



International Pandemic Preparedness and Response Conference 18–19 April 2011

Organised by the RSIS Centre for Non-Traditional Security (NTS) Studies

CENTRE FOR
NON-TRADITIONAL
SECURITY STUDIES



INTERNATIONAL PANDEMIC PREPAREDNESS AND RESPONSE CONFERENCE 2011: FINDING THE BALANCE BETWEEN VIGILANCE, WARNING AND LESSONS FROM DISASTER MANAGEMENT

REPORT

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THE RSIS CENTRE FOR NON-TRADITIONAL SECURITY (NTS) STUDIES

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This report summarises the proceedings of the Conference as interpreted by the rapporteurs and editors of the RSIS Centre for NTS Studies. Participants neither reviewed nor approved of this report. This Conference report adheres to a variation of the Chatham House Rule. Accordingly, beyond the speakers and paper presenters cited, no attributions have been made.

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Executive Summary

Two years on from the 2009 H1N1 outbreak, public interest in the matter, as well as the vigilance of some authorities involved, may have significantly waned. However, the need to be prepared for future pandemics remains important. It is thus an appropriate time to take stock of the lessons learnt from recent episodes of dealing with novel viruses, such as severe acute respiratory syndrome (SARS), H5N1 and H1N1, as well as many elements that make up the global disease burden including longer-standing health problems such as dengue, malaria, chikungunya and tuberculosis.

Many countries developed detailed plans for dealing with pandemics of emerging and re-emerging infectious diseases subsequent to SARS, but there remains much to learn and improve upon, not least of which is the need to turn plans into successfully implemented actions. It is also the case that plans have to operate across various sectors of government and society, as well as be flexible enough to adapt to changing conditions.

One criticism of the recent responses to H1N1 is that, when it became clear that the virus, while widespread, was relatively mild, some agencies and governments took considerable time to reflect this in their actions and communications.

The issue of communication is also particularly pertinent as clear, reliable and actionable information at such times is essential. Some have argued that it was the gap between public pronouncements and the reality on the ground that led to low vaccine uptake rates when it became available in the later stages of the H1N1 outbreak. This is unfortunate as, in many ways, the development of the H1N1 vaccine, less than six months after the virus was first identified, was itself a triumph of human ingenuity and social organisation. Accordingly, it remains important to manage both risks and perceptions.

Public responses to the recent outbreaks cover the spectrum of oversensitivity to complacency and fatigue. Each of these is a problem for the authorities, as they need to find an appropriate balance in periods of uncertainty.

This may be a particular challenge in developing countries, or those plagued by other natural disasters which occur more frequently. In such cases, competing resource commitments may divert funding away from the infrequent pandemic outbreaks, and towards the more common requirement of addressing regular needs, thereby relegating pandemic preparedness to a level where it may not receive the attention that some think it should.

In light of these issues and the need to find sustainable and feasible solutions to the challenges posed by future pandemic outbreaks, the Centre for Non-Traditional Security (NTS) Studies at the S. Rajaratnam School of International Studies (RSIS), Nanyang Technological University, Singapore, convened the International Pandemic Preparedness and Response Conference 2011 themed 'Finding the Balance between Vigilance, Warning and Lessons from Disaster Management' in Singapore from 18 to 19 April 2011.

This Conference brought together a wide array of participants, including health professionals, academics, policymakers, government officials, representatives from regional and international organisations, security analysts and members of non-governmental organisations (NGOs) from across Asia and beyond to share information and exchange ideas on the lessons to take away from the handling and management of past pandemics in the region. The Conference also aimed to discuss and determine the best ways forward to prepare for future pandemics or outbreaks without compromising other health security and disease priorities.

The Conference addressed questions under six subthemes, and a number of noteworthy points were raised:

- *Flexibility in pandemic preparedness and response*

It was noted that in a world where no two pandemic pathogens are the same, it would be difficult and unwise to employ a single model of action to prepare for and

respond to a pandemic threat. It was also argued that successful pandemic preparedness and response plans must be flexible, and at the same time, practical. They need to take into account country-specific considerations, capacities, existing mechanisms and structures, resource commitments and pre-existing disease burdens.

