Meeting Report

# Fifth Meeting of National Influenza Centres in the Western Pacific and South-East Asia Regions

7–10 June 2011
Vientiane, Lao People's Democratic Republic

World Health Organization
Western Pacific Region

CONTENTS




Key words: Influenza, Human - prevention and control/ Epidemiology/ Pandemics / Regional health planning/ Disease outbreaks – prevention and control

# 1. INTRODUCTION

The introduction of global influenza surveillance in 1948 was one of the first actions of the newly created World Health Organization, and in 1952, the Global Influenza Surveillance Network (GISN) was established. In 2011, GISN was re-named the Global Influenza Surveillance and Response System (GISRS) in recognition of increasing expectation from Member States, together with strong institutional and governmental support. The GISRS contributes to global public health by gathering and analyzing information on the appearance of novel strains of influenza virus and reporting to WHO to enable a prompt and appropriate public health response. It also collates data on circulating influenza viruses, which are used to make recommendations on strain composition of seasonal influenza vaccines. The GISRS currently consists of six WHO Collaborating Centres for Reference and Research on Influenza and 135 National Influenza Centres (NICs) in 105 countries. There are 21 NICs in 15 countries in the Western Pacific Region and 10 NICs in eight countries in the South-East Asia Region. There are three WHO Collaborating Centres in the Western Pacific Region, one each in Australia, China and Japan.

Since 2007, annual NIC meetings have provided an opportunity for NICs, Ministry of Health officials, WHO and partners to meet and share experiences, successes and challenges. The four previous meetings have been successful in contributing to strengthening GISRS in the Asia Pacific region.

(1) The first meeting of NICs in the Western Pacific and South-East Asia Regions was held in Melbourne, Australia, from 1 to 4 May 2007. A biregional four-year workplan for strengthening national influenza surveillance capacity was formulated during the meeting.

(2) The second meeting was held in Tokyo, Japan, from 21 to 24 April 2008. Guidelines on comprehensive influenza surveillance and influenza disease burden studies were introduced. A software database for NICs was also presented.

(3) The third NIC meeting was hosted by the China National Influenza Centre, Beijing, from 18 to 20 August 2009. Lessons learnt from the pandemic response were reviewed and appropriate measures for mitigating the impact of the pandemic were determined.

(4) The fourth meeting of NICs in the Western Pacific Region was held in Manila, Philippines, from 3 to 6 May 2010. Participants were encouraged to share their experiences during pandemic (H1N1) 2009 to assist those countries developing preparedness plans and laboratory contingency plans.

The Fifth Meeting of National Influenza Centres in the Western Pacific and South-East Asia Regions was held in Vientiane, the Lao People's Democratic Republic, from 7 to 10 June 2011.

*Photo: Participants of the Fifth Meeting of the National Influenza Centres in the Western Pacific and South-East Asia Regions, Vientiane, the Lao People's Democratic Republic, 7 to 10 June 2011*

1.1 Objectives

(1) To review current capacity of the network in the regions and develop the next five-year plan (2012–2016) for national influenza surveillance.

(2) To finalize a regional review paper of seasonal influenza.

(3) To develop a prioritized region-specific research agenda based upon the WHO Public Health Research Agenda for Influenza, and develop the plan for implementation.

1.2 Welcome and opening remarks

*Dr Takeshi Kasai, on behalf of Dr Shin Young-soo, Regional Director, WHO Western Pacific Regional Office*

On behalf of the WHO Regional Director, Dr Kasai welcomed participants to the Fifth Meeting of the National Influenza Centres in the Western Pacific and South-East Asia Regions. He conveyed appreciation to the Government of the Lao People's Democratic Republic for hosting the meeting. The venue of the meeting was purposely determined in light of the Lao People's Democratic Republic being home to the newest National Influenza Centre in the Western Pacific Region.

Participants were encouraged to think strategically to develop innovative ways to improve collaboration and information sharing between organizations, both within their own countries and within the regions. Cooperation between virologists, epidemiologists, researchers and policy-makers will continue to facilitate the link between disease surveillance and virological information and improve regional and global communicable disease response.

Dr Kasai highlighted the importance of the meeting objectives and said he was pleased to have a gathering of influenza experts from the two regions to share experiences and knowledge, thereby moving forward in the battle against influenza while strengthening the regions' core capacities to address emerging diseases and other public health events.

*His Excellency Dr Bounkouang Phichit, Vice-Minister, Ministry of Health, Lao People's Democratic Republic*

His Excellency Dr Bounkouang Phichit welcomed all participants to the Lao People's Democratic Republic. He emphasized the importance of the *Asia Pacific Strategy for Emerging Diseases* (APSED) in controlling emerging diseases. He highlighted the significant influenza events of the past, including severe acute respiratory syndrome, influenza H5N1, and the 2009 influenza pandemic, and cautioned about unknown future events.

On 6 August 2010, WHO recognized the new National Influenza Centre in the Lao People's Democratic Republic. With the NIC in place, the Lao People's Democratic Republic has an increased capacity in science and technology that has the potential to improve the quality of life of its citizens. Dr Phichit thanked the partners for contributing to the success of the meeting.

*Dr Ann Moen, Associate Director for Extramural Program, United States Centers for Disease Control and Prevention*

Last year's meeting focused on reviewing lessons learnt from the 2009 influenza pandemic. This year, the focus of the meeting was on looking forward and planning for the next five years. Dr Moen highlighted the importance of the gathering to develop friendships and partnerships to continue to learn from each other. She suggested that the meeting should act as a catalyst for improvements for the recognition, prevention and control of influenza and other emerging infectious diseases.

## 2. PROCEEDINGS

### 2.1 Plenary 1: Regional and global updates

*Chair: Dr Anne Kelso, Co-chair: Dr Chong Chee Kheong*

#### 2.1.1 Presentation 1: Asia Pacific Strategy for Emerging Diseases

*Dr Takeshi Kasai, WHO Western Pacific Regional Office*

An update on the *Asia Pacific Strategy for Emerging Diseases* (APSED) was delivered. Based on the fourth meeting of the Technical Advisory Group and the biregional consultation on "APSED and Beyond" held in May 2010, it has been recommended that APSED (2010) will continue to focus primarily on building national and local capacities for emerging infectious diseases. The ongoing objectives are to reduce the risk of emerging diseases by strengthening early detection, rapid response and effective preparedness and building technical partnerships.

APSED (2010) will continue to provide a common framework for countries to strengthen national and local capacities required for managing all emerging infectious diseases. In addition, with threats arising from other public health events and the requirements of the International Health Regulations (2005), the new strategy addresses other public health events, such as food safety events. The updated strategy seeks to build on the common approach and maximize the benefits achieved under APSED (2005).

2.1.2 Presentation 2: National Influenza Centres in the South-East Asia Region

*Dr Oommen John, WHO South-East Asia Regional Office*

There are eight NICs in the South-East Asia Region, all with virus isolation and polymerase chain reaction (PCR) testing capacity. The Region is trying to overcome the following challenges: encouraging the establishment of NICs in the three countries that do not have them, expanding immunization and surveillance and increasing data sharing. The burden of influenza in the South-East Asia Region is still not fully understood; however, there have been numerous studies to learn more, particularly in Thailand, Myanmar and India.

To control influenza in the Region, WHO is aiming to strengthen preparedness and capacity to respond to influenza with pandemic potential, strengthen and integrate capacity to carry out surveillance and response, and strengthen laboratory infrastructure. This includes building laboratory and epidemiology capacity to accurately and promptly diagnose seasonal influenza and influenza with pandemic potential.

2.1.3 Presentation 3: Summary of influenza activity in the Western Pacific Region

*Dr Jeffrey Partridge, WHO Western Pacific Regional Office*

Reports of influenza virus detection in the Western Pacific Region for the past year (30 May 2010 to 8 May 2011) have shown a predominance of influenza A(H1N1) 2009 (41%), followed by influenza A(H3) (34%) and influenza B (19%). Two peaks were observed during this period, the first in early September 2010, and the second, larger peak in the first month of 2011. Low influenza-like illness (ILI) activity in the northern hemisphere, tropics, and southern hemisphere has been observed for the current period (mid-April–mid-May). A mix of influenza viruses were reported from nine countries, but they were predominantly B viruses (>70% of positives) followed by influenza A(H3) and influenza A(H1N1) 2009 viruses. As of 3 June 2011, only Cambodia has reported cases of avian influenza H5N1 in the Western Pacific Region. Five cases have been reported; all were fatal.

Dr Partridge summarized the ongoing project to better define epidemiological and virological characteristics of influenza in the Western Pacific Region, as part of a collaborative effort to improve the understanding of disease burden in the Western Pacific Region and identify areas for improvement of surveillance and reporting. Influenza disease data were requested and collected by WHO from 16 countries and areas via survey. All 16 countries and areas responded to the survey by submitting weekly or monthly data by age group on influenza-like illness, acute respiratory infection (ARI), severe acute respiratory infection (SARI) and all-cause outpatient visits or hospital admissions data. Virological data were extracted from the GISRS database (FluNet) and validated and updated as required.

Surveillance systems and data collection methods, cases definitions and age categorizations varied across the Region. ILI, SARI and ARI were reported from 14, 5, and 4 countries or areas, respectively. Many challenges were observed, including data collection issues (timely and difficult collection, different case definitions, different methodologies in collection/sampling, missing data) and interpretation issues. The collection time period of three years was too difficult to determine patterns (especially since this period included the 2009 pandemic), and there was not enough data on ARI, SARI and age-specific categorizations to make solid conclusions related to these topics.

