelligence;
- To develop a forum to keep the relevant national stakeholders informed and connected with regard to public health preparedness and response capability;
- To develop a biorisk reduction management regulation and plan, particularly concerning laboratory practice and safety, and to integrate it with national preparedness plans;
- To implement the national biorisk reduction management plan, in particular concerning laboratory practice and safety;
- To map and strengthen the performance, capacity and sustainability of national laboratories by connecting them with regional and international laboratory networks.
WHO Biosafety Programme

Coordination of global Biosafety networks
  – WHO Biosafety Advisory Group (BAG)

UN model regulations
  – Transport of infectious substance

Biosafety and Laboratory biosecurity


Laboratory Biosecurity Guidance 2006

More than 30 different Awareness Workshops and training course world wide

Train the Trainers
**Why revised International Health Regulations?**

*In today’s world, diseases travel fast and no single country can protect itself on its own.*

*Acknowledging this, the 193 WHO Member States unanimously adopted a new version of the International Health Regulations (IHR).*

*The revised IHR enter into force in June 2007. It will now be up to the world to translate the new code of the Regulations into the reality of greater international public health security.*

*Dr Margaret Chan, WHO Director-General*
What’s new?

From three diseases to all public health threats
From preset measures to adapted response
From control of borders to, also, containment at source
International Health Regulations (2005)

- 10 years in the making – since 1995
- Key context – SARS
- Adopted overwhelmingly by Health Assembly - 23 May 2005
- Entered into force – 15 June 2007
- IHR (2005) now legally binding
  - 194 WHO Member States across the globe, and applicable to WHO as well

IHR Coordination Programme
Purpose and Scope of IHR

- Prevent, protect against, control and respond to the international spread of disease...
- Commensurate with the public health risks irrespective of the source
- Avoiding unnecessary interference with international traffic, trade and tourism
Decision instrument (Annex 2)

4 diseases that shall be notified: polio (wild-type polio virus), smallpox, human influenza new subtype, SARS.

Disease that shall always lead to utilization of the algorithm: cholera, pneumonic plague, yellow fever, VHF (Ebola, Lassa, Marburg), WNF, others....

Q1: public health impact serious?
Q2: unusual or unexpected?
Q3: risk of international spread?
Q4: risk of travel/trade restriction?

Insufficient information: reassess
Broad Scope of IHR (2005)

“Disease”: (not agent) “an Illness or medical condition, irrespective of origin or source, that presents or could present significant harm to humans”

- biological, chemical or radionuclear

Subjects covered include:

- notification/reporting/verification to WHO
- detection / investigation / assessment / response to public health events
- dissemination of information by WHO
- health & sanitary measures applicable to int'l transportation, travellers, and trade
- international ports, airports & ground crossings
IHR/BWC related Articles

Article 5 Surveillance. Information collected by WHO surveillance activities on potential events.

Article 8 Consultation. State Party requesting assistant to WHO to assess epidemiological data on events.

Article 9 Other reports. WHO considers reports from sources other than notification or consultation, WHO assess these reports according to established epidemiological principles and share information with State Party in whose territory the event is occurring.

Article 10 Verification. WHO asks for verification to a State Party for reports from sources other than that from notification or consultation. When PHEIC is suspected, WHO shall offer to collaborate for assessing PHEIC.

Article 11 Provision of information by WHO. Article 5 Surveillance. PHEIC that are Information collected by WHO surveillance activities on potential events.
Confidence-Building Measures (CBMs)

As agreed at the Third Review Conference, the CBMs consist of seven measures, A to G:

CBM A, Part 1: Exchange of data on research centres and laboratories;
   Part 2: Exchange of information on national biological defence research and
development programmes.

CBM B, Exchange of information on outbreaks of infectious diseases and similar
   occurrences caused by toxins.

CBM C, Encouragement of publication of results and promotion of use of knowledge.

CBM D, Active promotion of contacts

CBM E, Declaration of legislation, regulations and other measures.

CBM F, Declaration of past activities in offensive and/or defensive biological research
   and development programmes.

CBM G, Declaration of vaccine production facilities.
IHR: Required national capacities & transportation of infectious substances

States Parties must develop/maintain national capacities for surveillance & response and other functions (Annex 1)

- At all levels and throughout territory – within a limited time frame
- Detect, assess, verify & report—internally and to WHO
- States parties must be able to provide support through... laboratory analysis of samples (domestically or through collaborating centres) and logistical assistance (e.g. equipment, supplies and transport)
- Determine & implement necessary control - response measures
Global Laboratory Directory (GLaD)

- GLaDMap (demo), GLaDNet, GLaDResource

- Laboratory networks (focusing on resource gaps)
  - Tularaemia International Society (TuliSoc)
  - Cholera and Diarrheal Diseases Network (CHOLDInet)
  - Antimicrobial Resistance Surveillance Network (developing)
What is the Global Laboratory Directory (GLaD)?