- *Risk communication during and after pandemics*

Risk can be under-communicated or over-communicated during a pandemic, each bringing with it its own undesirable set of consequences. It was argued that it remains tricky to find a balance between the two, and to communicate messages of risk in a moderate manner, thereby encouraging positive action while deterring panic among the public. It was also argued that the social and cultural context of risk communication during a pandemic needs to be more closely examined, and that in order to ensure more effective risk communication, there is a need to continue questioning and challenging the assumptions and preconceptions of the society and culture in which the communication takes place.

- *One response plan for pandemics and other crises*

It was contended that while it would be difficult to design one master response plan that would adequately address all the ramifications of a pandemic, greater multisectoral involvement in pandemic preparedness and response planning would greatly enhance national and international capacity to cope with a pandemic situation. It was also argued that by preparing sectors providing essential services such as water, healthcare and energy for a pandemic situation – through increased collaboration and cooperation, better resource allocation and planning, increased provision of information, and active coordination of each sector's behaviours and actions – these sectors would also be better prepared to cope with other unexpected crises.

- *International collaboration in pandemic preparedness*

It was argued that although there are noteworthy efforts in international collaboration when it comes to pandemic preparedness, there remain significant gaps to be filled. Primary surveillance gaps exist because authorities lack an understanding of the communities

they serve, and communities lack engagement with top-down legislation and efforts. International research collaboration continually encounters problems thanks to various structural barriers, as well as funding, resource and politically influenced imbalances. It was also noted that governance structures in various countries may vary due to political, economic, developmental and cultural differences, and these continue to hinder international collaboration. In spite of these obstacles, however, international collaborative projects, particularly those that involve the whole-of-society approach, are gaining momentum.

- *Beyond pandemics: The non-pandemic disease burden*

It was argued that contemporary global public health focuses on health security, and that this has resulted in an emphasis on urgency in relation to, and crisis management of, a few selected threats, one of which is the pandemic threat. It was also noted that not enough consideration is given to how a country's ability to respond to a pandemic can be adversely impacted by its pre-existing disease burden of non-pandemic diseases, particularly within the Southeast Asian and Asia-Pacific context where many such diseases are endemic. It was argued that, in many cases, the effective management of the non-pandemic disease burden can help ease the many challenges posed by the clinical management of and responses to pandemic outbreaks.

- *Ways forward and policy recommendations*

It was noted that in a socio-cultural climate of pessimism and dwindling trust in government and authority, the context in which societies now respond to threats is the main determinant of the responses to them. It was suggested that this politicisation of health needed to be gradually reversed so as to ensure appropriate and measured response levels to a future pandemic threat. It was also proposed that greater attention is paid to clarifying the purpose of pandemic preparedness and response plans. More importantly, there is a need to examine what these plans have achieved; it is essential to look at where they were effective, where they did not deliver and how to bridge such gaps.

Opening Session

Welcome Remarks

Ambassador Barry Desker

Dean,

S. Rajaratnam School of International Studies (RSIS),

Nanyang Technological University (NTU),

Singapore

Ambassador Barry Desker began by welcoming all guests to the Conference, the third in an annual series of health conferences organised by the RSIS Centre for Non-Traditional Security (NTS) Studies. He acknowledged the aim of the Conference: to bring together leading practitioners, scholars, officials and other interested parties from both within and beyond the region to critically discuss the latest developments and thinking in the field. He noted that the theme of this year's Conference links the responses to pandemics to lessons learnt from other areas, such as the health-related dimensions of disasters, and that this could not be timelier.