2.1.4 Presentation 4: An update from WHO Headquarters

*Dr Wenqing Zhang, WHO Headquarters, Geneva*

On 24 May 2011, the WHO Global Influenza Surveillance Network changed its name to the WHO Global Influenza Surveillance and Response System. WHO Headquarters supports GISRS in selected activities including coordination, virus surveillance, vaccine support, and development of the epidemiological surveillance strategy. Since the last biregional NIC meeting, WHO Headquarters conducted several activities related to these work areas, including: organizing two vaccine composition meetings; publishing the third NIC survey; updating/upgrading FluNet; organizing a meeting on improving the vaccine virus selection process; organizing the global NIC meeting; organizing two PCR working group meetings; publishing serological study protocols; updating guidance on use of rapid diagnostic tests; conducting trainings on sequencing and antiviral susceptibility surveillance; publishing guidance on using PCR versus virus isolation and the selection of representative viruses for shipping; and providing continuing support to the WHO Shipment Project.

Dr Zhang also provided overviews of the Pandemic influenza preparedness framework for the sharing of influenza viruses and access to vaccines and other benefits and the Report of the Review Committee on the Functioning of the International Health Regulations (2005) in relation to Pandemic (H1N1) 2009. The full documents can be found at:

Framework: http://apps.who.int/gb/ebwha/pdf_files/WHA64/A64_R5-en.pdf
IHR Review: http://apps.who.int/gb/ebwha/pdf_files/WHA64/A64_10-en.pdf

2.1.5 Presentation 5: WHO External Quality Assessment Programme for the detection of influenza virus type A by PCR

*Dr Wilina Lim, Centre for Health Protection, Hong Kong (China)*

External quality assessment is a critical component of a laboratory network. The objectives of the WHO External Quality Assessment Programme (EQAP) for the detection of influenza virus type A by PCR are to monitor quality and standards of performance, to facilitate information exchange, to identify problems with assays, to help develop testing strategies, and to provide mechanisms to remedy any deficiencies revealed.

In 2007, the GISRS sent its first panel of unknown specimens (Panel 1) as an external quality assessment to 64 participating NICs globally. The most recent panel, Panel 9, was sent to 160 laboratories. Results were reviewed at the WHO meeting in Tunisia in December 2010.

Another part of the EQAP is the Good Laboratory Practices (GLP) survey. The survey, first conducted in 2007 and composed of 73 questions, was sent to 64 laboratories. In 2010, it included 32 questions and was sent to 142 laboratories. Questions on the GLP survey addressed personnel, quality managements, design, equipment and consumables, pre-analytical procedures, analytical procedures, post-analytical procedures, reporting and record keeping and safety.

Discussion following the presentation recommended that EQAP would benefit from a review of materials for simulated specimens/scope, type/subtype/clade to include in the panel, and frequency of shipment.

2.2 Plenary 2: Influenza activity in the northern and southern hemispheres

*Chair: Dr Xiyan Xu, Co-chair: Dr Ondri Dwi Sampurno*

2.2.1 Presentation 1: Northern hemisphere

*Dr Takato Odagiri, WHO Collaborating Centre, Japan*

Influenza activity reports from the northern hemisphere for the previous few months (29 August 2010 to 29 January 2011) has shown a predominance of influenza A(H1N1) 2009 (31%), followed by influenza A(H3) (27%) and influenza B and influenza A (not subtyped). A peak in activity was observed during January 2011. The majority of influenza A(H1N1) 2009 viruses have remained antigenically homologous to influenza A/California/7/2009 vaccine virus. The 2011/2012 vaccine composition recommended by WHO for the northern hemisphere has not changed from the previous season.

Since January 2011, Japan has observed an increase of influenza A(H1N1) 2009 viruses with haemagglutination inhibition titres. Australia has also detected this phenomenon but at a lower proportion than Japan has found. China has not observed this, but are not detecting a lot of influenza A(H1N1) 2009 viruses at the moment.

2.2.2 Presentation 2: Southern hemisphere

*Dr Ian Barr, WHO Collaborating Centre, Australia*

It is still early for the 2011 influenza season in the southern hemisphere. There was increased out-of-season influenza activity in Australia in early 2011, with an increase in influenza A(H3N2) activity in 2011 compared to 2010. The A(H3N2) viruses were mostly related to influenza A/Perth/10/2010 genetically and influenza A/Perth/16/2009-like (antigenically). Pandemic A(H1N1) 2009 is still common in Australia and is mostly influenza A/Brisbane/70/2011 genetically and influenza A/California/7/2009-like antigenically. There are few influenza B viruses circulating (mainly B/Brisbane/60/2008-like – B/Victoria lineage). Currently 100% of influenza A(H3N2) and influenza A(H1N1) 2009 viruses are adamantine resistant. There are low levels of neuraminidase inhibitor resistance with <1% viruses currently oseltamivir (Tamiflu) resistant. There is little activity in New Zealand, South Africa or South America so far. The 2011 vaccine match so far appears good.

The discussions resulting from both the northern and southern hemisphere presentations highlighted the lack of major antigenic change in the three viruses circulating in the last few years.

2.3 Poster session

*Facilitators: Dr Ann Moen, Dr Anne Kelso*

A poster session was held to give NICs the opportunity to present information on how their influenza research or surveillance data are used for public health practice. Fourteen posters were displayed and discussed. Four posters were also selected for oral presentation.

2.3.1 Presentation 1: Characterization of human influenza virus circulation in Cambodia (2006–2010) and impact on national public health policies

*Dr Ly Sovann, Ministry of Health, Cambodia*
*Dr Philippe Buchy, Institut Pasteur in Cambodia, Cambodia*

The Cambodia National Influenza Centre characterized circulating influenza viruses from 2006 to 2010. Each year, influenza viruses generally circulate from June to December, which is during rainy season. Although Cambodia is geographically located in the northern hemisphere, influenza circulation has a southern hemisphere pattern. Therefore, while the northern hemisphere vaccine may provide some protection in Cambodia, the southern hemisphere vaccine is recommended.

2.3.2 Presentation 2: Epidemiological and virological characteristics of seasonal influenza in the Lao People's Democratic Republic, 2008–2010

*Dr Bouaphanh Khamphaphongphane, Ministry of Health,*
*the Lao People's Democratic Republic*

Information on influenza from the Lao People's Democratic Republic is limited. Seasonal patterns of influenza have not been previously described. The epidemiology of ILI based on results of sentinel surveillance conducted by the National Centre for Laboratory and Epidemiology (NCLE) was presented.

Descriptive analysis was conducted on 2348 samples taken from ILI patients who presented at seven sentinel hospitals in three regions of the Lao People's Democratic Republic between 2008 and 2010. A large proportion of ILI patients in the Lao People's Democratic Republic, particularly younger children, did not have influenza. Influenza affects all ages but mostly older children. Similar to other countries in the Region, influenza season is from June to December and is dominated by a different virus each year. ILI surveillance is critical in recognizing changing patterns of seasonal occurrence and associated burden of disease as contributing to future influenza vaccination policy and strategy.

2.3.3 Presentation 3: Translating influenza research and surveillance into public health practice in New Zealand

*Dr Q Sue Huang, National Centre for Biosecurity and Infectious Disease,*
*New Zealand*

National influenza surveillance and related research in New Zealand provide evidence for assessing and implementing public health strategies to control influenza. When population-based disease burden data were reviewed for the period 1992–1996, a greater influenza mortality rate was observed in the elderly compared to other age groups. This resulted in the introduction of free influenza vaccination to those 65 years and older in 1997.

A national seroprevalence study of influenza A(H1N1) 2009 indicated a higher infection rate in children (about one in every three) compared to other age groups. This led to the eligibility policy for pandemic vaccine to be extended to include children under 5 years old. In addition, annual virological surveillance in New Zealand identified predominant circulating strains and contributed annual virus strain selection for global vaccine production.

Public health measures have been associated with a significant decrease of influenza-related mortality, based on mortality surveillance data obtained during the post-vaccination period. Influenza research and surveillance in New Zealand is pivotal for guiding evidence-based public health measures to control influenza effectively.

2.3.4 Presentation 4: Seasonal pattern of influenza activity in the Philippines (2006–2008): research implications for recommendations for influenza vaccination

*Dr Remigio M. Olveda, Research Institute for Tropical Medicine, Philippines*

Influenza virus infection has been studied extensively in temperate countries but not in tropical countries like the Philippines. An influenza surveillance system was established in the Philippines in 2005 after creation of the NIC. A retrospective analysis of weekly trends in influenza virus infection was conducted using virological surveillance data collected from ILI cases reporting in health centres and outpatient clinics in hospitals in 11 regions in the Philippines from 2006 to 2008. Nasal and/or oropharyngeal swabs were collected from 40% to 50% of ILI cases and sent for viral isolation, typing and subtyping.

A distinct seasonal pattern of increased influenza activity was observed from the start of the rainy season in May (just before the opening of schools) to the end of November. This has important implications on the timing of influenza vaccination. Knowledge of existing influenza strains also helps determine the appropriateness of the vaccine strains recommended.

2.4 Group work 1: Quality assurance programmes

*Chair: Dr Wilina Lim, Co-chair: Dr Khin Yi Oo, National Health Laboratory, Myanmar*

Participants were divided into four groups to discuss quality assurance programmes, specifically, how they are used, if they are useful, and what more (if anything) is needed.

