

Report of the Workshop on Risk Assessment and Management of Public Health Events

Jakarta, Indonesia, 27–30 September 2010



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1. Introduction and background

The South-East Asia Region presents unique challenges in the areas of emerging infectious diseases and other public health risks. The Region is home to nearly a quarter of the world's population and the last decade has seen significant outbreaks of infectious diseases such as SARS, avian influenza H5N1, dengue, Nipah virus and plague. Last year also saw the emergence of the first influenza pandemic for 40 years, which has revealed strengths in health systems in our Region as well as highlighted areas that can be improved.

International Health Regulations (IHR) (2005) have proven to be a valuable framework to facilitate the detection, assessment and reporting of public health events in the spirit of international collaboration. IHR (2005) contains a "decision instrument" that helps state parties identify whether a health-related event may potentially constitute a *public health emergency of international concern* (PHEIC) which requires formal notification to WHO. Risk assessment is a prerequisite to use the decision instrument appropriately. IHR (2005) include an all-hazards approach and public health events such as chemical and nuclear hazards and outbreaks of food-borne diseases which require a multidisciplinary approach, expertise and networking while conducting the risk assessment.

A strong and sensitive surveillance system aims to detect every possible signal that may indicate a serious public health event. However, false alarms do occur from time to time, and in addition, not every event actually requires full-scale mobilization of a response. Whenever any public health event is brought to our knowledge, either during the course of surveillance or any other means such as a rumour, we need to undertake risk assessment in order to develop a plan of action. To many people, this assessment is simply a process of applying common sense and some basic epidemiological principles. However, risk assessment is increasingly being recognized as a distinct discipline which involves a rigorous and structured process to identify hazards, analyse and/ or evaluate risks associated with it and determine appropriate ways to control or eliminate it.

Approaching risk assessment in this way helps to ensure that any event detected will be linked to the right type of response at the right time; that the level of the response is proportionate to the scale of the actual event, and that information on the event and the decision taken is communicated to the right people in a timely manner.

In accordance with strengthening IHR (2005) core capacities in the South-East Asia Region (SEAR), a regional workshop on “Risk assessment and management of public health events” was held from 27 - 30 September 2010 in Jakarta, Indonesia. It was the first regional-level workshop and was aimed to train human resources to improve national capacity for risk assessment and management of potential public health events of national and international concern.

This report outlines the process adopted in conducting the workshop which will likely facilitate organizing similar workshops at regional/ national/ subnational levels. The report does not provide details of the sessions conducted every day which are included in the detailed programme of activities. The presentations and exercises on specific topics have been clubbed even if they were spread in different sessions as a few group exercises were spread over many sessions. An electronic version of the presentations and exercises will be made available on the WHO-SEARO website.

2. Objectives of the workshop

The objectives of the workshop were:

- (1) To review the situation with regard to risk assessment and management (RAM) in selected Member States;
- (2) To discuss concepts and a risk approach to public health events;
- (3) To apply the principles of risk approach in managing public health events; and
- (4) To agree on follow-up actions for capacity development in RAM in Member States.

3. Methodology

The workshop was interactive and participatory and was conducted on the basis of adult-learning with limited emphasis on teaching and more on discussions. Each subject was introduced and discussed following a common structure which included:

Presentations to introduce a particular concept in risk assessment: The presentations were delivered by experts who outlined the basic principles of the risk assessment (RA) as carried out in different scenarios (including public health (PH) events of non-infectious nature). The participants were encouraged to ask questions at the end of each presentation. The presentation time varied from 20 minutes to 45 minutes followed by 10/ 15 minutes of questions and answers.

Facilitated group exercises and presentations: The purpose was to encourage the participants to use the RA process and matrix in different public health (PH) events/ hazards such as infectious diseases, zoonosis, chemical disasters and food safety. The time allocated for group exercises varied from 1-1.5 hours.

Homework to emphasize the role of in-depth processes required for RAM. The participants were encouraged to make use of the internet and other sources of information to undertake risk assessments.

For the purpose of group work and homework, the participants were divided into three groups ensuring that each one had a mix of individuals working in human and animal health. Each group was provided a laptop and internet connection for literature search.

Evaluation: Since this workshop was the first at regional level, it was planned to independently evaluate each session and case-study to assess its usefulness in SEAR and in order to improve it for possible use at national/ subnational levels.