He spoke of the H1N1 pandemic that confronted the region in 2009, as well as the severe acute respiratory syndrome (SARS) and H5N1 (avian influenza) outbreaks. He also acknowledged that recent events – the Indian Ocean tsunami of 2004, Cyclone Nargis that hit Myanmar in 2008, the Sichuan earthquake of 2008 and the regular typhoons and cyclones that afflict the region each year – demonstrate that the Asia-Pacific remains prone to a wide variety of natural disasters. The health impacts of these natural disasters may be more far-reaching than those of pandemics and other emerging or re-emerging infectious diseases. Amb. Desker expressed his sympathies to those affected by the recent disasters in Japan and New Zealand, and noted that these events offer reminders of the importance of being prepared to employ active responses ahead of time.

A large range of other health security threats can also be seen in Southeast Asia. Infectious diseases remain endemic, and continue to blight the lives of many. Malaria, dengue, cholera, tuberculosis and hand, foot and mouth disease affect thousands throughout the region each year.

It is with these problems in mind, and with a view to clarifying what could be learnt in terms of the way in which these issues are addressed and how they could be linked at the multisectoral level, that the RSIS Centre for NTS Studies decided to convene the Conference.

In the context of the Conference theme of finding a balance between vigilance and warning, Amb. Desker noted that many have pointed out the relative mildness of the H1N1 outbreak in 2009. There were suggestions that the resources used in dealing with the outbreak and communicating the threat vastly outweighed those available to deal with other health problems. So, he queried, is it ultimately better to be safe than sorry, or does the cost of prioritising the issue divert attention away from various other, sometimes more pressing, issues?

He suggested that it may be that the requisite balance between maintaining vigilance (and preparedness), and being effective when the time comes, is best achieved through pursuing generic healthcare capacity rather than specific strategies to pre-empt problems that may never arise. A key issue is how countries and authorities should go about communicating this, especially to the public at large. He concluded by noting that it is with such subtle issues in mind – issues that require a fine sensitivity, not just towards the effective communication of information, but also what shapes contemporary culture – that the rationale and objectives for the present two-day meeting are founded.

Guest of Honour's Address

Associate Professor Ho Peng Kee

*Senior Minister of State for Law and Home Affairs,
Singapore*

Associate Professor Ho Peng Kee observed the timeliness of the Conference and its theme of finding the right balance between vigilance and flexibility. He highlighted that two years have passed since the H1N1 pandemic broke out and he cautioned against complacency setting in. Indeed, he noted that there are quite a number of people who believe that pandemics will always be mild. In this context, however, he recalled a few devastating pandemics that have confronted the world, including the 1918 Spanish influenza, the 1957 Asian influenza and the 1968 Hong Kong influenza.

In terms of how well prepared and vigilant governments and other actors should be, he suggested that criticisms that focus on the perceived over-reaction of countries during the H1N1 pandemic actually miss the crucial point, arguing instead that it was a useful exercise in enhancing countries' preparedness for the 'next big one' should it occur and when it comes.

He pointed to the present concerns surrounding H5N1, noting that outbreaks had recently been reported in countries such as Bangladesh, Vietnam, Myanmar, Indonesia and Egypt. In South Korea and Japan, it is believed that the virus has been re-introduced into the commercial poultry industries. So, given the mere possibility that a pandemic may arise or mutate/spread with significant implications, how vigilant should countries aim to be? What sort of planning scenario should they adopt?

Some believe that it is necessary to plan based on a worst-case scenario. Others believe it is more realistic to plan for a most-likely scenario. Prof. Ho identified the difficulties associated with the latter approach, including the inherent ambiguities and hesitation that go along with it. Nevertheless, he ultimately agreed that it was for countries to decide for themselves the most feasible strategy for their own purposes. This would ideally take into account factors such as availability of resources and expertise, effectiveness of disease surveillance systems, access to healthcare, and susceptibility of the population to infection.

No matter the scenario chosen, however, he argued that the key lies in maintaining a degree of flexibility. This might involve, for instance, developing a plan whereby actions identified for the initial phase of a pandemic could be recalibrated once the severity of the virus becomes clearer. Thus, the vital point is to be able to scale responses up and down accordingly. There would be different tiers of measures for scenarios of varying intensity.