The importance of timely and accurate laboratory diagnosis of emerging diseases in a safe environment was highlighted in line with Focus Area 2 (laboratory) of the Asia Pacific Strategy for Emerging Diseases. APSED (2010) includes a component of strengthening external quality assurance for emerging disease diagnosis, and there is an opportunity to utilize influenza as a pathfinder. The expansion and coordination of laboratory networks is important in ensuring that the strategic directions of APSED (2010) are met.

While the current terms of reference of NICs do not require participation in the EQAP, a proposal to make participation mandatory was raised. A comparison was made to the EQAP requirement established as part of the Measles Laboratory Network, which is perceived to be a well-working model with laboratory accreditation conducted by WHO. However, it was noted that the perception of a punitive effect to a NIC as a consequence of poor results would need to be considered as the EQAP emphasizes an educational component and does not indicate the level of performance. Nonetheless, the EQAP provides an opportunity for laboratories to conduct self-assessment, identify challenges and find solutions to address them. The EQAP also provides staff with confidence in conducting their day-to-day work.

Several participants also requested that EQAP panels be more challenging, with inclusion of untypable influenza viruses. This could be addressed through, for example, inclusion of H9 and H7 strains, which not all laboratories have the PCR primers to detect. An alternative would be to use weak samples, such as those with low RNA titres, but temperature variations during shipment may render them unviable for testing.

While the importance of viral culture was highlighted by most countries, challenges such as shipment of live viruses were also raised. Lyophilized viruses, which are more stable than frozen viruses and can be shipped at room temperature, may provide a good alternative.

A proposal to establish an accreditation process for NICs was suggested as a way to support laboratories to operate using set standards. WHO was requested to pursue discussions with possible agencies to include areas of influenza laboratory requirements in an accreditation framework. WHO Headquarters is currently exploring this possibility.

2.5 Plenary 3: Influenza surveillance and reporting

*Chair: Dr Takato Odagiri, Co-chair: Dr Phengta Vongphrachanh, NCLE, Lao People's Democratic Republic*

2.5.1 Presentation 1: GISRS reporting and communication – FluNet and EZCollab

*Dr Wenqing Zhang, WHO Headquarters*

FluNet is a web-based interactive data reporting, query and mapping system for the support and coordination of national, regional and global influenza surveillance. The system houses data from 1997 to date for more than 80 countries.

FluNet was revamped in November 2010 to provide a more user-friendly platform for influenza data entry and generation of reports. In the Western Pacific Region, out of 21 NICs in 15 countries, 12 are currently using FluNet for reporting. NICs are encouraged to use the FluNet platform for influenza data reporting as it is instrumental in the semi-annual seasonal influenza strain selection for vaccine production.

EZcollab is an informal platform for information sharing. Its importance was highlighted during the A(H1N1) pandemic in 2009, when EZcollab was used for the rapid dissemination of information, guidelines and other useful information. All registered users of EZcollab receive e-mail notifications when updates are made on this website.

2.5.2 Presentation 2: Integration of epidemiological and laboratory data – challenges and perspectives in China

*Dr Zhen Xu, Center for Disease Control and Prevention, China*

China has 556 sentinel hospitals and 411 laboratories to support ILI surveillance. There is a real-time database for ILI, PCR and virus isolation results, which allows efficient reporting functions. To encourage timely reporting of data, quality monitoring is regularly conducted.

In addition to this, training workshops are conducted regularly. Feedback is provided through weekly reports posted on the official website and in the reporting system, allowing stakeholders to review weekly reports and provide comments With this system, China is working towards improving sentinel SARI surveillance and modelling the seasonal pattern of ILI. They also hope to use it as an early warning system, as a tool to describe disease burden and for vaccination policy-making.

2.5.3 Presentation 3: Integrated epidemiological and laboratory surveillance and reporting system in the National Influenza Centre in Mongolia

*Dr Alyeksandr Burmaa, National Center for Communicable Diseases, Mongolia*

Mongolia has three network laboratories and 197 influenza surveillance sentinel sites. Since October 2010, Mongolia has used a web-based system for reporting that has proven to be efficient for timely data collection. The sentinel sites share the same database and feedback of surveillance results is posted online in real-time. There is on-the-job training for health staff and statisticians in sentinel surveillance sites nationwide. Some functions of the system are still under development, particularly within the laboratory and epidemiology component. Future plans to overcome challenges and implement a better system include development of more comprehensive data analyses and reports, improvement of Internet access for sentinel sites and development of an English version of the website.

2.5.4 Presentation 4: Laboratory integration in influenza surveillance

*Dr Geethani Wickramasinghe, National Influenza Centre, Sri Lanka*

Sri Lanka is a developing country with limited resources. Until 2007 there was no organized continuous influenza surveillance. Influenza surveillance was initiated under the avian influenza preparedness plan of the GISN. The national network of laboratories consists of one NIC and two provincial laboratories. Training programmes were conducted to improve collection and transport of specimens and to introduce case definitions . The national influenza network consists of 20 ILI sites and three SARI sites. Each site sends 30 specimens per month to the NIC. In the future, Sri Lanka aims to improve subnational laboratories, improve routine surveillance, conduct disease burden studies, and initiate drug resistance monitoring.

2.6 Group work 2a: Summary of seasonal influenza in the Western Pacific Region

Participants were divided into four groups to discuss the draft summary of seasonal influenza in the Western Pacific Region and to make suggestions for improving the draft and developing it into a manuscript for publication. Challenges were noted and suggestions were made to improve the summary, including approaching countries and areas to obtain another two years of data, possibly linking ILI and virological data to determine if ILI is an indicator of influenza activity and including antigenic strains by zones (if incorporating vaccination strain matching data into the manuscript).

Overall, it was noted that while preparing the summary was challenging, there is value in presenting the data as a Region. For example, it can be used to put forward recommendations for future data improvements, such as annual NIC reports using a standardized format, introduction templates and harmonized case definitions. It was also noted that the process of reviewing the draft summary was useful in recognizing that while a great deal of progress has been made in the Region in terms of influenza surveillance, there is still work to be done to improve data collection and reporting.

2.7 Group work 2b: Strengthening NICs in the South-East Asia Region

Participants from the South-East Asia Region discussed the capacity of NICs in the Region, reviewed influenza surveillance activities and developed a summary of influenza surveillance challenges.

Discussions highlighted the following:

(1) the importance of sending people to workshops and conferences who will share their new knowledge with others in their respective countries or areas;

(2) the challenges associated with shipping and transport of specimens due to logistic difficulties;

(3) the challenges associated with persuading some countries to share data in a timely manner (discussions with government officials have shown good support to overcome this issue and FluNet was identified as a good way to share information on a global level); and

(4) the importance of purchasing good-quality laboratory equipment and ensuring you have timely service support in case equipment requires repair. Cheap equipment may cost more in the long term.

2.8 Plenary 4: Antiviral resistance surveillance

This session began with a presentation by Dr Aeron Hurt from the WHO Collaborating Centre in Melbourne, Australia. He presented factors that should be taken into consideration when establishing antiviral resistance surveillance. Participants were then invited to discuss antiviral resistance surveillance in their countries and areas.

Five broad questions should be considered before implementing antiviral resistance surveillance:

(1) Which drugs are being used in your country or area?

(2) Do you have a pandemic stockpile of antiviral drugs?

(3) What type of samples will you be testing?

(4) What is the current level of resistance in circulating strains?

(5) Will other laboratories be testing strains from your region for resistance?

The most appropriate methodology for antiviral susceptibility testing will depend on the needs of the laboratory. The choice of methodology will be based on various factors such as requirements for adamantane or neuraminidase-inhibitor resistance testing, source of testing samples, i.e. from patients being treated with antivirals or from community samples, availability of resources and budget, and staff expertise. Regardless of the methodology chosen, it is essential that there is an understanding of the limitations of assays and that staff can interpret data appropriately.

Participants discussed their current role in antiviral resistance surveillance, which is summarized below:

(1) Cambodia, China, Hong Kong (China), Mongolia, New Zealand, the Republic of Korea, India and Thailand are all involved in antiviral resistance surveillance and test using both genotypic and phenotypic methods.

(2) Fiji, New Caledonia and Singapore have found it more feasible to send samples to a collaborating centre for antiviral resistance surveillance, rather than doing internal testing.

(3) The Lao People's Democratic Republic and Sri Lanka send samples to a collaborating centre, and are also undertaking technical discussions and looking into the feasibility of conducting their own testing.

(4) Malaysia and Nepal do not do routine antiviral resistance testing as it is currently a low priority.

(5) Bangladesh, Myanmar and the Philippines have limited testing which is predominantly done in a research capacity.

(6) Viet Nam conducts genotypic testing on select samples and plans to conduct phenotypic testing in the future.

(7) Indonesia does not conduct antiviral resistance surveillance except on outbreak cases.

(8) The Democratic People’s Republic of Korea does not currently conduct antiviral resistance surveillance.

2.9 Group work 3: Development of the NIC/national influenza surveillance system's five-year workplan

A draft of the *Biregional Plan for Further Strengthening National Influenza Surveillance: Guiding the Way towards Influenza Control Policy and Regional Surveillance* was presented to participants. Participants discussed the draft in four working groups. Recommendations and suggestions were put forward to improve the plan.

The groups acknowledged that a pandemic could occur at any time, and countries and areas would need to have technical capabilities to detect influenza and the appropriate systems and policies to respond rapidly to untypable viruses. They would also benefit from the skills and knowledge to effectively link animal health and human health, link epidemiological and virological surveillance at the earliest possible time and obtain better surveillance data that will inform on timing of vaccination.