4. Facilitators and participants

The workshop was facilitated by technical staff from WHO (HQ), SEARO, and the WHO Country Office, Indonesia, Temporary Adviser as well as SEARO/WHO Indonesia support staff. The workshop was attended by 23

participants from 10 Member States and included public health practitioners, clinicians and veterinarians. Technical staff from WHO Indonesia attended as participants. The list of facilitators and participants is given in Annexure I.

It is envisaged that public health and animal health professionals who participated in this workshop will contribute to promote better understanding and teamwork in the process of risk assessment at country level and could be involved in advocacy and training in their respective countries.

4.1 Opening session

The workshop commenced with an opening ceremony conducted in traditional Indonesian manner. Dr Oscar Martin Barreneche, Ag. WHO Representative to Indonesia welcomed the participants and delivered the address of the Regional Director, Dr Samlee Plianbangchang. Dr Yusharmen, Secretary during his opening remarks welcomed the participants and underlined the relevance of the workshop in improving the risk assessment capacity in the South-East Asia Region.

4.2 Presentations and exercises

Presentation: Introduction to the workshop: Pre-assessment

Dr Yogesh Choudhri, TIP/DSE, WHO-SEARO provided the objectives and proposed methodology of the workshop. It was mentioned that the workshop is based on past experiences related to similar workshops undertaken in the Western Pacific Region. The need for active participation and deliberations in order to improve these workshops and make them more suitable for the SEA Region was emphasized.

Presentations by Member States

Session 1 was organized to enable participants from selected Member States to present the situation with respect to risk assessment and management (RAM) in their countries. The Member States were urged to present the risk assessment (RA) approach used to address the recent public health (PH) events in their countries. The presentations included:

- RAM in Bangladesh: Case study: Anthrax outbreak
- RAM in India: Case study: Leptospirosis
- RAM in Indonesia: Case study—A case of H5N1
- RAM in Thailand: Case study—Botulism in Thailand

During the course of presentations and discussions, it emerged that countries are utilizing the RA approach, not in a structured manner albeit, to address the PH events. Most of the risk assessments are carried out in the context of outbreaks and increase in reported cases as observed in indicator-based surveillance and RA for preparedness and planning are lacking. The capacity to undertake RA varies between countries and between different regions of a country. Risk assessments are usually carried out in the context of infectious diseases and zoonosis and a multisectoral approach to address RA in the context of chemical and nuclear disasters and food safety is comparatively deficient.

Presentation: Introduction to risk assessment/risk analysis

Dr G N Gongal, DSE, WHO-SEARO, in his presentation provided a broad overview of RAM as part of day-to-day life and work. He presented the basic concepts and processes involved in RAM and discussed their utility and limitations.

Presentation: Event-based risk assessment approach

The presentation by Dr Stephanie Williams focused on WHO's policy related to event-based risk assessment. Her talk was primarily focused on PH issues and emphasized the role of RA in investigations and reporting of PH events of national and international concern. The objectives of the session were to apprise the participants on how to interpret unstructured information about PHE and what information is required to conduct RA. She talked about the basic principles of RA in the context of public health such as threats, exposure and vulnerabilities. The aim was to familiarize the participants with the concept of risk assessment as part of risk management and understand the uses of the risk matrix (including consequences and likelihood).

Scenarios and group work on infectious diseases

Infectious diseases are a major source of morbidity and mortality in countries of the South-East Asia Region (SEAR) and most of the PHE have been infectious in origin. As mentioned earlier, most Member States in the Region have conducted RA in the context of infectious disease outbreaks and it was proposed to present different scenarios to the participants and familiarize them with the RAM process in different scenarios. Each scenario was discussed by the participants in groups for 30-45 minutes followed by 3-5 minutes of presentation and some of the scenarios included role play following the group work. The following scenarios were presented and the group work on these scenarios continued on the second day of the workshop:

1. *Verifying and assessing rumours; assessing alerts identified through routine surveillance systems, "Risk Assessment: Rumours across the border"*

During the practical "Risk Assessment: Rumours across the border", the participants were asked to work on the RA when they receive reports of a mysterious disease which appears across the border. The victims of this disease presented with symptoms of contortion of mouth, glassy eyes and mild paralysis.