One of the advantages of flexibility is that pandemic response plans and frameworks could be adapted for the management of other crises, such as natural disasters and terrorist incidents. For instance, the command and control structure for pandemic outbreaks could be utilised in other national crisis situations. Planning for the distribution of essential items, the disposal of bodies and the handling of public communications could also be easily applied to other events.

Prof. Ho concluded by noting that the participants of the Conference came from different backgrounds, including medicine, disaster management, consulting and public health. He was heartened that all in attendance recognised the benefit of participating in such a Conference, where lessons on an issue of both global and local concern could be shared.

Introductory Remarks

Associate Professor Ralf Emmers

*Acting Head,
Centre for Non-Traditional Security (NTS) Studies,
S. Rajaratnam School of International Studies (RSIS),
Nanyang Technological University,
Singapore*

Associate Professor Ralf Emmers began by introducing the RSIS Centre for NTS Studies. The Centre was established in May 2008, and serves as the Secretariat of the Consortium of Non-Traditional Security Studies in Asia (NTS-Asia), a network of more than 20 research institutions. In 2009, it was selected as one of the three institutions to lead the MacArthur Asia Security Initiative on Internal Challenges. The Centre currently runs six different research programmes, including the Health and Human Security Programme, the convenor of the Conference.

Prof. Emmers acknowledged that pandemic outbreaks remain a key health challenge for the world today. Two years after the 2009 H1N1 outbreak, there remains a need to be better prepared for future pandemics. In order to address pandemic preparedness and response questions, it is essential to take stock of the lessons learned from recent outbreaks of new diseases such as SARS and H5N1, and from endemic diseases such as dengue and malaria.

In particular, he noted that the Conference sought to delve deeper into two important recent lessons: (1) the need to turn international collaborative plans into successfully implemented actions; and (2) the need for flexibility in pandemic response to ensure adaptive capacity in the face of evolving outbreak conditions.

Keynote Address

Professor David Heymann

*Head of the Centre for Global Health Security at Chatham House, UK;
Professor, London School of Hygiene & Tropical Medicine, UK;
Chairman, Health Protection Agency, UK;
and former World Health Organization (WHO) Assistant Director-General for Health Security and Environment, and Representative of the Director-General for Polio Eradication*

Professor David Heymann's presentation focused on pandemic preparedness in the context of lessons learnt from recent public health emergencies. He began by presenting participants with a brief overview of some of the emergencies of disease at the human-animal interface that have occurred since 1976, from Ebola to H1N1. These are diseases that are present in animals, and may variously cause symptoms or occur without any symptoms, but nonetheless eventually find their way into human populations, and include viruses, bacteria, fungi and protozoa. He noted that, over the past 30 or 40 years, there has been an annual increase in these diseases being identified throughout the world. This trend is especially evident in industrialised countries, where they are more easily detected than in developing countries.

Prof. Heymann began by highlighting the difficulties associated with risk assessment of infectious agents and the potential of a pandemic outbreak. The difficulties arise from several factors. To begin with, when an infectious disease emerges at the human-animal interface, there are several possible pathways it may take. For instance, an organism could infect one human and cause disease, and then fail to transmit any further (e.g., salmonella). Another possible emergence is one that may continue transmission for a short amount of time, with transmission

subsequently ceasing and the disease again becoming sporadic (e.g., human monkeypox). Yet another possibility is that an infectious agent emerges in human populations, continues its transmission and eventually becomes endemic (e.g., HIV/AIDS). Another important variable is the virulence of an organism, which may increase or decrease, leading to the disease becoming either more severe, or conversely, asymptomatic over time. Finally, Prof. Heymann acknowledged the tremendous negative economic impacts (due to lower levels of trade, tourism and travel) that infectious diseases can bring about.

Prof. Heymann argued that the current overarching paradigm for potential pandemics takes the detection of disease in humans as its departure point, subsequently responding by locating the infected animal population and then culling them. However, this approach can prove very costly, as illustrated by the case of mad cow disease in the UK in the 1990s. He did, however, identify some present attempts to transform this paradigm into one that examines the animal-human interface more closely. For instance, he referred to instances in the UK of experts from various fields (both those studying human populations and those focused on animals) coming together to discuss what is happening in their respective areas, enabling better insights into what diseases might infect humans, and at least determining tendencies through this close surveillance.