It was agreed that Member States should develop workplans and monitor progress in three areas of work: (1) defining the epidemiology and burden of influenza by linking virological and epidemiological surveillance and strengthening national networks; (2) improving virological testing capacity in the National Influenza Centres in an environment where safe laboratory practices and quality assurance are ensured; and (3) supporting national efforts and improving communication and reporting through the development or strengthening of regional and global networks.

WHO can assist with the development and implementation of workplans by:

(1) continuing to conduct annual NIC/National Influenza Surveillance System meetings to share experiences, address common issues, and improve communication between WHO NICs and collaborating centres;

(2) identifying training needs through NIC capacity assessments;

(3) supporting NICs to meet the minimum capacity requirements and quality standards;

(4) supporting countries with the development of a national influenza reporting system;

(5) developing a regional reporting platform;

(6) providing practical guidelines or technical assistance for burden of disease studies;

(7) developing a regional vaccine policy workgroup to look at regional vaccine introduction and use policies, the level of evidence or impact data by country, and vaccine production;

(8) supporting national efforts for the development of seasonal influenza control policies;

(9) supporting the development of national influenza awareness education strategies; and

(10) establishing links with regional influenza awareness activities.

2.10 Summary and closing of the full plenary sessions

*Dr Jeffrey Partridge, WHO Western Pacific Regional Office*

Dr Partridge made closing remarks prior to the group breaking into parallel sessions on the final day. He acknowledged the fruitful discussion on the WHO External Quality Assessment Programme, which will be used to improve the programme. He also noted that the meeting was a good opportunity to learn more about antiviral resistance surveillance in the two WHO regions. Specifically, countries and areas discussed current initiatives and some of the challenges and barriers they experience.

The development of a summary of epidemiological and virological characteristics of influenza in the Western Pacific Region is a great example of collaboration within GISRS. The process of reviewing the draft summary was useful for recognizing that while a great deal of progress has been made in the Region in terms of influenza surveillance, there is still work to be done to improve data collection and reporting. Efforts to work together on the summary to develop it into a manuscript for publication will continue.

The five-year *Biregional Plan for Further Strengthening National Influenza Surveillance: Guiding the Way towards Influenza Control Policy and Regional Surveillance* provides direction for reaching the vision of reducing morbidity and mortality associated with influenza in all countries and areas of the two regions.

Participants were acknowledged for their participation in a successful meeting, and for the excellent work achieved by all countries and areas.

*Dr Oommen John, WHO South-East Asia Regional Office*

Dr John thanked the meeting organizers for inviting the South-East Asia Region to participate in the meeting. The meeting highlighted the need to continually work towards harmonization of data to translate it into public health policy. The South-East Asia Region looks forward to strengthening networks and sharing data and knowledge in the future. It also hopes to prepare a summary of epidemiological and virological characteristics of influenza in the South-East Asia Region, similar to the one drafted by the Western Pacific Region. He concluded by acknowledging the lessons learnt from discussions during the meeting, and expressing his appreciation for the informal networks built. He looks forward to ongoing collaboration.

2.11 Plenary 5: Presentations and discussions with WHO collaborating centres

*Chairs: Dr Harpal Singh, Dr Dapeng Luo*

2.11.1 Presentation 1: A collaborating centre's perspective on the three Cs: collaboration, communication and capacity-building

*Dr Anne Kelso, Dr Patrick Reading, WHO Collaborating Centre, Australia*

To enhance collaboration in virological surveillance and isolation of vaccine viruses, collaborating centres request NICs to submit novel or unsubtypable viruses, recently circulating viruses, some clinical specimens for isolation of vaccine candidates and relevant clinical or epidemiological information. With timely virus submission, collaborating centres hope to provide NICs with urgent identification of novel or unsubtypable viruses, rapid reporting of results for circulating viruses and information on availability of vaccines matched to circulating viruses. Collaborating centres also hope to collaborate on research projects of mutual interest.

Collaborative networks can be strengthened through sharing of virological, technical and other information. This can be done effectively through meetings, telephone calls, e-mail and reports. WHO collaborating centres are committed to assisting NICs in laboratory-based detection of influenza viruses, particularly through training.

There were discussions surrounding the criteria for sending specimens from NICs to WHO collaborating centres. While there are no set criteria, the decision is often dependent on factors such as geographical feasibility, shipping and other logistical costs, permits and customs clearances. WHO was requested to provide guidance to NICs on how to select WHO collaborating centres for sending of specimens based on factors such as cost and logistics. There was notably good collaboration between WHO collaborating centres and NICs.

2.11.2 Presentation 2: Laboratory strategies and challenges for detection and characterization of influenza

*Dr Xiyan Xu, WHO Collaborating Centre, United States of America*

The strategies for detection of influenza, including detection of viral antigen, viral nucleic acid and live virus, were discussed, including the advantages and disadvantages of each strategy. An explanation of virus submission (why, when, what) was covered, including the steps involved in virus characterization at WHO collaborating centres.

A brief explanation of the challenges faced in the South Pacific was given. Rapid influenza diagnostic tests were initially seen a feasible option in areas that were remote and where more technologically advanced methods were not available. However, the low sensitivity of the tests and over reliance by physicians were notable problems. While immunofluorescence assays are gaining popularity, it was noted that they are highly operator dependent and require skills with microscopy for interpretation. This has resulted in laboratory staff being less comfortable and confident with the results. PCR has now become the mainstay and is perceived to be straightforward.

The lack of dry ice for packing and shipping of viruses could be addressed by using virus lysis buffers, which enable viruses to be shipped at room temperature for PCR. However, virus culture is not possible when lysis buffers are added.

2.11.3 Presentation 3: Improving influenza vaccine virus selection process – report from a WHO informal consultation, 14–16 June 2010

*Dr Wenqing Zhang, WHO Headquarters*

Retrospective studies have shown that WHO recommendations for influenza vaccine virus selection closely match the circulating viruses during the targeted season. However, since a decision on vaccine composition must be made almost one full year in advance of the peak of the targeted season, it is crucial for NICs to collect and forward representative samples to WHO collaborating centres in a timely manner for this continued public health benefit.

While the process is highly technical and complex, with numerous collaborative efforts, vaccine virus selection lies at the heart of global efforts against influenza. WHO will maintain its central role of coordinating worldwide expertise to meet increasing public health needs and work with the GISRS and its partners to identify improvements, harness new technologies, and strengthen and sustain collaboration.

2.11.4 Presentation 4: Efficacy of influenza A(H3N2) and B vaccines

*Dr Takato Odagiri, WHO Collaborating Centre, Japan*

This presentation discussed recent research into the efficacy of influenza A(H3N2) and B vaccines conducted by the WHO Collaborating Centre in Japan. The results from this study are expected to be published in the near future.

2.11.5 Presentation 5: Management and quality evaluation of influenza surveillance network in China

*Dr Dayan Wang, WHO Collaborating Centre, China*

In 1952, the Chinese Center for Disease Control and Prevention commenced influenza surveillance, and in 1957, the Chinese National Influenza Centre was established. In 1981, the Chinese NIC joined the GISN network.

The surveillance network in China is very extensive. The network covers not only all provinces, but also all prefectures and some counties. The surveillance objectives are:

(1) to monitor influenza activity in mainland China;

(2) to determine which influenza viruses are circulating;

(3) to detect changes in antigenic and genetic characteristics, and provide evidence for recommending circulating strain and vaccine strain; and

(4) to monitor for novel influenza viruses with pandemic potential.

China NIC is willing to share a simplified version of their information system; however, it should be noted that while the system is very good, ongoing improvement is necessary to address issues such as software bugs, slow processing speed and the generation of analytical reports.

## 3. MEETING OF INFLUENZA PUBLIC HEALTH RESEARCH AGENDA

The Fourth Meeting of the National Influenza Centres in the Western Pacific Region held in June 2010 commended countries that were advancing the research agenda and made a categorical recommendation for vaccine development and disease-burden studies on influenza. In order to develop strategies that will reduce the burden of influenza and to strengthen regional public health preparedness and response, a public health research agenda for influenza must be developed. This consultative meeting with expert researchers on influenza aimed to develop a five-year research agenda for national vaccine policy development. The objectives were:

(1) to facilitate discussion about research activities that would augment a five-year vaccine policy development plan;

(2) to develop a road map with listed research activities for vaccine policy development; and

(3) to discuss the necessary facilities and resources for the purpose of developing vaccine policy.

### 3.1 Module 1: Disease burden, vaccine target and effectiveness

*Chairs: Dr Yoshio Hirota, Dr Lance Jennings*

This module commenced with a presentation by Dr Sonja Olsen on "Influenza in Thailand: data for decision-making". She discussed how research in Thailand contributed to influenza vaccine policy changes. Prior to 2001, little was known about the burden of influenza in Thailand and the uptake of vaccine was minimal. Research studies identified susceptible populations, determined the burden and economic costs of influenza infections specific to Thailand, and influenced recommendations for vaccination policy changes, e.g. vaccinating the elderly and adults with chronic diseases.

In implementing an influenza vaccine programme in a country, it is important to know the burden of influenza in the community. Currently, many countries have implemented national influenza surveillance to monitor the trend of influenza activities, but few studies have been conducted on influenza disease burden. General discussion around disease burden and target audiences for vaccination highlighted the need for countries to know what data are collected, what

vital statistics are available, what health utilization surveys have been conducted, and what data are required.

