Biological Threats - preparedness, management and response

Dr. Stela Gheorghita
Republic of Moldova
Structure of the public health system of Law nr.10/03.02.2009, Governmental decision 384/12.05.2010 MoH Order # 369/03.06.2010 on Public Health Service
-National Center of Public health
-37 Center of Public Health (35 rayon + 2 municipal)
# Classification of the Biological agents

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Category A</th>
<th>Category B</th>
<th>Category C (emerging pathogens that can be engineered for future mass dissemination)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disseminated or transmitted person to person</td>
<td>easily</td>
<td>moderately easy</td>
<td>1) availability;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2) ease of production and dissemination</td>
</tr>
<tr>
<td>Morbidity and mortality</td>
<td>high mortality, with potential for major public health impact</td>
<td>moderate morbidity and low mortality</td>
<td>potential for high morbidity and mortality and major health impact</td>
</tr>
<tr>
<td>Panic and social disruption</td>
<td>+</td>
<td>+/-</td>
<td>+/-</td>
</tr>
<tr>
<td>Public health preparedness</td>
<td>require special action</td>
<td>require enhanced disease surveillance</td>
<td>1) require enhanced disease surveillance,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2) biosecurity and biosafety strategy</td>
</tr>
</tbody>
</table>
## Classification of the Biological agents

<table>
<thead>
<tr>
<th>Category A</th>
<th>Category B</th>
<th>Category C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variola major (smallpox)</td>
<td><strong>Category B</strong></td>
<td>• Nipah virus</td>
</tr>
<tr>
<td>• <em>Bacillus anthracis</em> (anthrax)</td>
<td>• <em>Coxiella burnetii</em> (Q fever)</td>
<td>• Hantaviruses</td>
</tr>
<tr>
<td>• <em>Yersinia pestis</em> (plague)</td>
<td>• <em>Brucella sp.</em> (brucellosis)</td>
<td>• Tickborne hemorrhagic fever viruses</td>
</tr>
<tr>
<td>• <em>Clostridium botulinum</em> toxin (botulism)</td>
<td>• <em>Burkholderia mallei</em> (glanders)</td>
<td>• Tickborne encephalitis viruses</td>
</tr>
<tr>
<td>• <em>Francisella tularensis</em> (tularemia)</td>
<td>• Alphaviruses: Venezuelan encephalomyelitis and eastern/western equine encephalomy.</td>
<td>• Yellow fever virus</td>
</tr>
<tr>
<td>• Hemorrhagic fever viruses, including (ex, Ebola, Marburg, Lassa)</td>
<td>• Ricin toxin from <em>Ricinus communis</em> (castor beans)</td>
<td>• Multidrug-resistant Mycobacterium tuberculosis</td>
</tr>
</tbody>
</table>

| **Food and waterborne pathogens**                                         |                                                                            |                                                                            |
| • *Salmonella sp.*                                                        |                                                                            |                                                                            |
| • *Shigella dysenteriae*                                                  |                                                                            |                                                                            |
| • *Escherichia coli O157:H7*                                              |                                                                            |                                                                            |
| • *Vibrio cholerae*                                                       |                                                                            |                                                                            |
| • *Cryptosporidium parvum*                                                |                                                                            |                                                                            |

| **Epsilon toxin of *Clostridium perfringens**                            |                                                                            |                                                                            |
| • *Staphylococcus enterotoxin B**                                         |                                                                            |                                                                            |
Ongoing national strategic activities

- Revising and adjusting the national legislation to the international requirements;

- Elaborating the National list of potential public health risk (biological, chemical, radiological) and response measures;

- Inter-sectoral Involvement and Commitment for Prevention and Response;

- Strengthening surveillance and laboratory capacity to Detect, Notify, Assess, Alert and Control events representing a National/International Threat for the public health;

- Using informational electronic system for strengthening the national surveillance system of communicable disease and public health events unusual and unexpected for persons, place and time;

- Strengthening the national capacity by setting up and training of rapid response mobile teams (ord. MoH nr.268/2009).
Implementation of IHR (2005): the principles

- Legal frameworks and monitoring of progress;
- Inter-sectoral Involvement and Commitment for Prevention and Response;
- Strengthening surveillance and laboratory capacity to Detect, Notify, Assess, Alert and Control events representing a National/International Threat for the public health;
- International Collaboration and Cooperation
Implementation of IHR (2005): legislative framework