However, Prof. Heymann posited that it may be necessary to go back even further than the animal-human interface, to the precise determinants of the infections. He provided a number of examples of possible determinants, including risky trade, free range animal husbandry in village settings, domestic-wild animal contact and instances of intensive agriculture being undertaken in unsanitary conditions. He suggested that in order to address the roots of the

problem, there would need to be a whole series of cross-sectoral activities involving food and animal regulation, practices in commerce and a range of other measures that go well beyond the remit of the health sector, and require significant political interventions. A better understanding of the determinants of animal infection would ultimately provide a more effective and cost-efficient method than the approach (i.e., identifying the infectious disease in humans, and subsequently detecting and eradicating the animal source) favoured by the prevailing paradigm.

Prof. Heymann then examined the critical issue of the availability of vaccines and medicines for pandemic preparedness. He referred to the case of numerous development agencies – mainly in the G8 countries – that were particularly active prior to 2000. He acknowledged the ease with which these agencies would provide funding for vaccines (they perceive vaccines as a cost-effective form of intervention) while simultaneously stalling when it came to providing medicines, even if the medicine was for treating a transmissible disease such as tuberculosis. Although there has been some positive movement away from the severe bias towards vaccines (to the detriment of medicines/treatments), the long-term sustainability of the more significant global funds/initiatives is nonetheless uncertain, which presents difficulties in mobilising necessary resources.

On this same theme, in the context of H5N1, he acknowledged its spread among poultry in Asia since 2003, and its present differentiation/rapid mutation, leading to the question of whether there might be an H5N1 pandemic. He noted that although there are some stockpiles of products to treat and prevent the infection, there is very limited production capacity for influenza vaccines, and that production would fall well short in the hypothetical case of a global pandemic.

A related issue is that of equitable access to the benefits derived from sharing vaccines and viruses, a concern which has been brought to the fore by Indonesia. Although recent discussions in the WHO will lead to a more equitable distribution of the benefits, the extent to which the situation improves will nonetheless be limited; and there is still the ultimate issue of ensuring access to the drugs needed in the event of a pandemic. Key questions of where the necessary vaccines would come from, and how we can ensure more equitable access to both drugs and vaccines, remain to be examined.

Prof. Heymann then examined the central issue of risk communication using the cases of the H1N1 pandemic and H5N1. He noted the difficulties associated with communicating risk, especially in cases of precautionary risks (due to the lack of complete understanding among the communicators). In the case of H1N1, there was quite a lot of confusion regarding what was to be said in the written press; and there were messages in all types of written media describing catastrophic events, which ultimately led to a sense of apathy setting in. In addition to the written press, people were also communicating on the issue of risk on Facebook, Twitter and other social

media sites, often without a real understanding of the risks involved but merely armed with their own perceptions. This, he argued, provides another important lesson: risk communication typically occurs very rapidly through various outlets, and oftentimes, those communicating the risks do not have the necessary skills or knowledge.

Prof. Heymann ended by reiterating the core lessons from his examination of, and experiences with, real and potential pandemics. He noted the need for a better understanding of the determinants of animal infection; the need for careful scientific investigation and informed decisions through complete risk assessment; the importance of ensuring more equitable access to medicines and vaccines for all diseases, globally; the importance of understanding how risk communication is carried out, including communication by individuals who often disseminate distorted assessments of risk; and ultimately, the need to expect the unexpected. Here, Prof. Heymann used the analogy of Swiss cheese (and a 'Swiss cheese event'), whereby all the holes (epidemiological risk factors) may by chance line up, leading to a public health disaster. The emergence of SARS, he said, illustrated this perfectly.