Filling the gaps in knowledge research should begin with a literature review. After the literature review, two research paths should be considered: (1) identify core data requirements and ways to collect the data; and (2) undertake special studies to further understand influenza.

Burden of disease studies could focus on mortality, severity by age group, and hospitalization. The cost-effectiveness of a vaccination programme would help guide policy. Data need to be collected on basic demographics and denominator data. Studies should also consider target populations for vaccination, e.g. children, adults, the elderly, pregnant women, people living with chronic disease, and health workers.

### 3.2 Module 2: Vaccine selection, deployment and regulations

*Chairs: Dr Myoung-don Oh, Dr Takato Odagiri*

The meeting discussed the need for studies to address vaccine selection in prospects of influenza seasonality and vaccine manufacturing. Research in this area could identify influenza vaccines currently being used and production capacity in the Region, could identify seasonality/timing of vaccine use in tropical countries and could help determine which type of vaccine should be recommended based on cost, timing, availability, etc.

Vaccine deployment is a challenge in some countries. Issues associated with influenza vaccine deployment and administration should be identified to assist in the development of guidelines for deployment. Research could identify issues associated with influenza vaccine deployment and administration to develop guidelines.

### 3.3 Module 3: Design of research on disease burden, vaccine target and effectiveness

*Chairs: Dr Hitoshi Oshitani, Dr Bonduush Ichinkhorloo*

To move forward with the research agenda, it is possible to use a regional approach, i.e. data from a few countries could inform “all” countries. There is also a need to look for and validate “simplified” methods to define disease burden. Taking this approach is the simplest way to obtain the available core data for each country and area.

Some countries and areas have the capacity to conduct more sophisticated studies. Methods for moving from surveillance to disease burden studies are being developed by WHO Headquarters and Thailand. It was recommended that a regional practical guide for using surveillance systems for disease burden should be developed.

## 4. CONCLUSIONS

During the recent influenza A(H1N1) 2009 pandemic, when a novel virus strain was first reported, it became apparent that a global network of institutions was needed for influenza surveillance and the gathering, analysis and distribution of laboratory data. Throughout the pandemic, data availability and reporting was a testament to the great strides made by countries and areas in terms of strengthening surveillance systems, including establishment of laboratory facilities for case confirmation.

During the meeting, recommendations and suggestions were put forward to improve the draft *Biregional Plan for Further Strengthening National Influenza Surveillance: Guiding the Way towards Influenza Control Policy and Regional Surveillance*. It was agreed that countries and areas should develop workplans and monitor progress in three areas of work: (1) defining the epidemiology and burden of influenza, (2) improving virological testing capacity, and (3) improving communication and reporting through the development or strengthening of regional and global networks. WHO can assist in implementation by continuing its support and providing practical guidelines, tools, reporting platforms and forums for discussions.

Preparing the summary of epidemiological and virological characteristics of influenza in the Western Pacific Region was a greater challenge than first expected. However, it was agreed that the presentation of regional data was valuable. Further data collection was recommended to improve the understanding of disease burden in the Western Pacific Region and to identify areas for improvement in surveillance and reporting.

The research agenda meeting highlighted areas that need further research to better inform influenza vaccine introduction policy. It was recommended that research should begin with a literature review, followed by research to identify the core data required and special studies to fill knowledge gaps. To move forward with the research agenda, a regional approach to obtain data should be considered. A validated “simplified” method to define disease burden using surveillance systems was also recommend. Countries and areas that have the capacity could conduct studies to collect more sophisticated data.

The meeting was an excellent opportunity for participants to meet and share experiences. Several outcomes and actions were agreed upon.

(1) The five-year *Biregional Plan for Further Strengthening National Influenza Surveillance: Guiding the Way towards Influenza Control Policy and Regional Surveillance* will be finalized and disseminated after comments from participants have been addressed.

(2) Work on the summary of epidemiological and virological characteristics of influenza in the Western Pacific Region will continue with the collection of additional data from participating countries and areas.

(3) A regional influenza research agenda for the Western Pacific Region will be drafted based upon the deliberations of the meeting.

ANNEX 1

| | ***Day 1 – Tuesday, 7 June 2011*** | | ***Day 2 – Wednesday, 8 June 2011*** | | ***Day 3 – Thursday, 9 June 2011*** | | ***Day 4 – Friday, 10 June 2011*** |
|---|---|---|---|---|---|---|---|
| 08:00-08:30 | Registration | 08:15-09:15 | **Group Work 1: Quality Assurance Programmes**<br>- Programmes that are used currently<br>- Programmes that are useful<br>- Programmes that are needed<br>- Programmes that are better if multiple used for a particular test | 08:15-08:30 | Administrative Announcement | 08:15-08:30 | Administrative Announcement |
| 08:30-09:00 | **Opening session**<br>- Welcome and opening remarks<br>- Overview of objectives and agenda<br>- Group photo | | | 08:30-09:00 | Feedback from SEARO | 08:15-13:00 | **Plenary 5: Technical presentations and discussions with WHO Collaborating Centres**<br>- A Collaborative Centre's perspective on the three Cs: collaboration, communication and capacity building |
| 09:00-09:30 | *Coffee break* | 09:15-09:45 | *Coffee break* | 09:00-10:00 | **Plenary 4: Antiviral Resistance Surveillance**<br>Presentation and Discussion: What should be taken into consideration for establishing antiviral resistance surveillance? | | - Laboratory strategies and challenges for detection and characterization of influenza |
| 09:30-10:00 | Self introductions<br>Administrative announcements | 09:45-10:45 | Report back from Group Work | | | | *Coffee break* |
| 10:00-12:15 | **Plenary 1: Regional and global updates**<br>- APSED (2010)<br>- SEARO<br>- WPRO<br>- WHO/HQ<br>- WHO EQA Programme<br><br>Question and answer | 10:45-11:00 | **Plenary 3: Influenza Surveillance and Reporting**<br>GISN Reporting and Communication FluNet and EZCollab | 10:00-12:30 | **Group Work 3: Development of NIC/GISN 5-year workplan**<br><br>Previous 5-year plan and introduction to Group Work 3<br><br>*Coffee break*<br><br>Group Work 3 | | - Improving influenza vaccine virus selection process: report from a WHO informal consultation 14-16 June 2010<br><br>- Efficacy of influenza A/H3N2 and B vaccines<br><br>- Management and Quality Evaluation of Influenza Surveillance Network in China |
| | | 11:00-12:15 | Country Experiences with Surveillance and Reporting<br>- China<br>- Mongolia<br>- Sri Lanka | | | | |
| | | 12:15-12:30 | Introduction to Group Work 2 | | | | *Lunch* |
| *12:15-13:15* | *Lunch break* | *12:30-13:30* | *Lunch break* | *12:30-13:30* | *Lunch break* | | ***Day 4 – Friday, 10 June 2011*** |
| 13:15-14:30 | **Plenary 2: Influenza activity in the Northern and Southern Hemisphere**<br>- Northern Hemisphere<br>- Southern Hemisphere<br><br>Question and answer<br><br>*Coffee break* | 13:30-15:30 | **Group Work 2: Summary of Seasonal Influenza in the WPR**<br><br>Group A – Results (ILI, SARI, ARI) and Discussion<br>Group B – Results (ILI, SARI, ARI) and Discussion<br>Group C – Results (Virological) and Discussion<br>Group D – Results (Virological) and Discussion | 13:00-14:00 | Feedback from Group Work<br><br>14:00-14:30 Coffee break<br><br>14:30-15:00 **Summary and Closing Session** | | **Meeting of Influenza Public Health Research Agenda for the Western Pacific Region** |
| 14:30-15:00 | **Poster Session**<br><br>Poster Viewing<br><br>Poster Presentations<br>- Cambodia<br>- Lao PDR<br>- New Zealand<br>- Philippines | 15:30-16:00 | *Coffee break* | | | 08:00-08:30 | Registration |
| | | 16:00-17:00 | Feedback from Group Work | | Friday's session splits into two groups:<br><br>- Group 1: Continuation with conference<br>- Group 2: Public Health Research Agenda for the Western Pacific Region | 08:30-09:00 | **Opening Session**<br>- Welcome<br>- Introduction of meeting objectives and background |
| | | 17:00-17:30 | Moving forward with the Summary of Seasonal Influenza in the WPR manuscript<br>- Review and revision process<br>- Publication and authorship | | | 09:00-10:00 | **Module 1: Disease burden, vaccine target, and effectiveness**<br><br>*Coffee break* |
| 17:30-17:45 | Introduction to Group work 1 | | | | | 10:30-12:00 | Continuation – Module 1<br><br>*Lunch* |
| 18:00 | **Reception** | | | | | 13:00-15:00 | **Module 2: Vaccine selection, deployment and regulation**<br><br>*Coffee break* |
| | | | | | | 15:30-17:00 | **Module 3: Design of research agenda for vaccine policy development**<br>**Summary and Closing Session** |

ANNEX 2

# LIST OF PARTICIPANTS, TEMPORARY ADVISERS, OBSERVERS AND SECRETARIAT

## 1. PARTICIPANTS

## WESTERN PACIFIC REGION

CAMBODIA

Dr Sam An UNG, Director, National Institute of Public Health #2,
Kim Il Sung Boulevard, Khan Toul Kork, P.O. Box 1300, Phnom Penh
Tel. No.: (855) 1283 6781, Fax No.: (855) 2388 0339
E-mail: usa@camnet.com.kh