- National Health Policy (2007)
- Governmental Decree no.475/2008 on approving the Plan of actions to implement IHR(2005)
  - Part I: Main responsibilities
  - Part II: Detailed action plan (2008-2012 / 31 Actions)
- The Law no.10/2009 on State oversight of public health
  - Art.53. Prevention of international spreading of infectious diseases and public health events
- Governmental Decree no.820/2009 on National Extraordinary Commission of Public Health
Implementation IHR (2005): legislative framework

- The MoH order nr.268/2009 on implementation provisions of Governmental Decree no. 475/2008 - appointed the National Centre of Public Health as National Focal Point of IHR(2005)

- The MoH decision nr.477/2009 on implementation of the new electronic reporting system for communicable diseases surveillance
National Focal Point of IHR(2005)
(MoH order nr.268/2009)

I. Accessibility: The NFP ensure accessibility at 24 hours, 7/7 days, to communications with WHO IHR Contact Points through efficient and functional ways: telefon, e-mail, fax;

II. Communication: The NFP ensure exchange of information, consultation with WHO during unexpected or unusual public health events which do not require notification;

III. Dissemination: The NFP disseminating to/gathering health information from health services network and points of entry, governmental departments;
IV. Data Consolidation:

The NFP field of activities include:

- Detection, assessment, notification and response in case of public health risk, events and emergencies caused by
  - biological,
  - chemical and/or
  - radiological agents.

- Systematic analyses the formal and informal source of information regarding health events in the world, region, country and daily reporting to the Ministry of Health
Collaboration in public health event

**Goals:** Protect public health and safety

**Coordination** is providing by National Extraordinary Commission of Public Health - 17 authorities:

- All hazard approach, prevention and management of public health emergency
- Monitoring the level of preparedness
Inter-sectoral involvement and coordination: Points of Entry (PoE)

- Strategy of Integrated management at PoE (Gov.Decree 1212/2010)
- Training of competent authorities at PoE (21 seminars and 1200 trained persons): Border Police & Customs Services
- Notification/reporting on based of Procedures and protocols for early notification of cases of disease and primary measures to limit the spreading of disease;
- Stocks of Individual Protection Equipment
Notification

• In accordance with the **WHO International Health Regulations**, after evaluation we have to notify the event to WHO in 24 hours after assessment.

• A biological incident may have implications under the **Biological Weapons Convention** if it can be attributed to actions of a foreign party.
Strengthening surveillance and laboratory capacity

- Notification/detection
- Assessment
- Control measures/response

Relevant partners in public health emergencies, including bioterrorism are:

- Medical care offices, ambulances, labs, etc;
- Veterinary services;
- Police, fire brigade, army;
- Environmental protection agency;
- Local authority, community, mass-media.
Surveillance system includes all levels of health systems according Annex 1 IHR(2005)

**National level**
- Assessment
- Notification
- Public health response

**Intermediate level**
- Confirmation
- Notification
- Assessment

**Local level**
- Detect events, risks
- Report
- Implement preliminary control measures

**WHO**
- Focal Point IHR

**Legislation/regulation**
- MoH Ord.268/2009 on implementation
  Gov.Decree nr.475 /2008
- MoH Ord.358/2009 on approving the Case Definitions
- MoH Ord.368/2004 on approving the list of events for obligatory reporting in case of emergency situation and natural disasters
• **Notification of nominal cases** of communicable diseases in accordance with International Classification of Diseases (ICD)-10

  ‣ **Case classification**
  according standard case definitions, adjusted at the EU Decisions:
  ➢ Possible
  ➢ Probable
  ➢ Confirmed

• **Notification of all kind of events:**
  ➢ Biologic
  ➢ Chemical
  ➢ Radiological

• **Assesment based on** Decision instrument (Annex 2 IHR (2005))
Electronic surveillance system: I - notification/detection

II - assessment

1. Is the public health impact of the event serious?
2. Is the event unusual or unexpected?
3. Is there a significant risk of international spread?
4. Is there a significant risk of international travel or trade restrictions?