Panel 1: Flexibility in Pandemic Planning, Preparedness and Response and Its Security Implications

Chair:

Mr Kwa Chong Guan

Head of External Programmes,
S. Rajaratnam School of International Studies (RSIS),
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Panellists:

Associate Professor Leo Yee Sin

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Tan Tock Seng Hospital,
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Singapore

Dr I. Nyoman Kandun

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and former Director-General, Centre for Communicable
Diseases,
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Dr Sarah M.Y. Choi

Head, Emergency Response and Information Branch,
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Department of Health,
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Arguably, a more flexible approach to tackling a potential pandemic outbreak can lead to its more effective management and control. Such an approach would involve identifying the various unique facets of pandemic planning, preparedness and response. Preparedness measures should be open to adjustments and amendments so as to enable a tailored, effective, scenario-based response to the pandemic at hand. Given these considerations, this session focused on three main topics:

- Lessons from Singapore's immediate past experiences in pandemic planning and response.
- The specificity involved in pandemic planning and response, with Indonesia as a case study.
- Ways to improve responsiveness in pandemic planning, as suggested by Hong Kong's pandemic experience.

Pandemic Preparedness and Response: Lessons from Singapore's Immediate Past Experiences

Disease outbreak management in Singapore, as a geographically compact, densely populated city-state, was described as a major national public health priority. Local healthcare systems are under the mandate of the Ministry of Health. In Singapore, 80 per cent of acute healthcare is provided for in the public healthcare sector, and 80 per cent of primary healthcare in the private sector.

There are seven public acute healthcare hospitals in Singapore, of which Tan Tock Seng Hospital (TTSH) is one. TTSH runs the Singapore Communicable Disease Centre (CDC), which would fall under the direction of the Ministry of Health in the event that they are called to be the first responding centre for clinical management and care in an outbreak situation.

Singapore has faced several disease outbreaks in recent years:

- *Nipah, 1999*

Nipah first broke out in Malaysia in 1999, arriving in Singapore not long after. Singapore was unprepared for the outbreak and thus did not know how to handle it effectively, but was arguably fortunate that Nipah is a purely zoonotic disease and not transmissible from human to human.

Singapore managed to curb Nipah at its source by slaughtering all live imported pigs, closing down abattoirs and targeting abattoir workers who were at highest risk of infection. One failure in infection control was acknowledged, that is, the failure to take the prevention of intra-hospital (nosocomial) disease transmission into account.

Also, local healthcare professionals were inexperienced in infectious disease management and made errors such as cramming many patients into small healthcare facilities and not wearing adequate personal protective equipment. Only after this outbreak did clinicians consider the potential ramifications of a more severe outbreak – particularly one capable of human-to-human transmission – for Singapore.

- *Severe acute respiratory syndrome (SARS), 2003*

Singapore was a major international hotspot during the SARS outbreak of 2003. The first cases in the country were four local women who had recently returned from Hong Kong. One of them was admitted to hospital with a diagnosis of community-acquired pneumonia. Clinicians were however unable to provide a definitive diagnosis after various tests came back negative. Only later did authorities learn of SARS from the World Health Organization (WHO) and other sources. From that point on, the government instituted triage management, one-stop management at entry points, stringent compulsory training in the use of personal protective equipment, and mask fittings for clinicians and healthcare providers. Healthcare infrastructure was also engineered to increase isolation capacity, and thermal screening (because elevated temperature was a symptom of SARS) was implemented.

A problem that was quickly recognised was that many patients were located in open wards with shared bathroom facilities, heightening the risk of intra-hospital transmission. At TTSH, for example, because clinicians took over a week to diagnose the Hong Kong returnee as a SARS patient, one wave of transmissions occurred within the hospital, affecting healthcare workers and visitors. In response, TTSH instituted multiple-level infection control practices that enabled it to reduce transmissions within

the hospital. Ultimately, the government of Singapore locked down TTSH as the country's designated SARS-exclusive hospital, directly admitting patients with SARS symptoms and taking in patients with such symptoms from other hospitals.