Dr Sovann LY, Deputy Director, Communicable Disease Control Department
Ministry of Health, No. 151-153 Kampuchea Krom Avenue, Phnom Penh
Tel. No.: (855) 1282 5424, Fax No.: (855) 2388 2317
E-mail: sovann_ly@online.com.kh

Dr Philippe BUCHY, Chief, Virology Division, Institut Pasteur du Cambodge
5 Monivong Boulevard, Phnom Penh, Tel No.: (855) 1280 2982
Fax No.: (855) 2372 5606, E-mail: pbuchy@pasteur-kh.org

Dr Heng SENG, Chief, Surveillance Bureau, Communicable Disease
Control Department, Ministry of Health, No. 151-153 Kampuchea Krom Avenue,
Phnom Penh, Tel. No.: (855) 1282 5424, Fax No.: (855) 2388 0441
E-mail: hengcdc@gmail.com

CHINA

Dr Xia GANG, Director, Division of Communicable Disease Control
Ministry of Health, No 1, Xizhimenwai Nanlu, Beijing
Tel. No.: (8610) 6879 2361, Fax No.: (8610) 6879 2342
E-mail: xiagang@moh.gov.cn

Dr Zhen XU, Chief, Branch of Respiratory Disease Prevention and Control
Division for Disease Control and Emergency Response, Chinese Center for
Disease Control and Prevention, No. 155, Changbai Road, Changping District
Beijing, Tel. No.: (8610) 5890 0505, Fax No.: (8610) 5890 0564
E-mail: xuzhen@chinacdc.cn

HONG KONG (CHINA)

Dr WONG Wang Christine, Principal Medical and Health Officer
Centre for Health Protection, Department of Health, 3/F, 147C Argyle Street
Kowloon, Tel. No.: (852) 2125 2288, Fax No.: (852) 3145 1544
E-mail: Christine_wong@dh.gov.hk

Dr LO Yee Chi Janice, Consultant Medical Microbiologist
Public Health Laboratory Centre, 5/F 382 Nam Cheong Street, Shek Kip Mei
Kowloon, Tel. No. : (852) 2319 8254, Fax No.: (852) 2776 5758
E-mail: janicelo@dh.gov.hk

| | |
|---|---|
| FIJI | Dr Prem Sanjeev SINGH, Acting Senior Medical Officer, Fiji Centre for Communicable Disease Control, Ministry of Health, Mataika House, Building 30, Suva, Tel. No.: (679) 332 0066, Fax No.: (679) 331 8227<br>E-mail: premdrsingh@gmail.com |
| LAO PEOPLE'S DEMOCRATIC REPUBLIC | Dr Sibounhom ARCHKHAWONGS, Director, Disease Prevention Division Department of Hygiene and Prevention, Ministry of Health, Simsuang Road Vientiane, Tel. No.: (856) 2099 8048, Fax No.: (856) 2124 1924<br>E-mail: sbh_dohp@yahoo.com |
| | Dr Phengta VONGPHRACHANH, Director, National Centre for Laboratory and Epidemiology, Ministry of Health, Simsuang Road, Vientiane<br>Tel. No.: (856) 2124 1924, Fax No.: (856) 2121 4010<br>E-mail: ncle@laotel.com |
| | Ms Bouaphan KHAMPHAPHONGPHANE, Acting Chief, Epidemiology Division, National Centre for Laboratory and Epidemiology Km 3, Thadeua Road, Vientiane, Tel. No.: (856) 2131 2351, Fax No. : (856) 2135 0209, E-mail: ncle@laotel.com or k_bouaphanh@hotmail.com |
| MALAYSIA | Dr Chong Chee KHEONG, Director, Disease Control Division Ministry of Health Malaysia, Level 4, Block E10, Complex E Federal Government Administrative Centre, 62590 Putrajaya<br>Tel. No.: (603) 8883 4276, Fax No.: (603) 8888 6215<br>E-mail: drchongck@moh.gov.my |
| | Mdm Norizah ISMAIL, Science Officer, National Public Health Laboratory Lot 1853, Kampung Melayu, 47000 Sungai Buloh, Selangor<br>Tel. No. : (603) 6126 1200, Fax No.: (603) 6140 2249<br>E-mail: norizah_ismail@moh.gov.my |
| MONGOLIA | Dr Nyamkhuu DULMAA, Director-General, National Center for Communicable Diseases, Nam Yan Yu Street, Ulaanbaatar<br>Tel. No.: (976) 9916 4451, Fax No.: (976) 1126 3631<br>E-mail: naraa61us@yahoo.com |
| | Dr Alyeksandr BURMAA, Head, EWAR Unit, National Center for Communicable Diseases, Nam Yan Yu Street, Ulaanbaatar<br>Tel. No.: (976) 9908 5415, Fax No.: (976) 1145 8699<br>E-mail: aburma69@yahoo.com |
| | Dr Oyuntsetseg PUREV, Officer, Department of Public Health Policy Implementation and Coordination, Ministry of Health, Government Bldg-8, Olimpic Street-2, Ulaanbaatar, Tel. No.: (976) 9979 0110<br>E-mail: Tseagromch@yahoo.com |
| NEW CALEDONIA | Dr Jean Paul GRANGEON, Medecin' Inspecteur, Influenza Surveillance Chef Du Service des actions Sanitaires de la Direction des Affaires Sanitaires et Sociales, Gouvernement de la Nouvelle-Caledonie, BP N4 98851 Noumea<br>Tel No.: (687) 243 700, Fax No.: (687) 243 714<br>E-mail: jean-paul.grangeon@gouv.nc |

Dr Anne Claire GOURINAT, Epidemiologist, Health Surveillance
Department of Health and Social Services, 98851 Noumea
Tel. No.: (687) 243 715, Fax No.: (687) 243 714
E-mail: agourinat@pasteur.nc

NEW ZEALAND

Dr Q. Sue HUANG, Science Leader – Virology, Communicable Disease Group
Institute of Environmental Science and Research, 66 Ward Street, Wallceville,
Upper Hut, Tel. No.: (644) 529 0606, Fax No.: (644) 529 0601
E-mail: Sue.Huang@esr.cri.nz

PHILIPPINES

Dr Remigio OLVEDA, Director IV, Research Institute for Tropical Medicine
9002 Research Drive, Filinvest Corporate City, Alabang, 1781 Muntinlupa City
Tel. No.: (632) 809 7599, Fax No.: (632) 842 2245
E-mail: rolvedamd_ritm_doh@yahoo.com

Dr Juan LOPEZ, Chief, Applied Pubic Health Division, National
Epidemiology Center, Department of Health, San Lazaro Compound
Rizal Avenue, Sta Cruz, Manila, Tel. No.: (632) 368 1508
Fax No.: (632) 732 9057, E-mail: jlo_nec@yahoo.com

Dr Vito ROQUE, Medical Specialist IV and Surveillance Unit Head
Public Health Surveillance and Informatics Division, National
Epidemiology Center, Department of Health, San Lazaro Compound,
Rizal Avenue, Sta Cruz, Manila, Tel. No.: (632) 732 9057
Fax No.: (632) 732 9057, E-mail: vitogroquejr@yahoo.com

REPUBLIC OF KOREA

Dr Chun KANG, Director, Division of Influenza and Respiratory Viruses
National Institute of Health, Korea Centre for Disease Control and Prevention
187 Osangsaengmyeong 2-ro, Gangoe-myeon, Cheongwon-gun
Chunguk 363-951, Tel. No.: (8243) 719 8190, Fax No.: (8243) 719 8219
E-mail: ckang@nih.go.kr

Dr Jinwoong MOON, Director, Infectious Disease Surveillance Division
Korea Centre for Disease Control and Prevention, Osong Health Technology
Administration Complex, Cheongwon-gun, Chunguk 363-951
Tel. No.: (8243) 719 8190, Fax No.: (8243) 719 8219,
E-mail: mjw3030@mw.go.kr

Ms PARK Sun Hee, Deputy Director, Division of Infectious Disease
Surveillance, Center for Communicable Disease Response
Korea Centre for Disease Control and Prevention, Osong Health Technology
Administration Complex, Cheongwon-gun, Chunguk 363-951
Tel. No.: (8243) 719 7163, Fax No.: (8243) 719 7188
E-mail: mjw3030@korea.kr

SINGAPORE

Dr Wen Sim Nancy TEE, Head, Department of Pathology and
Laboratory Medicine, KK Women's and Children's Hospital
100 Bukit Timah Road, Singapore 229899, Tel. No.: (656) 394 1350
Fax No.: (656) 394 1387, E-mail: nancy.tee.ws@kkh.com.sg

Ms Phoebe LEE, Public Health Officer, Ministry of Health
16 College Road, Singapore 169854, Tel. No.: (656) 325 9215
Fax No.: (656) 325 4679, E-mail: phoebe_lee@moh.gov.sg

VIET NAM

Dr NGUYEN Thanh Long, Director, National Influenza Centre
Ministry of Health, 167, Pasteur Street, District 3, Ho Chi Minh City
Tel. No.: (848) 202 878, Fax No.: (848) 231 419
E-mail: longpasteurhcm@yahoo.com

Dr DOMANH Hung, Chief, Epidemiology Department, Nha Trang Pasteur Institute, No 8 Tran Phu Street, Nha Trang City
Tel. No.: (914) 103 331, Fax No.: (583) 824 058
E-mail: manhhungpnt@yahoo.com