It is a support system designed to build, connect and maintain laboratory/surveillance networks. The focus is to map networks that are involved with infectious (epidemic-prone) diseases affecting humans and animals and of those handling environmental and non-biological hazards sample testing. Such networks are resources that provide evidence-based information to help identify and contain health related events that may impact travel and trade between countries under the International Health Regulations.
Components of GLaD

GLaDMap. It is a real-time mapping tool that links networks and their member sites. It is based on a combination of the "yellow pages" directory with the links of a global "facebook". It provides a tool to form individual web page and/or easy link to an existing web page;

GLaDNet. It is a partner recognition and support program, so networks and their member sites can be visible to each other, can find similar laboratories or networks, can identify potential partners at desired geographical locations, can find specific type(s) of services, and can find expertise/experts. It creates a platform to build and assist networks, providing guidance on managerial and administrative functions critical for keeping networks "alive". It has an announcement board, a calendar for meetings, conferences and training opportunities;

GLaDResource. It is a resource centre in a secured communication environment in order to facilitate exchange of experiences, practices, information, laboratory data, research ideas, questions and answers. It is an archival service where networks share their tools, templates and materials
IHR Coordination Programme

Two components:

- Private Site (login to CNPHI required):

- Public Site (no login required):

https://www.cnphi-rcrsp.ca/public/faces/glad/search.jsp
National Microbiology Laboratory
Winnipeg Canada [Link to website]
Enhancing international disease surveillance of communicable disease, chemical, radiological and foodborne incidents

At the international level, a 24/7 system of alert and response operations detects international public health events, and performs risk assessments on the public health implications of these events. These systems are consistently tested, both through annual exercises and during real events, in order to optimize operational performance and the effectiveness of collaboration with international partners.
WHO mobilizes international networks of technical partners to assist countries to respond to public health events, a system activated on request from countries. Among these specialized networks are GOARN (the Global Outbreak Alert and Response Network); ChemiNet, for alert and response to chemical events; INFOSAN (International Food Safety Authorities Network), for alert and response involving food-related events; REMPAN (Radiation Emergency Medical Preparedness and Assistance Network) and BioDoseNet (Global Network for Biodosimetry), for radio-nuclear emergencies. WHO is strengthening its stockpiles of vaccines and treatments for disease-specific risks, such as smallpox, and is exploring the possibility of a new global stockpile for radio-nuclear emergencies.
WHO is establishing procedures to guide public health responses to potential deliberate events, and for addressing health and security concerns at mass gatherings. WHO has developed and refined internal standard operating procedures to respond to intentionally-caused outbreaks and emergencies.
Collaboration with the UN Office for disarmament Affairs on the update of the UNSG mechanism for investigating the alleged use of chemical, biological and toxin weapons

Upon request of the UNSG office, the WHO Director-General agreed to provide technical support to updating the roster of experts used by the mechanism, providing equipment and support to the training for experts, and updating and refining the relevant technical manuals and procedures.

Once WHO experts participate in such investigation, they will be acting as members of the UN investigation team.
Active partners with the Members States of the Biological and Toxin Weapons Convention (BTWC) and the Implementation Support Unit (ISU)

The WHO is a regular contributor and observer at BWTC expert and state party intersessional and review conference meetings.

WHO organized a one day workshop for the BTWC MS on IHR core capacities to respond to the public health events of international concern PHEIC prior to the expert meeting in August 2009.
Management of the smallpox of stockpiles

In accordance with a series of WHA resolutions, WHO has established the technical norms for maintaining the world's remaining samples of smallpox.

WHO is conducting regular visits to the remaining two repositories of live variola virus to examine biosafety and biosecurity arrangements; and has directed, in collaboration with the international community, the research agenda for the smallpox virus.

WHO has also developed strategies for mobilization of stockpiled smallpox vaccine (which WHO maintains).
Responsible life sciences research for global health security

WHO is also exploring the public health issues surrounding the potential risks of accidentally or deliberately misusing life sciences research; has held a meeting of experts to define strategies to minimize the potential risks; and is developing guidance, and a self-assessment questionnaire on responsible life sciences research
National capacity building

At national level, WHO has prepared guidance to assist countries to assess their readiness in dealing with the public health consequences of a deliberately caused incident involving chemical, biological and radiological agents or materials. Guidelines for establishing and strengthening prevention and response systems for the deliberate contamination of food have also been made available to Member States; in addition, a manual for the public health management of chemical incidents has been developed. These guidelines are supported by a large number of technical documents and information material intended to assist Member States in strengthening all public health capacities related to incidents and emergencies.

Developing technical reference tools to be used for building expertise, education and training is also an important component of the organization’s work. Notably, WHO contributed to the multiagency product TMT Handbook: Triage, monitoring and treatment - handbook for management of the public in the event of malevolent use of radiation
Targeted collaboration with external partners

Formal mechanisms exist (for example, with the UN, FAO, OIE, IASC, EC and IAEA) and ad hoc technical interactions also occur with organizations such as OPCW, G8, the Global Health Security Action Group (GHSAG), UNEP/OCHA, IMO, NATO and INTERPOL. WHO has worked with the latter two organizations to provide disease and threat-specific technical guidance, and to insure that awareness of the public health impact and requirements of various relevant incidents is reflected in their training and exercise materials.
Liaison with the UNSC Resolution 1540

WHO submits reports annually to the UNSC Resolution 1540 Committee on activities undertaken relevant to the preventing the acquisition of WMD to non-state actors
Liaison with the Counter-Terrorism Implementation Task Force (CTITF)

The WHO is a member of the CTITF and reports regularly on activities relevant to the implementation of the strategy which "serves as a common platform, bringing the efforts of the United Nations system entities that work on counter-terrorism related issues into a common, coherent and more focused framework"
To avoid.....

"Other than everyone who works for us, and everyone who doesn't work for us, we have no one to fear."
I wish you a healthy, safe and secure world

Thank you

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