The participants were asked to work in groups and specifically address the possible threats, sources and methods of collecting additional information, preliminary outcome of the risk assessment (likelihood, consequences, level of uncertainty), and control measures and risks associated with them. The scenario further discussed the impact and risk assessments that need to be carried out during spread of diseases in neighbouring geographic areas. The time allocated was one hour for group work followed by group presentations.

2. *Mystery disease*

The participants were given a scenario on a mystery disease presenting with symptoms of loss of appetite, vomiting and abdominal and mouth pain. The mystery disease coincides with the death of pigs in the area. The second

scenario on mystery disease was deaths among patients presenting with fever, headache and drowsiness.

The participants were asked to work in groups and specifically address the possible threats, sources and methods of collecting additional information, preliminary outcome of the risk assessment (likelihood, consequences, level of uncertainty), and control measures and risks associated with them. The time allocated was 45 minutes for group work followed by group presentations.

3. *Verifying and assessing rumours; assessing alerts identified through routine surveillance systems “A case of suspected smallpox in a remote village”*

The practical session, “A case of suspected smallpox in a remote village” was designed to familiarize the participants as to how to undertake RA in the context of an infectious disease when reported with information which could be misleading. The participants were asked to work in groups and specifically address the possible threats, sources and methods of collecting additional information, preliminary outcome of the risk assessment (likelihood, consequences, level of uncertainty), and control measures and risks associated with them. The time allocated was 45 minutes for group work followed by group presentations.

4. *Case study: acute flaccid paralysis*

This scenario dealt with a report on acute flaccid paralysis (AFP) in children and adults. The participants were requested to discuss risk assessment for such an AFP cluster using respective country settings, listing the differential diagnosis and possible exposures, plotting them on a risk matrix according to likelihood and consequences of occurrence, and identifying the data needed to fill any knowledge gaps about the threat and exposures, and sources of data, level of confidence in initial threat and exposure assessment, and recommending a set of initial control measures. The time allocated was 45 minutes for group work followed by group presentations.

5. *Case study: renal failure*

This scenario dealt with a cluster of cases presenting with renal failure. The participants were asked to work in groups and specifically address the possible threats, sources and methods of collecting additional information, preliminary outcome of the risk assessment (likelihood, consequences, level of uncertainty), and seriousness and uncertainty.

6. *Case Study: Outbreak of diarrhoea and vomiting*

The scenario presented to the participants is a common occurrence in SEAR. The participants were asked to work specifically to address the health risks now and in future, and the political, social and economic effects of control measures. The participants undertook role-play to discuss these issues.

7. *Japanese encephalitis*

This scenario reported and confirmed an outbreak of Japanese encephalitis (JE) in one district and in the neighbouring districts there was a cluster of cases presenting with headache, drowsiness, fever and deaths. In that district, doctors did not believe it was JE. The participants were asked to work in groups and specifically address the possible threats, sources and methods of collecting additional information, preliminary outcome of the risk assessment (likelihood, consequences, level of uncertainty), and control measures.

Presentations, scenarios and group work on zoonoses

- Dr G N Gongal made a presentation on Future Challenge of Zoonoses in the Asia-Pacific Region and how to respond to and manage it. The presentation dwelled on the importance of zoonoses in the Asia-Pacific Region, hotspots of emerging zoonoses in Asia, risk factors and determinants, opportunities and challenges, strategies and policies in place to handle these threats and the need for approaches for integrated, multidisciplinary action.
- The presentation on zoonoses by Dr Mike Nunn had a detailed description on zoonoses and talked about incursions of 'exotic'

diseases, re-emergence of 'endemic' diseases, emergence of 'new' diseases, and human-induced risks. He further talked about drivers and exposure of humans which included changed contact with other animals, climate change, increased rate of evolution of pathogens, globalization of trade, and the role of community and individual behaviours and gave a detailed description of avian influenza, Nipah virus, rift valley fever, and monkeypox. He concluded that diseases will continue to emerge ('new' or newly recognized, known or established). He mentioned how climate and environmental change will be a 'driver' for emerging infections and stressed the need for interdisciplinary cooperation, early identification and prompt reporting and need to consider factors favouring emergence when planning changes to production systems. He further elaborated to answer 'how intensive is intensive enough' and emphasized the need to take a much broader (ecosystems health) approach than is traditionally taken in any one discipline or paradigm using STEEEP (social, technical/scientific, economic, ethical, environmental, policy/political) approach.

