International Workshop on Improving Cooperation under Article X for Disease Surveillance, Detection, Diagnosis and Containment
Council of the European Union, Brussels
11-12 November 2009

International cooperation on Public Health Emergencies

Dr Ali A. Mohammadi
Scientist, Biosafety and Biosecurity
International Health Regulations
Health Security and Environment
World Health Organization
<table>
<thead>
<tr>
<th>Guidelines/recommendations, Biosafety, Biosecurity, Life Science Research, Transport of biological materials and Misuse of pathogens and toxins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness workshops for Health authorities, policy makers, Health regulators on the regional and International level</td>
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<tr>
<td>Training courses for laboratory managers and experts</td>
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<td>Train the trainers/Biosafety officers</td>
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<tr>
<td>Biorisk reduction curricula for under/post graduates/Biosafety professionals</td>
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<tr>
<td>Risk Assessment/checklist</td>
</tr>
<tr>
<td>Connectivity/communication (Networking)</td>
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WHO Laboratory Biosafety Manual

Biosafety:
To promote the use of safe practices in the handling of pathogenic microorganisms
• in the laboratory
• during transportation
• in field investigations
• in manufacturing facilities
• in health-care facilities

• Laboratory Biosafety Manual, 3rd edition
  - lab commissioning and certification
  - lab biosecurity concepts

- translated into F, S, P, Ch, Ru
- available on web, CD-Rom, hard copies
Laboratory biosafety (working safely) describes containment principles, technologies and practices implemented to prevent unintentional exposure to pathogens and toxins, or their accidental release. (Laboratory biosafety manual, 3rd edition, 2004)

Laboratory biosecurity (keeping the work safe) describes the protection, control and accountability for valuable biological materials (VBM) within laboratories, in order to prevent their unauthorized access, loss, theft, misuse, diversion or intentional release. (Biorisk management: laboratory biosecurity guidance, 2006)
Transport of infectious substances

Biosafety:
To promote the use of safe practices in the handling of pathogenic microorganisms
- in the laboratory
- during transportation
- in field investigations
- in manufacturing facilities
- in health-care facilities

Transport of Infectious Substances

UNCETDG → ICAO → IATA

WHO 2009

International Health Regulations Coordination
Guidance for public health preparedness

Managing the health risks of the deliberate use of biological and chemical agents or radioactive material: Guidance on capacity assessment being finalized
Typical structure of Biosafety and Laboratory Biosecurity Awareness Raising Workshops

Composition of national delegations:

• MoH, access to regulatory framework
• Director of central human public health laboratory
• Director of central animal health laboratory

To Discuss:

1. Laboratory management and legislative framework
2. Physical environment: equipment, construction, design for human and animal research, containment
3. Networking, training and human resources
4. Biorisk management: biosafety and laboratory biosecurity

Develop: Regional plans, commitments, national plans

Train:

5. Transport of infectious substances
Biosafety and Laboratory Biosecurity Awareness Workshops
Where we have already been?

- Asian-Pacific Region, REDI Centre, Singapore 2005, 9 countries
- Central America, Guatemala 2006, 10 countries
- South America, Brazil 2005, 9 countries
- Eastern Mediterranean Region, Iran 2006, 22 countries
- Francophone Africa, Burkina Faso 2007, 24 countries
- Anglophone Africa, Kenya 2007, 21 countries
- South East Asian Region, New Delhi, 2008, 18 countries
- Western Pacific Region, Malaysia, 2009, 12 countries
2010-2015: a five-year strategic plan

193 ways to implement biosafety

Dr Nicoletta Previsani

Biosafety and Laboratory Biosecurity
Laboratory Alliances and Biosafety
International Health Regulations Coordination
Global Awareness Raising

Priority areas:
1. Training to implement Biorisk Management Systems (Adult training)
2. Support the 'After-Train the Trainers'
3. Use and maintenance of equipment (e.g. biosafety cabinets)
4. Waste management
Laboratory Quality Management Programme

Training tool kit

EQAP programme and questionnaire
Twelve Quality System Essentials

Quality system essentials

Set of coordinated activities that function as building blocks for quality management.
Organization

- 2007: 5th year of the programme
- 72 labs in 45 countries: national microbiology reference labs
- International referee labs
- 5 disciplines:
  - Enteric bacterial pathogens
  - Meningeal bacterial pathogens
  - Plague
  - Malaria microscopy
  - Tuberculosis microscopy
- 3 languages (F/E/P)
- 3 shipments/year
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.
Two components:

Private Site (login to CNPHI required):

Public Site (no login required):

https://www.cnphi-rcrsp.ca/public/faces/glad/search.jsp
<table>
<thead>
<tr>
<th>Geographical search:</th>
<th></th>
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<tbody>
<tr>
<td><strong>WHO Region</strong></td>
<td><strong>Country</strong></td>
</tr>
</tbody>
</table>

- African Region
- Eastern Mediterranean Region
- European Region
- Region of the Americas
- South-East Asia Region
- Western Pacific Region

<table>
<thead>
<tr>
<th>Network search:</th>
<th></th>
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</thead>
</table>

- GIGN
- Latin America AMR Network
- PulseNet International

[Show list of labs] [Show labs on a map]
International Health Regulations Coordination

Home > Infectious Diseases > National Microbiology Laboratory

H1N1 Flu Virus

What's New?

August 6, 2009
MEETING: Severe H1N1 Disease: Preventing Cases, Reducing Mortality September 2nd & 3rd, 2009

May 7, 2009
Role of the Public Health Agency of Canada’s National Microbiology Laboratory: H1N1 Flu Virus Outbreak Response

About NML
- NML Overview
- What's New
- Photo Galleries
- Video Library

Programs
- Enterics & Bacteriology
- Creutzfeldt-Jakob Disease (CJD)
- Viral Diseases
- Zoonotics and Special Pathogens

Services
- Guide to Services
- IDAC
- NESP
- PulseNet Canada
- The Quality Office
- CNPHI

Diseases & Conditions
- Infectious Diseases
- Chronic Diseases

Health & Safety
- Travel Health
- Food Safety
- Immunization & Vaccines
- Emergency Preparedness & Response
- Health Promotion
- Injury Prevention

Research & Statistics
- Surveillance

Agency Information
- About the Agency
- Media Room
- Reports & Publications
- A-Z Index
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• Laboratory networks (focusing on resource gaps)
  • Tularaemia International Society (TuliSoc)
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**Introduction and Objectives**

Enhancing international cooperation, assistance, exchange, and coordination in biological sciences is crucial in the context of effective response to infectious diseases. Since 2000, the World Health Organization (WHO) has been working with an advisory group of tularemia experts to develop comprehensive guidelines for the detection of *Francisella tularensis*. The outcome of the exercise was very productive with regards to fostering a network of connected laboratories as well as exchanging information including improved methods, reagents, and media formulations.

**Background**

Since 2000, the WHO International Health Regulations (IHR) has been working with an advisory group of tularemia experts to develop comprehensive tularemia guidelines (WHO IHR Consultation on Tularemia, 2000). More recently, under the WHO-CHIRL with support from the German Ministry of Health, two informal consultations with tularemia experts were held at the Robert Koch Institute. As an outcome of these consultations, a Tularemia International Society (TULARINS) was proposed to formally connect experts from around the world and with responsibility to coordinate standardization of reagents, reference materials, and laboratory trainings. It was also agreed that a tularemia wet-lab exercise, jointly hosted by WHO and a tularemia expert laboratory, would be of value. Therefore, FOI (Swedish Defence Research Agency) with support from the WHO and the Swedish Ministry for Foreign Affairs hosted a comparative laboratory workshop on the detection of *Francisella tularensis* and the diagnosis of tularemia. The focus of the workshop was molecular, culture and serologic methods for the detection of *F. tularensis* and the clinical diagnosis of human specimens. Each participating laboratory was provided the opportunity to compare and validate their diagnostic methods using unknown samples provided at the workshop. Demonstrations of state of the art techniques were also performed, with the techniques demonstrated as determined by the participant’s request.

**Results**

The outcome of the exercise was very productive with regards to fostering a network of connected laboratories as well as exchanging information including improved methods, reagents, and media formulations.

Consistency among PCR assays was very good. All PCR assays correctly identified the *Francisella* positive and negative samples. The sensitivity of all PCR assays was also comparable. PCR specificity differed among assays. Variability was observed among serology tests performed at the wetlab likely due to the differing methods (agglutination, ELISA), differing antigen preparations as well as differing interpretive criteria used.

Areas for improvements were identified including standardization and interpretive criteria of serologic methods as well as PCR specificity. Several actions were suggested to further standardize inter-laboratory exchange of results.