Dr VU Ngoc Long, Vice Chief, Department of Communicable Disease Control, General Department of Preventive Medicine
Ministry of Health, 135/1 Nui Truc Street, Ba Dinh, Ha Noi
Tel. No.: (844) 3845 6255, Fax No.: (844) 3736 6241
E-mail: longvutb@gmail.com

Dr NGUYEN Le Khanh Hang, National Influenza Centre,
Department of Virology, National Institute of Hygiene and Epidemiology
No 1, Yetsin, Ha Noi, Tel. No.: (844) 3972 6857, Fax No.: (844) 3821 0853
E-mail: khanhhangres@yahoo.com

## SOUTH-EAST ASIA REGION

BANGLADESH

Dr Mohammad Sabbir HAIDER, Medical Officer, Department of Virology
Institute of Epidemiology, Disease Control and Research, Dhaka – 1212
Tel. No.: (8802) 989 8796, Fax No.: (8802) 882 1237
E-mail: sabbir@iedcr.org

INDONESIA

Dr Ondri Dwi SAMPURNO, Head, Centre for Biomedical and Basic Technology of Health, National Institute of Health Research and Development, Ministry of Health, Jakarta, Tel. No.: (6221) 424 5375
Fax No.: (6221) 424 5386, E-mail: odsam19@yahoo.co.id

Dr Vivi SETIAWATY, Researcher, Centre for Biomedical and Basic Technology of Health, National Institute of Health Research and Development, Ministry of Health, Jakarta, Tel. No. : (6221) 424 5375
Fax No.: (6221) 424 5386

DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA

Dr Kim Jong HWAN, Senior Officer, Ministry of Public Health

Dr Ro Nam CHOL, Interpreter, Ministry of Public Health

MYANMAR

Dr Khin Yi OO, Head/Senior Consultant, National Health Laboratory
Yangon

| | |
|---|---|
| NEPAL | Dr Anand Kumar SHRESTHA, Chief, Avian Influenza Programme<br>Ministry of Health and Population, Kathmandu |
| SRI LANKA | Dr Geethani WICKRAMASINGHE, Consultant Virologist<br>Medical Research Institute, Baseline Road, Colombo<br>Tel. No.: (9411) 269 7280, E-mail: geethaniwvirology@yahoo.com |
| THAILAND | Miss Sunthareeya WAICHAROEN, Medical Scientist, National Institute of Health, Department of Medical Sciences, Ministry of Public Health<br>Tivanon Road, Nonthaburi, Tel. No.: (662) 951 0000 ext. 98408 and 99213<br>Fax No.: (662) 591 5449, E-mail: sunthareeya.w@dmsc.mail.go.th |

## 2. TEMPORARY ADVISERS

Dr Ian BARR, Deputy Director, WHO Collaborating Centre for Reference and Research on Influenza
10 Wreckyn Street, North Melbourne 3051, Victoria, Australia, Tel. No.: (613) 9342 3944
Fax No.: (613) 9342 3939, E-mail: Ian.Barr@influenzacentre.org

Dr Seiichiro FUJISAKI, Research Scientist, Center for Influenza Virus Research, National Institute of Infectious Diseases, Gakuen 4-7-1, Musashi Murayama, Tokyo, Japan, Tel. No.: (8142) 561 0771
Fax No.: (8142) 561 6149, E-mail: seifuji@nih.go.jp

Dr Aeron HURT, Senior Research Scientist, WHO Collaborating Centre for Reference and Research on Influenza, 10 Wreckyn Street, North Melbourne 3051, Victoria, Australia, Tel. No.: (613) 9342 3914
Fax No.: (613) 9342 3939, E-mail: Aeron.Hurt@influenzacentre.org

Dr Lance JENNINGS, Clinical Virologist, Canterbury Health Laboratories, Christchurch, New Zealand
Tel. No.: (643) 364 0075, Fax No.: (643) 364 0750, E-mail: lance.jennings@cdhb.govt.nz

Dr Anne KELSO, Director, WHO Collaborating Centre for Reference and Research on Influenza
10 Wreckyn Street, North Melbourne 3051, Victoria, Australia, Tel. No.: (613) 9342 3940
Fax No.: (613) 9342 3939, E-mail: anne.kelso@influenzacentre.org

Dr Wei-Ling Wilina LIM, Consultant, Medical Microbiologist, Public Health Laboratory Centre
382 Nam Cheong Street, Kowloon, Hong Kong, Tel. No.: (852) 2319 8252, Fax No.: (852) 2319 5989
E-mail: wllim@pacific.net.hk

Ms Ann MOEN, Associate Director, Extramural Programmes, Influenza Division, National Centre on Immunization, and Respiratory Diseases (NCIRD/CCID), Centers for Disease Control and Prevention
1600 Clifton Road, NE, MS A-20, Atlanta, GA 30333, United States of America, Tel. No.: (1404) 639 4652
Fax No.: (1404) 639 2334, E-mail: ALC3@cdc.gov

Dr Takato ODAGIRI, Head, Laboratory of Influenza Viruses, Department of Virology III, National Institute for Infectious Diseases, Gakuen, 4-7-1, Musashi-Murayama, Tokyo 208-0011, Japan
Tel. No.: (8142) 561 0771 ext 708, Fax No.: (8142) 561 0812, E-mail: todagiri@nih.go.jp

Dr WANG Dayan, Associate Professor, National Influenza Center, Institute for Viral Disease Control and Prevention, 155 Changbai Road, Changping District, Beijing, People's Republic of China
Fax No.: (8610) 5890 0859, E-mail: dayanwang@cnic.org.cn

Dr XU Xiyan, Virologist, Influenza Division, Centers for Disease Control and Prevention
1600 Clifton Road MS G-16, Atlanta, GA 30333, United States of America, Tel. No.: (1404) 639 1657
Fax No.: (1404) 639 2334, E-mail: xxx1@cdc.gov

## 3. RESEARCHERS

Dr Michael BAKER, Associate Professor, Department of Public Health, University of Otago,
P.O. Box 7343, Wellington South, New Zealand, Tel. No.: (644) 918 6802, Fax No.: (644) 389 5319
E-mail: michael.baker@otago.ac.nz

Dr Yoshito HIROTA, Professor and Chairman, Department of Public Health, Osaka City University,
Faculty of Medicine, 1-2-3, Asahi-machi, Abeno-ku, Osaka 545-8585, Japan, Tel. No.: (816) 6645 3755
Fax No.: (816) 6645 3757, E-mail: hiro8yoshi@med.osaka-cu.ac.jp

Dr Bonduush ICHINKHORLOO, Head, Quality Control Department, Public Health Institute
Bayanzurkh District, Peace Avenue – 17, Ulaanbaatar, Mongolia, Tel. No.: (976) 1148 1049
E-mail: ibonduush@yahoo.com

Dr Myoung Don OH, Chief, Division of Infectious Diseases, Seoul National University Hospital
Chongro-gu, Seoul 110-744, South Korea, Tel. No.: (822) 2072 2945, Fax No.: (822) 762 9662
E-mail: mdohmd@snu.ac.kr

Dr Hitoshi OSHITANI, Professor, Department of Virology, Tohoku University, 2-1 Seiryo-machi, Aoba-ku
Sendai, Japan, Tel. No.: (8122) 717 8210, Fax No.: (8122) 717 8212, E-mail: oshitanih@med.tohoku.ac.jp

## 3. OBSERVERS/REPRESENTATIVES

| | |
|---|---|
| ASIA-EUROPE FOUNDATION (ASEF) | Miss Naoko NODA, Advisor ASEM Initiative for Rapid Containment of Pandemic Influenza, Asia Europe Foundation (ASEF)<br>31 Heng Mui Keng Terrace, Singapore 119595, Tel. No.: (65) 6874-9752<br>Fax No.: (65) 6872 2246, E-mail: naoko.noda@asef.org |
| CENTERS FOR DISEASE CONTROL AND PREVENTION | Dr Andrew CORWIN, Medical Officer, American Embassy<br>Unit 8165, Box V, APO AP 96546-0001, Rue Bartholonie<br>That Dam, Vientiane , Lao People's Democratic Republic,<br>Tel. No.: (856) 2126 7059, Fax No.: (856) 2126 7193<br>E-mail: CorwinAL@state.gov |
| | Dr Brian KAPELLA, Medical Officer, Centers for Disease Control and Prevention Vietnam, U.S. Embassy Annex, 170 Ngoc Khanh, Ha Noi<br>Viet Nam, Tel No.: (844) 3850 5100 ext. 6173, Fax No.: (844) 3850 5028<br>E-mail: KapellaBK@vn.cdc.gov |
| | Dr Jeffrey MCFARLAND, Influenza Coordinator, China GDD Coordinator, China Country Director, China, US Centers for Disease Control and Prevention, Unit 7300 Box 0061, DPO AP 96521, United States of America<br>Tel. No.: (8610) 8532 2634, Fax No.: (8610) 8532 6363,<br>E-mail: jwm5@cdc.gov |