Practical: Zoonotic diseases

The practical on zoonosis focused on a real-life incident involving deaths and abortion among sheep and goats in a Northern African region associated with heavy rainfall. This was followed by an increasing number of patients being seen for flu-like fever, muscle pain, joint pain and headache, while some patients had ocular disease (retinitis) and meningo-encephalitis.

The participants were encouraged to undertake risk assessment and each group member was asked to represent a particular 'stakeholder' ('interested person') in their discussions. They were encouraged to use the STEEEP approach in their risk assessments.

Presentations, scenarios and group work on chemical and nuclear disasters

Dr Richard Brown in his presentation on Acute Chemical/Toxicological and Radio-Nuclear Events discussed the specific issues raised during risk assessments in chemical and nuclear events. He emphasized the need to

assess any event with an open mind - and to be alert to the *possibility* of a chemical/toxicological/radio-nuclear cause. He further emphasized the need for a roster of experts in this field as the capacity to undertake risk assessments in this field in the Region is limited. His talk included risk assessments during acute radiation exposures, chemical and toxic events and dwelled on distinctive features of the three events. He also provided a brief overview of WHO's Risk Assessment Toolkit for Chemical Hazards.

Practical: Chemical and nuclear disasters risk assessment

The practical on chemical disasters was based on a real-life scenario in a Member State in the Region where there was an outbreak of unknown disease. The common clinical *presentation* was with nausea and vomiting, weakness and upper abdominal discomfort, fever and progression to unconsciousness and death within 24-48 hours of onset.

The disease appeared in clusters in families and the mortality among women and children was higher. There appeared to be two different villages affected, the distance between these two villages was 20-30 km and in one of the villages there was flooding a month ago, followed by some deaths of cattle and (backyard) poultry.

The participants were asked to work in groups and specifically address the possible threats, sources and methods of collecting additional information, preliminary outcome of the risk assessment (likelihood, consequences, level of uncertainty), and control measures.

Presentation: Planned animal/human health risk assessments

The talk by Dr Mike Nunn was focused on planned risk assessments and on issues such as risk analysis in 'quarantine'/'biosecurity' which included the disease risks, policy context, changing questions, and changing expectations. He also talked about import risk analysis and trade environment including World Trade Organization and standards and guidelines by organizations such as the World Organization for Animal Health (OIE), Codex Alimentarius Commission, the International Plant Protection Commission and the Sanitary and Phytosanitary (SPS) Agreement.

He talked about the OIE Risk Analysis Framework which is similar to what is being done for human health and encompasses hazard identification, risk assessment, risk management, and risk communication.

Presentation: Linking control measures to risk assessments and prioritization of control measures using the STEEP approach

The presentation by Dr Thomas Grein was aimed to apprise participants on how to complete risk assessment, how to identify the risk assessment team, and the process of making recommendations for evidence-based prevention and control measures based on threat-specific risk assessment proportional to the risk. He talked about components of risk management and the risk assessment matrix and how to use it. The presentation included a case-scenario and participants were urged to develop options for control measures, prioritize them, apply them and evaluate the actions taken.

Practical: Risk assessments and control measures

The practical on risk assessment presented two scenarios to the participants:

- (a) An explosion at a petrochemical plant which resulted in chemicals pouring into nearby river which supplies drinking water and is important for the local economy of the region including a large fishing industry. There have been reports of an increase in the number of patients in the emergency rooms presenting with diarrhoea and vomiting. In a nearby school, there have been reports of children with respiratory signs and symptoms. The participants were asked to work in groups and answer specific questions raised by the health minister on the possible health risks, now and in the future, after the petrochemical explosion. Which are the populations at risk? How many people are likely to get sick and how many people are likely to be severely ill/die? The participants were asked to discuss the merits and demerits of actions such as prohibition of access to the river, and a ban on fishing which was being argued upon by the ministries of tourism, trade and forestry. The participants discussed if the control measures were reasonable and appropriate.