Upon gaining more information on SARS characteristics, TTSH changed its patient management system, designating a pay-class ward as a triage centre. Patients who were admitted were classified as low- or high-risk. High-risk patients were immediately isolated to minimise intra-hospital transmission. Patient-centred management was also instituted, which involved healthcare workers rotating from patient to patient. It was also mandatory for all healthcare workers to have their temperature taken three times a day. If a healthcare worker was found to have an abnormal temperature on more than two occasions in a day, they would be removed from the facility. This was arguably a pertinent disease control measure, in light of the fact that 41 per cent of SARS patients were healthcare workers. After a SARS patient was discharged, strict quarantine orders were given to them; community engagement was cited as a major factor in controlling infections post-discharge of patients.

The point was made that the government's SARS containment strategies worked well. Although some labelled these measures 'draconian', the most important question that needs asking post-SARS is whether these strategies could and should be used in other outbreak situations. In other words, are all pathogens equal?

- *Chikungunya, 2008*

Chikungunya, a vector-borne infection carried by two types of Aedes mosquitoes, both of which are found in Singapore, broke out in 2008. Successes from SARS prompted the authorities to implement a similar containment strategy to control the outbreak. All febrile suspects were admitted and tested using the polymerase chain reaction (PCR) method. They were discharged only if they had two consecutive negative results.

However, healthcare workers later learned that fever was not a good symptom for identifying the disease. This was discovered when the Ministry of Health launched

a proactive effort to visit infection sites in order to test blood from individuals residing around outbreak areas. This resulted in the detection of one individual who was infected with the virus but did not have elevated temperature levels.

An important lesson from this is that it is no longer unusual to see antigens in circulation before symptoms such as fever begin to show in individuals. In some cases, there are no clear-cut clinical indicators differentiating symptomatic from asymptomatic patients.

- *H1N1, 2009*

H1N1 (swine flu) arrived in Singapore in mid-2009. This strain of influenza posed a new set of challenges as its characteristics were different from that of SARS and H5N1. In the case of SARS, most patients become infectious only when they show clinical symptoms. With H1N1, however, asymptomatic shedding occurs and the disease begins transmitting early. This resulted in a host of clinical challenges, and it was argued that the country's previously instituted containment strategies might not be effective in dealing with H1N1. In spite of this, the outbreak management system continued to encourage steps based on the SARS model, including thermal-scanner barricading of all entry points from the first day of the WHO alert in April 2009, pandemic drills, and public education efforts such as teaching schoolchildren to take their body temperature and encouraging the public to wear masks.

From a clinician's perspective, however, the most important question was whether existing health facilities could adequately handle critically ill patients. At the time, there was no certainty that the same facilities and equipment used to handle SARS could be used to tackle H1N1. A series of measures based on the SARS and chikungunya model was implemented at hospitals, including thermal scanning, admission of all suspected cases, and utilisation of the same principles of discharging after two consecutive negative PCR test results. However, it took a month of these heightened activities to identify the first case of H1N1 and even longer to detect local transmission patterns and disease clusters. Realising this, the government changed its H1N1 strategy from

containment to mitigation about two months into the outbreak.

H1N1 vaccines were also stockpiled, but uptake was slow. It was noted that while this attracted criticism, many clinicians felt that the rapid development and availability of the vaccine was a breakthrough development and should be commended.

As the above outline of Singapore's experiences with outbreaks of different pathogens show, it is difficult to reconcile the use of a single model of action to react and respond to every outbreak. Not all outbreak-causing pathogens are equal, and preparing a country for an outbreak requires leadership, capacity, capability, resource commitment, infrastructure, and multisectoral involvement and networks. Preparedness and response plans would need to be practical and flexible.

Finally, a call for a broader approach to dealing with health issues was sounded. It was noted that pandemics, being high-impact events, often receive more attention than other health priorities such as the drug-resistant pathogens, bacteria and viruses that cause illness and death on an everyday basis. These non-pandemic disease burdens (both communicable and non-communicable) must also be investigated and given consideration.

The Specificity of Pandemic Planning: Indonesia as a Case Study

Pandemics, it was argued, could have a strong adverse impact on health security if there is delay in detection and notification, and if the response to the pandemic is late or inappropriate. Pandemics were acknowledged to have multi-layered, multisectoral impacts, including public health consequences, fatalities, socioeconomic impacts from absenteeism and other opportunity costs, unwanted media and political attention, and rising fear and anxiety among members of the public.