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|---|---|
| | Dr Sonja OLSEN, Influenza Program Director, Thai MOPH – US CDC Collaboration, DDC, 4th Fl, Bldg 7, Ministry of Public Health Sol 4 Tivanon Road, Nonthaburi 1100, Thailand, Tel. No.: (662) 580 0669 ext 451 Mobile: (6684) 874 2167, E-mail: sco2@cdc.gov |
| INSTITUT PASTEUR | Dr Paul BREY, Director, Institute Pasteur du Laos, Phieywat Village, Chanthabuly District, Vientiane, Lao People's Democratic Republic Tel. No.: (856 20) 7786 7865, E-mail: pbrey@pasteur.fr |
| MINISTRY OF HEALTH LAO PEOPLE'S DEMOCRATIC REPUBLIC | Dr Onechanh KEOSAVANH, Deputy Director National Centre for Laboratory and Epidemiology (NCLE) 3km Thadeua Road, Sisathanak District, Vientiane, Lao People's Democratic Republic, Tel. No.: (856) 2131 2351, Fax No.: (856) 2135 1006 E-mail: onechanh_k@yahoo.com |
| | Dr Kongmany SOUTHALACK, Deputy Director, National Centre for Laboratory and Epidemiology (NCLE), 3km Thadeua Road, Sisathanak District, Vientiane, Lao People's Democratic Republic, Tel. No.: (856) 2131 2351, Fax No.: (856) 2135 1006 E-mail: K_Southalack@yahoo.com |
| | Dr Thongchanh SISOUK, Chief, Laboratory Division, National Centre for Laboratory and Epidemiology (NCLE), 3km Thadeua Road, Sisathanak District, Vientiane, Lao People's Democratic Republic Tel. No.: (856) 2131 2351, Fax No.: (856) 2135 1006 E-mail: ssk_thong@yahoo.com |
| | Dr Darouny PHONEKEO, Vice Chief, Laboratory Division, National Centre for Laboratory and Epidemiology (NCLE), 3km Thadeua Road, Sisathanak District, Vientiane, Lao People's Democratic Republic Tel. No.: (856) 2131 2351, Fax No.: (856) 2135 1006 E-mail:darounyphonekeo@hotmail.com |
| | Dr Simmaly PHONGMANY, Chief, Infectious Diseases, Infectious Diseases Department, Mahosot Hospital, (Influenza surveillance coordinator), Simeuang Road, Sisathanak District, Vientiane Lao People's Democratic Republic |
| | Dr Khamla CHOUMLIVONG, Chief, Infectious Diseases, Infectious Diseases Department, Sethathirath Hospital, (Influenza Surveillance Coordinator) T4 Road, Sisathank District, Vientiane, Lao People's Democratic Republic E-mail: khamla_choumlivong@yahoo.fr |
| | Dr Sanong THONGSNA, Head, Cardio Vascular Division, Mittapab Hospital (Influenza surveillance Coordinator), T4 Road, Sisathank District, Vientiane Lao People's Democratic Republic, E-mail : thongsna@yahoo.com |
| | Dr Sinakhone XAYADETH, Technical Staff, Laboratory Division National Centre for Laboratory and Epidemiology (NCLE) 3km Thadeua Road, Sisathanak District, Vientiane, Lao People's Democratic Republic, Tel. No.: (856) 2131 2351, Fax No.: (856) 2135 1006 |

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| REGIONAL EMERGING DISEASE INTERVENTION CENTRE (REDI) | Ms LEE Soo Sim, Assistant Director, Laboratory Research<br>10 Biopolis Road, #02-01 Chromos, Singapore 138670<br>Tel. No.: (65) 6478 8521, Fax No.: (65) 6874 7031<br>E-mail: lsoosim@redi.org.sg |
| UNITED STATES DEPARTMENT OF HEALTH AND HUMAN SERVICES | Miss Anne YU, Senior International Health Analyst<br>International Influenza Unit, Office of the Secretary,<br>United States Department of Health and Human Services,<br>United States of America, Tel. No.: (1202) 205-5534<br>E-mail: anne.yu@hhs.gov |
| VICTORIAN INFECTIOUS DISEASE REFERENCE LABORATORY | Dr Patrick READING, WHO Collaborating Centre for Reference and Research on Influenza, 10 Wreckyn Street, North Melbourne 3051 Victoria, Australia, Tel. No.: (613) 9342 3917, Fax No.: (613) 9342 3939<br>E-mail: Patrick.Reading@influenzacentre.org<br><br>Dr Naomi KOMADINA, WHO Collaborating Centre for Reference and Research on Influenza, 10 Wreckyn Street, North Melbourne 3051 Victoria, Australia, Tel. No.: (613) 9342 3944, Fax No.: (613) 9342 3939<br>E-mail: Naomi.Komadina@influenzacentre.org |
| WELLCOME TRUST | Dr Paul NEWTON, Director, Wellcome Trust, Simeuang Road<br>Sisathanak District, Vientiane, Lao People's Democratic Republic<br>Tel. No.: (20) 7785 4118, E-mail: paul@tropmedres.ac |

## 5. SECRETARIAT

| | |
|---|---|
| WHO/REGIONAL OFFICE FOR THE WESTERN PACIFIC | Dr Takeshi KASAI, Director, Health Security and Emergencies<br>World Health Organization Regional Office for the Western Pacific<br>P.O. Box 2932, 1000 Manila, Philippines, Tel. No.: (632) 528 9730<br>Fax No.: (632) 521 1036, E-mail: kasait@wpro.who.int<br><br>Dr Jeffrey PARTRIDGE, Epidemiologist, Emerging Disease Surveillance and Response, World Health Organization Regional Office for the Western Pacific, P.O. Box 2932, 1000 Manila, Philippines<br>Tel. No.: (632) 528 9732, Fax No.: (632) 521 1036<br>E-mail: partridgej@wpro.who.int<br><br>Ms Emma Jane DENEHY, Consultant, Emerging Disease Surveillance and Response, World Health Organization, Regional Office for the Western Pacific, P.O. Box 2932, 1000 Manila, Philippines<br>Tel. No.: (632) 528 9730, Fax No.: (632) 521 1036<br>E-mail: denehye@wpro.who.int |
| WHO/LAO PEOPLE'S DEMOCRATIC REPUBLIC | Dr Reiko TSUYUOKA, Team Leader/Epidemiologist<br>Emerging Disease Surveillance and Response, Office of the WHO Representative in the Lao People's Democratic Republic<br>World Health Organization, 125 Saphanthong Road, Unit 5<br>Ban Saphangthongtai, Sisattanak District, Vientiane<br>Lao People's Democratic Republic, Tel. No.: (856) 2135 3902<br>Fax No.: (856) 2135 3905, E-mail: tsuyuokar@wpro.who.int |

| | |
|---|---|
| | Mr Joseph FOY, Consultant, Emerging Disease Surveillance and Response<br>Office of the WHO Representative in the Lao People's Democratic Republic<br>World Health Organization, 125 Saphanthong Road, Unit 5,<br>Ban Saphangthongtai, Sisattanak District, Vientiane,<br>Lao People's Democratic Republic, Tel. No.: (856) 2135 3902<br>Fax No.: (856) 2135 3905, E-mail: foyj@wpro.who.int |
| WHO/MALAYSIA | Dr Harpal SINGH, National Professional Officer, Office of the<br>WHO Representative in Malaysia, Brunei Darussalam and Singapore<br>World Health Organization, 1st Floor, Wisma UN, Block C, Komplek Pejabat<br>Damansara, Jalan Dungun, Damansara Heights, Kuala Lumpur, Malaysia<br>Tel. No.: (603) 2093 9908, Fax No.: (603) 2093 7446<br>E-mail: singhh@wpro.who.int |
| WHO/MONGOLIA | Dr Dapeng LUO, Team Leader and Scientist, Focal Point for Avian Flu<br>Office of the WHO Representative in Mongolia, World Health Organization,<br>Ministry of Health, Government Building-8, Ulaanbaatar, Mongolia<br>Tel. No.: (976) 1132 0183 Fax No.: (976) 1132 4683,<br>E-mail: LuoD@wpro.who.int |
| WHO/NORTHERN MICRONESIA | Dr Boris PAVLIN, Country Liaison Officer, World Health Organization<br>CLO/Federated States of Micronesia, Department of Health Social Affairs<br>1/F Mogethin Building, National Capital Complex, Palikir,<br>Federated States of Micronesia, Tel. No.: (691) 320 2872<br>Fax No.: (866) 868 3940, E-mail: pavlinb@wpro.who.int |
| WHO/ VIET NAM | Dr Babatunde OLOWOKURE, Epidemiologist and Team Leader<br>Communicable Disease Surveillance and Response, Office of the<br>WHO Representative in Viet Nam, 63 Tran Hung Dao Street<br>Hoan Kiem District Ha Noi, Viet Nam, Tel. no.: (844) 943 3734<br>Fax No.: (844) 943 3740, E-mail: olowokureb@wpro.who.int |
| WHO/ REGIONAL OFFICE FOR SOUTH-EAST ASIA | Dr Oommen JOHN, Consultant, Immunization and Vaccine Development<br>World Health Organization, Regional Office for South-East Asia (SEARO)<br>Indrapastha Estate, Mahatma Gandhi Road, New Delhi 110002<br>Tel. No.: (9111) 233 7804, Fax No. : (9111) 316 5095<br>E-mail: johno@SEARO.WHO.INT |
| WHO/HEADQUARTERS | Dr Wenqing ZHANG, Scientist, Communicable Diseases<br>Global Influenza Programme, World Health Organization<br>Avenue Appia 20CH-1211, Geneva 27, Switzerland<br>Tel. No.: (4122) 791 4282 Fax No.: (4122) 791 3111,<br>E-mail: zhangw@who.int<br><br>Dr Tim NGUYEN, Technical Officer, Disease Monitoring, Assessment and<br>Control, Global Influenza Programme, World Health Organization<br>Avenue Appia 20, CH-1211, Geneva 27, Switzerland<br>Tel. No.: (4122) 791 3246, Fax No.: (4122) 791 3111<br>E-mail: Nguyent@whi.int |