- (b) The second scenario dealt with an outbreak of ergotamine intoxication in humans and animals, linked to contaminated rye grown for bread and the highly popular locally-produced beer. It occurred in an area where subsistence farming and grazing of goats, sheep and cattle are the main sources of food and income. There was a simultaneous outbreak in cattle and sheep, including fever, weight loss, hyperexcitability, muscular incoordination, drooling and tremors. The participants were encouraged to use the internet and carry out a risk assessment on ergotamine intoxication, including threat assessment, exposure assessment, and vulnerability assessment. The participants were asked to identify the agencies and disciplines that should be consulted and make long-term recommendations for prevention.

Presentations, scenarios and group work on food safety risk assessments

Presentation: Food safety

Dr G. N. Gongal in his presentation on risk analysis in ensuring food safety provided information and evidence needed for effective decision-making, contributing to better food safety outcomes and consumer protection. The presentation on food safety risk assessment focused on components and procedures while doing food safety risk analysis and included a case study on thyrotoxicosis from excess iodine in soy milk product and *E.coli* 0157:H7 infection. It also talked about the International Network for Food Safety Risk Assessment including Codex Alimentarius and INFOSAN and IHR (PHEIC). Physical, chemical and biological hazards were discussed in the context of food safety. The role of the risk management process in Hazard Analysis and Critical Control Point (HACCP) was also discussed.

Practical: Food safety

The practical on food safety was related to *Listeria monocytogenes* in a manufacturing environment and in selected products where no human cases were reported in the areas where products had been supplied. No export had occurred.

The participants were asked to work in groups and specifically address a brief outline of the event, undertake risk analysis, the possible threats, sources and methods of collecting additional information, outcome of the risk assessment using the matrix (likelihood, consequences, level of uncertainty), and provide an outline of risk management options.

The time allocated was 45 minutes for group work followed by group presentations.

Presentation: Influenza

Dr Mike Nunn in his presentation on influenza talked in detail about avian influenza including HPAI: outbreaks before 2000, recent history of H5N1, lessons learnt and Pandemic (H1N1) 2009. He highlighted ongoing issues in Indonesia which include endemic situation, uneven response, limited resources, competing priorities, and risk to neighbouring countries. There have been many changes in recent times which increase the likelihood of emerging zoonotic infections, including significant increase in the number of birds raised, husbandry systems, migration patterns, climate, circulating viruses, and trade patterns. He further mentioned that neither virus subtype is 'going away' soon and other subtypes will continue to emerge. It is likely to be harder to control 'at source' especially due to the global financial crisis, donor fatigue, and insufficient capacity in different Member States to address the outbreaks. There is a need to strengthen surveillance in animals and communications will remain critical to maintain control efforts and in managing perceptions.

Presentation: Communicating effectively while assessing and managing risk

Ms Nursila Dewi from the WHO country office, Indonesia, made a presentation on communicating effectively while assessing and managing risk and underlined the importance of communicating internally and externally.

Practical: Communicating effectively while assessing and managing risk

The practical included a scenario for communications during an outbreak and was followed by group discussions and presentations and dwelled on: using the risk assessment and management approach (covering all hazards) and the strengths and weaknesses in Member States:

Feedback and evaluation

The feedback and evaluation of each session/ presentation/ and practical was collected and analysed. The group further discussed follow-up actions for strengthening risk assessment in Member States in an open forum discussion.

4.3 Recommendations

WHO-SEARO may consider continuing to provide technical and financial support to undertake similar trainings at national level.

WHO-SEARO and HQ may develop training modules and finalize exercises and presentations for the course based on the feedback from this training workshop.

Annex 1

List of participants

Participants

Bangladesh

Dr Md. Muslehuddin Ahmed
Assistant Director (CDC) &
DPM Emerging Re-emerging Diseases DGHS
Mohakhali, Dhaka
Tel: +88029880948
Mob: +8801711457524
Email: dr_musleh_uddin@yahoo.com

Dr Arabinda Kumar Saha
Chief Veterinary Officer (CVO)
48 Kazi Alauddin Road
Department of Livestock Services
Dhaka
Tel: +8802-7319971
Mob: +8801714256434
Email: aksahass@yahoo.com

Bhutan

Ms Roma Karki
Assistant Program Officer
Department of Public Health
Ministry of Health
Thimphu
Tel: +975-2-328091, Ext: 244
Mob: +975-17611318
Email: romak@health.gov.bt

Dr J.B. Gurung
Animal Health/VPH
Specialist of Bhutan Agriculture and Food
Regulatory Authority
Tel: +975 2 327031
Mob: +975-17607948
Email: jbgurung2002@yahoo.com

