CAPACITY BUILDING in DETECTION, DIAGNOSIS and CONTAINMENT of INFECTIOUS DISEASE: INDONESIA’S EXPERIENCE, CHALLENGES and NEEDS

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THE WAY AHEAD
(presented by Indonesia)
Summary on Important Issues from International Workshop on BWC Supporting Global Health, Oslo, 18-19 June 2009

- Raising awareness of biologically threats globally – BWC, BTR, Dual Use, Code of Conduct
- Strengthening laboratory biosafety and biosecurity to protect laboratory capacity and safely combat infectious diseases – Training, SOP
- Ensure the sustainability of maintenance and management
- Maximize existing resources and facilities to enhance effectiveness and efficiencies
THE WAY AHEAD – Strengthening Basic and Translational Research (Summary on Important Issues from International Workshop on BWC Supporting Global Health, Oslo, 18-19 June 2009)

- Expanding the use of safe and modern diagnostics – National capacity building in fundamental and translational research
- Participation in infectious disease surveillance networks – Sharing quality data/information – Need quality assurance of data collection
- New vaccines, antibiotics and a basic understanding of pathogenic nature of diseases are critical for health security - Invest in basic science and fundamental research
Indonesia’s Experience on Reducing Biological Risks

- Biosafety biosecurity prevention measures
- Risk assessments
- Biosafety laboratories infrastructures for dangerous pathogens
- Systems to detect, diagnose, track outbreaks and the origins of the outbreak of highly infectious diseases
- Emergency response systems for control and containment of infectious disease events
- Capacity building activities to support public health and security goals
National Actions to Promote Capacity Building in Containment, Disease Surveillance, Detection and Diagnosis of Infectious Disease

WHAT ARE WE FACING?
Indonesia – A rapidly developing country with serious challenges in infectious disease

WHAT ACTIONS SHOULD BE TAKEN?

I. Build a safe, secure and sustainable capacity
II. Best practices on biological safety and security
III. Build capacity to detect, diagnose and track outbreaks of highly infectious diseases
IV. Enhance cooperation
Research is an Essential Component of Response to Emerging Infectious Diseases

- Role of Research Institution i.e. Eijkman Institute in national response to Emerging Infectious Disease
  - To provide scientific and technological support to the national diagnostic laboratory network, including capacity building
  - As the leading research laboratory, in particular in genomic research (viral as well as host) and pathology
  - As the major back up diagnostic facility in emergency situation, such as in pandemic response

- Prepare for future emerging infectious disease threat
I. Capacity Building in Containment – BSL3 Facilities in Indonesia

Planning vision:
What is the long term plan to ensure sustainability?
What support (financial, collaborative, others) will be needed for?
I. Capacity Building in Containment – Challenges in Best Practices

Good facilities and procedures are not sufficient if personnel are not adequately trained and do not clearly understand their roles and responsibility.

- Laboratory biosecurity training, complementary to biosafety training is provided - protection, assurance and continuity of operations.

- Should not be a one-time event – offered regularly and taken currently. To refresh memories and to learn about new developments and advances in different areas.

Management System is the Key for a Good Laboratory Practice in Biosafety.
More than 70 representatives from 17 countries
Contributions by the WHO, APBSA and academia

- Need to enhance capabilities in addressing challenges such as emerging and re-emerging diseases
- Capabilities must be adapted to local needs – complexities in setting up new laboratories, challenges associated with construction, on-going maintenance and running costs
- Increased co-operation between countries – make a use of existing capabilities and resources
II. Laboratory Capacity and Capability Building to Overcome Deficiencies in Management System

- Establish an effective, best practice management system, incorporating safety and security management process and associated procedures
- Devise necessary document templates, training programs and material
- Develop a generic model of the system which can be applied in other Institutes in Indonesia and elsewhere
- Enhance communication around biorisk management and capacity building at all levels within SEA and beyond
- Concept and practices based on CWA 15793: 2008 Laboratory Biorisk Management Standard

Supported by the Norwegian Ministry of Foreign Affairs
II. Manpower Development Through Training, Specific Workshops and Seminars