**Aims for the specific training exercise**

- Compare and exchange a working knowledge of tularemia among endemic countries.
- Improve the connection among the network of laboratories charged with the responsibility to detect, assess and confirm *F. tularensis* infections in humans and animals as well as its presence in the environment.
- Provide an opportunity to examine and compare different diagnostic techniques and algorithms.

**Conclusions**

This exercise was very successful in bringing together 8 countries to compare and evaluate their diagnostic tests for the detection of *F. tularensis* and related organisms. As the wetlab format requires hands-on participation, only a limited number of teams may be hosted at any one time. Therefore, a series of workshops should be organized on a continual basis under the auspices of various volunteer hosting sites in order to make the opportunity available to all qualified laboratories that wish to participate. We encourage the increased use and funding of this type of laboratory exercises for further promoting development and technology transfer as a means to increasing security and capacity building in the fields of infectious disease surveillance, detection, diagnosis, and containment.

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**The Disease**

Tularemia (also known as “rabbit fever”, “deer fly fever”) is a serious infectious disease caused by the bacterium *Francisella tularensis*. The bacterium has a past history of being weaponized within the context of several biological weapons programs. Tularemia occurs naturally throughout the entire northern hemisphere.
<table>
<thead>
<tr>
<th>Coordination Group</th>
<th>Organisation</th>
<th>Country</th>
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<tbody>
<tr>
<td>Mats Forsman</td>
<td>St. Olavs Hospital, Dept of Medical Microbiology</td>
<td>Norway</td>
</tr>
<tr>
<td>Anders Johansson</td>
<td>National Center for Disease Control and Public Health, Department of Especially Dangerous Infections</td>
<td>Georgia</td>
</tr>
<tr>
<td>Jeannine Petersen</td>
<td>Instituto Nacional de Saúde Dr. Ricardo Jorge, Unidade de Resposta à Emergência e Biopreparação I.P.</td>
<td>Portugal</td>
</tr>
<tr>
<td>Roland Grunow</td>
<td>Ukrainian I.I.Mechnikov Anti Plague Research Institute, Laboratory of Extremely Dangerous Bacterial Agents</td>
<td>Ukraine</td>
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<tr>
<td>May Chu</td>
<td>Korea Center for Disease Control and Prevention, Division of Zoonoses, Center for Immunology &amp; Pathology</td>
<td>Korea</td>
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<td>Ministry of Health, Refik Saydam Hygiene Center and Kocaeli University, Medical Faculty, Clinical Microbiology Laboratory</td>
<td>Turkey</td>
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<td>Department of Civil Protection, Spiez Laboratory and University of Bern, Institute for Veterinary Bacteriology</td>
<td>Switzerland</td>
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<td>Umeå University, Department of Clinical Microbiology</td>
<td>Sweden</td>
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Meeting on the Formation of TULISOC

14 September 2009

Berlin, Germany
The Purpose of TULISOC

To facilitate and encourage the assembly, acquaintance and association of scientists from all geographical regions engaged in research on tularaemia and Francisella species;

To foster and encourage discussion and dissemination of the results of research and related matters of interest in this field;

To provide a means to convene appropriate specialists that will serve as a ready resource in the case of specific needs and emergencies;

To promote education and training in the field;

To use the assets of the Society to further the objectives of the Society as outlined in the Terms of Reference,
Governance (March 2009)

Vision/Mission

Terms of Reference

Actions

- RDT evaluation during outbreaks
- Mitigation and prediction upstream of outbreak
- Website, membership
- Launch of global consortium, 2010

http://www.niced.org.in/choldinet/registration.asp
Collaborative efforts

IHR core capacity: evaluation and readiness
- Sharing laboratory capacity assessments
- Participate in IHR exercises to test readiness

Total quality management
- Promote and participate in TQM and EQAS
- Support the global laboratory strengthening initiative

Bilateral collaboration on GLaD
- Test drive the GLaDMap tool through December 2009
- Joining in laboratory network capacity building
- Support the wet-lab exercises beyond GHSAGLN

Biosafety and Laboratory Biosecurity
- Biosafety Advisory Group (CC and BSA) assist in Strategic Planning
- Participate in training scheme
- Support the infectious substance training
- Synergize on special topics: TB, GMV, biocontainment, waste management, use of training centers
I wish you a healthy, safe and secure world

Thank you

mohammadia@who.int