DPR Korea

Regretted

India

Dr Jagvir Singh – Not attended
Addl. Director & NPO, IDSP
National Centre for Disease Control
22 Shamnath Marg, Delhi – 54
India
Tel: 91-11-23932290
Email: jagvirsingh1971@yahoo.co.in

Dr J M Kataria
Director
National Institute of Animal Health
Deptt of Animal Husbandry
Dairying and fisheries
Ministry of Agriculture
Baghpat – 250 609 (UP)
Ph: 091-121-2222471
Fax: 091-121-2222291
Mob: 91-9359117944
Email: jmkataria@rediffmail.com

Dr Sudhir J. Gandhi
Deputy Director Epidemic
Commissionerate of Health Services
Government of Gujarat
Gandhinagar
Tel: +91-7923253336
Mob: 91- 9099952951
E Mail: sudhir_gandhi2004@rediffmail.com

Indonesia

Mr Priagung A.B. M. Med. Sc. PH
Health Quarantine and Port Health
Ministry of Health RI
Jakarta, Indonesia
Tel: +62 21 4266920
Mob: +62 81381611177
Email: priagungb@yahoo.com

Ms Rosliany
M.Sc.PH
Outbreak subdirector
MOH RI
Jakarta, Indonesia
Tel: +62 21 7816484
Mob: +62 81310882422
Email: uti_rsh@yahoo.com

Dr Uti Ratnasari Herdiana
M.Si Animal Quarantine
Ministry of Agriculture, RI
Tel: +62 21 7816484
Mob: +62 21 881310882422
Email: uti_rsh@yahoo.co.id

Maldives

Mr Hussain Maaniu
Senior Public Health Programme Officer
Maldives
Tel: 00960 332 0695
Mob: 009607783885
Email: hussainmaaniu@hotmail.com

Mr Ibrahim Nizar
Assistant Public Health Programme Officer,
+960-7782339,
Tel: +960-6892806
Mob: +960-7782339
email: chohonda@hotmail.com

Myanmar

Dr Aung Kyi Swe (Mr)
Additional State Health Director
Additional State Health Department
Shan (East) State, Kayingtong
Tel: 95-84-21070
Mob: 95-9-51-59221

Dr Wah Wah Han (Ms)
Deputy Director (Vaccine Production)
Livestock Breeding & Veterinary Department
Ministry of Livestock & Fisheries
Tel: 95-1-640789, 95-1-640677
Mob: 95-9-50-53348
Email: wah.han.56@gmail.com

Nepal

Dr Bishwo Raj Khanal
Senior Health Administrator
Epidemiology & Disease Control Division
DHS, MOHP
Tel: 977-1-4262268, 4255796
Mob: 977-9841-719878
Email: brkhanal@hotmail.com

Dr Jeetendra Man Shrestha
Deputy Coordinator
Avian Influenza Control Project, DHS, MOHP
Tel: +977-1-4261419, 4255796
Mob: +977-9841-220635
Email: jmshrestha@gmail.com

Sri Lanka

Dr A E Gnanajothy
Director/Quarantine
Ministry of Health
Colombo 10
Tel: 094-11-2723877 (Resi)
Mob: 0726442849
Email: dquranjine1@yahoo.com

Dr Mayuri G Thammitiyagoda
Veterinary Surgeon
Medical Research Institute
Colombo 8
Tel: +94-11-2413927, 94112695604
Mob: 0712285487
Email: geethatg@yahoo.com

Thailand

Dr Teerasak Chuxnum
Veterinary Officer, Professional Level
Bureau of Epidemiology
Department of Disease Control
Ministry of Public Health
Tel: 66 2 – 590 1775
Mob: 66 8 – 9536 1585
Email: tchuxnum@yahoo.com

Dr Wacharapon Chotiyaputta
Veterinary Officer
Senior Professional Level
Bureau of Disease Control and Veterinary
Services
Department of Livestock Development
Ministry of Agriculture and Cooperatives
Tel: 66 2 – 653 4443
Mob: 66-815292719
Email: dcontrol9@dld.go.th

Timor-Leste

Mr Joao P H Da Silva
Head of Health Management Information
System
Ministry of Health
Timor Leste
Tel: +6203323209
Mob: +6207263853
Email: rentaujoao_phd@yahoo.com