2006 Laboratory Biosecurity and Biosafety for BSL3 Laboratories, Bogor; APBA Biosafety Management Course, Singapore, July 2007 Lab for the 21st Century, High performance, Low Energy Design Course, Scottsdale, April; Safe BSL3 Work Practices and Procedures, Scottsdale; ABSA 50th Conference and Biological Safety Course, October 2008 3rd APBA Aerobiology Workshop and Conference, Bangkok; 3rd Annual Conference SEA Influenza Clinical Research Network, Bali; Regional Seminar on Promoting and Implementing Biosafety and Biosecurity Management, Jakarta, June; Laboratory Biorisk Management System Workshop, Jakarta, August 2009 Advanced Topics in Managing BSL3 Laboratories, CDC Atlanta, January; BSL3 Science and Safety Training Course at Emory University, Atlanta, March; 4th APBA Conference and CWA15793 Biosafety Standard Training, Implementation and Auditing Workshop and, Manila, April 2009 (on the plan) two Biosafety and Biosecurity Training in Jakarta, DNV and OECRU.
II. Capacity Building Through Education and Awareness on Code of Conduct on Biosecurity

The Indonesian Academy of Sciences (AIPI) in partnership with the Royal Netherland Academy Sciences (KNAW), the lead academy for Inter Academy Panel (IAP) statement on biosecurity, is developing a Code of Conduct on Biosecurity for Indonesia as required by BTWC.

PRINCIPLES

- Raising Awareness
- Safety and Security
- Education and Information
- Accountability
- Oversight
III. Building Capacity in Detection and Diagnosis of Infectious Diseases

- Development of diagnostic tests (AI)
  - Diagnosed by virus isolation – hemaglutinating activity indicates the presence of influenza virus
  - Reverse Transcriptation-PCR assay for molecular identification
  - Positive test by RT-PCR should be confirmed by the second Institution
  - RT-PCR and antigen testing carried out in BSL2

- Tracking outbreaks
  - BSL3 laboratory conditions are required for HPAI viruses culture - detection of viral sequence changes (infection with other subtypes have been associated with outbreaks in other species)
III. The Role of Science and Technology in Health Security – Preparedness for Pandemic

Risk Assessments

- **Molecular Epidemiology:**
  - Grouping of viral in clades or subclades – showing viral isolates clustered together – no new strain
  - Surveillance - tracing sources of infection

- **Characteristics of Virus**
  - Alteration of interaction with host receptors i.e. pandemic need changing in specificity of avian type receptor into human-type (result showed the presence of avian-type receptor)
  - Change of virulence
  - Drug resistance – no sign
III. National Capacity in Emerging Infectious Diseases Diagnostic and Laboratory Network

44 Reference laboratories for emerging infectious diseases were developed to increase national capacity in detection and diagnostic.

Quality control and sustainability of the operation is very important!!!!!!!!!!!!!!!
III. Indonesia: Challenges in Promoting Capacity Building in Diagnosis and Detection of Infectious Diseases

- A maritime continent
- Have 700 languages – population very diverse
- A crossroad of ancient migration – influenced the genetic background of host and pathogen
- Hepatitis, Dengue, Malaria, Tuberculosis show disease complexity

Management of disease is not simple, need a strong disease surveillance and fundamental research – some countries with diverse populations share same problem
IV. Enhancing cooperation

- Networking with interagency counterparts, personal in health, academia, law enforcement, defense and multiple stakeholders including industry, medical, professional organizations and the media.

- Regional cooperation is necessary not only in the field of biosafety and biosecurity but also in infectious diseases research and surveillance.

- Strengthening cooperation between developed and developing countries (Norway/USA/Japan–Indonesia) and opportunities among developing countries.
Conclusion - What Indonesia Need to Do to Meet the Challenge in Capacity Building

- Raise awareness of biologically threats globally - introduce awareness on Dual Use and Code of Conduct through academic curricula
- Strengthen laboratory biosafety and biosecurity – Regular Training, develop SOP
- **Ensure the sustainability of maintenance and management** – Continuous funding support, maximize existing resources and facilities to enhance effectiveness and efficiencies
- Expand the use of safe and modern diagnostics – need to build national capacity in fundamental and translational research,
Thank you and greetings from Indonesia