III – response

- Intersectoral Committee
- Rapid response team
- Lab investigation
- Risk communication
- Isolation patient, etc
Outbreak/event investigation: Steps

1. Detect signal
2. Confirm/discard signal
3. Define a case – standard definition
4. Identify cases and obtain information
5. Describe data collected and analyse
6. Develop hypothesis
7. Test hypothesis: analytical studies
8. Complementary studies
9. Communicate outcome

10. Implement control measures
Rapid response & field investigation

WHO

Notification, verification, request for technical and expert assistance/ international rapid response teams

Ministry of health

National Center of Public Health

Request for expert assistance

Rapid response team

Center of Public health rayon / municipal

Territorial Rapid response team

Request for consultations

Request for Assistance/ Rapid response team
Structure of the Rapid response team
depending on the case, included:

- Epidemiologist
- Infectious disease physician
- Microbiological laboratory worker
- Specialist in disinfection
- Specialist in public health communication
- Veterinarian
- Environmental protection
- Entomologist/Zoologist
- Social worker
- Local authority
Level A - Fully Encapsulated

- Provides highest level of protection from toxic gas
- Vapor tight suit
- Provides highest level of protection to liquids
- Typically not used for a known biological response
- Often poor visibility
- Communications difficult
- Limited work period
Level B – Non-Encapsulated

• Provides good skin protection
• Powered Air Purifying Respirator
• Slash suit, boots and gloves
• Increased dexterity and mobility
Level C

- Provides some protection from liquids
- Provides good protection from particulate contamination
- Uses a respirator
- Greater mobility and dexterity than Level A or B
- Longer work period
- Better communications
Guidance on regulations for the Transport of Infectious Substances, 2011

Guidance on laboratory biosafety, 2011
International Collaboration and Cooperation

WHO, Euro
- Information, consultation, verification and notification WHO in case of public health risk or events and application control measures;
- Participation in regional and global surveillance networks: SalmSurv, ROTA, HIV AIDS; notification each case of PAF, monthly and annually reports.

CDC, ECDC
- Evaluation, support and consultation in adjustment of national legislation regarding public health;
- Support in strengthening public health lab networks;

Stability Pact for South Eastern Europe - Strengthening surveillance and control of communicable diseases in South-eastern Europe

UNICEF, GAVI – assistants and strengthening national surveillance capacity of preventable communicable diseases

NATO, UN Office of Disarmament Affairs, and the Biological Weapons Convention Implementation Support Unit, other NGO
Training Trilateral (US-Romania-Moldova) Civilian-Military Forum on Outbreak Response and Bioterrorism Investigation (ORBIT Forum and TTX)

http://www.phe.gov/Preparedness/international/Pages/orbitforum.aspx

- Implementing national measures consistent with the Biological Weapons Convention (BWC), UN Security Council Resolution 1540 (UNSCR 1540), and WHO International Health Regulations (IHRs) to deter, prevent, or respond to bio incidents / threats

- It was organized by the:
  - US Department of Health and Human Services (Office of the Assistant Secretary for Preparedness and Response);
Training Trilateral (US-Romania-Moldova) Civilian-Military Forum on Outbreak Response and Bioterrorism Investigation (ORBIT Forum and TTX)

http://www.phe.gov/Preparedness/international/Pages/orbitforum.aspx

Goals:

• i) promote interagency (in particular public health-law enforcement, also civilian-military) cooperation, coordination and synchronization for preparing, detecting, and responding to infectious disease outbreaks, whether natural, accidental, or deliberate in nature;
• ii) establish sustainable laboratory partnerships to enhance training and medical surveillance initiatives among the three countries;
• iii) strengthen the core capacities required by the WHO IHR and existing national measures consistent with obligations under the Biological Weapons Convention and the UN Security Council Resolution 1540 to deter, prevent, and respond to biological incidents or threats.
Training of rapid response team
- initial and periodic (refresher) training -
Conduct Joint Training (future)

Create Joint Training Programs
• Notification drills
• Table Top Exercises
  – Public health
  – Law enforcement
  – Other stakeholders (customs, foreign affairs, etc)
• Full Scale and Practical Exercises
Perspectives

- Reviewing the standard case definitions for strengthening of the national intervention capacity;
- Strengthening of the national capacity for early warning and rapid response in public health risk and events;
- Processes of reforms of public health requires the implementation of electronic system for surveillance of communicable diseases and extend for noncommunicable diseases;
- Training of personnel according to international requirement.
- Integration into regional and global Surveillance networks.
Thank you!

Dr. Stela Gheorghita
National Center of Public Health
Republic of Moldova

sgheorghita@cnsp.md