Dr Mario Francisco Amaral
Head of Animal Health Dept. of National
Directorate of Livestock and Veterinary
Services
Ministry of Agriculture & Fisheries
Timor Leste
Mob: +6707258587
Email: amaraldum@yahoo.com
rio_doh@yahoo.com

Temporary Advisers

Dr Michael John Nunn
Principal Scientist (Animal Biosecurity)
Biosecurity Australia
Tel: +612 26074036
Mob: +61 409650406
Email: mike.nunn@daff.gov.au

WHO Secretariat

Dr Khanchit Limpakarnjanarat
WHO Representative to Indonesia
World Health Organization
Jakarta, Indonesia
Tel: +62 21 5204349
Email: limpakarnjanaratk@searo.who.int

Dr Graham Tallis
Medical Officer
Jakarta, Indonesia
Tel: +62 21 5204349
Email: tallisg@searo.who.int

Dr Vason Pinyowiwat
Medical Officer
Disease Surveillance and Epidemiology
WHO Country Office for Indonesia
Tel: +62 21 5204349
Email: pinyowiwatv@searo.who.int

Ms Nursila Dewi
Communication Officer
WHO Country Office for Indonesia
Landline: +62-21-520 4349
Mobile: +62-815 1110 2540
E-mail: dewin@searo.who.int

Dr Paba Palihawadane
Epidemiologist
WHO/Myanmar
Email: palihawadanapa@searo.who.int

Dr Tom Grein
Scientist
World Health Organization
Geneva, Switzerland
Tel: +41227911692
Email: greint@who.int

Dr Stephanie Williams
Scientist
Alert and Response Operations
Department of Global Alert and Response
World Health Organization
Tel (direct): +41 22 791 3649
Fax (direct): +41 22 791 1397
Email: williamss@who.int

Dr Yogesh Choudhri
Medical Officer
Outbreak Alert and Response
World Health Organization
I. P. Estate, Mahatma Gandhi Road
New Delhi - 110002
Tel: 91-1123370804
Email: choudhric@searo.who.int

Dr Richard Brown
Public Health Specialist
World Health Organization
I. P. Estate, Mahatma Gandhi Road
New Delhi - 110002
Tel: 91-1143040000
Mob:
Email: brownr@searo.who.int

Dr Gyanendra Gongal
Scientist
World Health Organization
I. P. Estate, Mahatma Gandhi Road
New Delhi - 110002
Tel: 91-1123370804, Ext: 26647
Email: gongalg@searo.who.int

Ms Erly Maria
CSR/DSE unit
World Health Organization, Indonesia
Jakarta, Indonesia
Email: erlym@searo.who.int

Mr Sunil Rajput,
Outbreak Team
Disease Surveillance and Epidemiology (DSE)
World Health Organization
I. P. Estate, Mahatma Gandhi Road
New Delhi - 110002
Tel: 91-1123370804, Ext: 26127
Email: rajputs@searo.who.int

Annex 2

Agenda

- (1) Opening session (Registration)
- (2) Inauguration
- (3) Objective of workshop
- (4) Experiences and lessons in risk assessment and management
- (5) Introduction to risk assessment and management tool
- (6) Situation assessment: status of capacity for risk assessment and management
- (7) Introduction to event management
- (8) Identifying follow-up actions for application of event

The process of risk assessment is increasingly being recognized as a distinct discipline which involves a rigorous and structured regimen to identify hazards, analyse and/or evaluate associated risks, and determine appropriate ways to control or eliminate risk. In accordance with strengthening the core capacities related to the International Health Regulations (IHR) 2005 in the WHO South-East Asia Region, a Regional Workshop on Risk Assessment and Management of Public Health Events was held from 27 to 30 September 2010 in Jakarta, Indonesia.

This was the first regional-level workshop on the issue and aimed at training human resources to improve national capacity for risk assessment and the management of potential public health events of national and international concern. This report outlines the process that was adopted in conducting the workshop and the deliberations in it that are likely to facilitate the organizing of similar workshops at the regional, national and sub-national levels.



**World Health
Organization**

Regional Office for South-East Asia
World Health House
Indraprastha Estate,
Mahatma Gandhi Marg,
New Delhi-110002, India
Website: www.searo.who.int



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