Pandemics have a global impact but these impacts vary between and within countries. For example, the 1918 Spanish influenza pandemic data show that mortality rates in Europe and North America were significantly lower than those in Asia, sub-Saharan Africa and Latin

America. Several possible reasons were cited, including lack of access to adequate medical care, weak public health infrastructure, and social and host factors such as population density and health co-morbidities. The implication of the presence of varied factors is that pandemic planning needs to be tailored specifically to each country's situation. The case of Indonesia was then used to expand on this argument.

Indonesia is a developing country of over 237 million inhabitants, comprising 17,000 islands administratively subdivided into 33 provinces and 480 districts. Its major health challenges include tuberculosis, HIV/AIDS, malaria, diarrhoea and pneumonia. Governance-wise, Indonesia's system is decentralised, and disease control measures are mandated at district level under the authority of district-elected officials. The archipelagic geography of the country, the biodiversity of wildlife and livestock (which implies a large and diverse reservoir of zoonotic diseases) and the rural-urban disparity have made national pandemic preparedness efforts particularly complex and challenging.

Indonesia has a significant history of pandemics, with the earliest reported ones occurring in 1957 and 1969. It was noted that knowledge of the history and epidemiology of influenza in the country was limited, both among the general population as well as health authorities. It was only in the period 2000 to 2005 that research studies and surveillance work began to be done to assess the country's influenza burden. This was partly spurred on by H5N1, which was found in birds in August 2003, followed by the detection of the first human case, and then a cluster, in the outskirts of Jakarta in 2005. After the discovery of the human cluster, the government, and more specifically, the Ministry of Health, struggled to manage two important issues simultaneously: the response to H5N1 outbreaks in humans and birds, and the mobilisation of government authorities to prepare for a pandemic.

The public health sector in Indonesia operates on a set of key guiding principles: public health necessity, reasonable and effective means, proportionality, distributive justice, trust and transparency, and the Siracusa Principles (which state that limitations on human rights must be based

on a legitimate objective; be the least restrictive and intrusive means; and not be arbitrary, unreasonable or discriminatory).

These guiding principles mean that an important issue during a pandemic is equitable access to healthcare during a pandemic. Among questions raised were: how to allocate vaccines, antivirals and hospital care; whether or not some population groups such as healthcare workers, women or children should have priority in receiving treatment or drugs; and how to allocate limited healthcare resources to both a pandemic and the existing healthcare burden in a balanced and moderate manner. Within the Indonesian context, the upholding of public health ethics was a continuing struggle. For example, a donation of influenza vaccine from the WHO was deliberated in parliament but was not passed.

Given these complex circumstances, it was argued that Indonesia's responses to H5N1 and H1N1 emphasised measures that were feasible given Indonesian's limited resources. Efforts focused on controlling the disease at its animal source, preparing for containment in an attempt to prevent the virus from transmitting efficiently from human to human, and lastly, initiating a risk communication campaign that would enable the population to prevent infection at individual, family and community levels.

It was argued that there is a need to regard pandemic planning as a living process, so that a flexible approach to tackling outbreaks and pandemics can be achieved. The plan has to have provisions for response adjustments to effectively tackle different levels of disease severity. For countries with limited resources, regional and global cooperation would be important in bridging resource gaps. Recent frameworks, such as the WHO International Health Regulations (IHR) and the One World, One Health initiative, provide the basis for building flexibility and collaboration.

Based on past experience and indications that the ingredients for new influenza viruses with pandemic potential are present, it was argued that a future pandemic looms large. Thus, the only answer is to be prepared. It was suggested that, in most developing countries,

vulnerable communities were in general not as well-protected by disease prevention and control policies and programmes as populations in developed countries due to myriad problems, including limited resources, expertise and facilities to implement pandemic preparedness plans.

Indonesia, it was noted, is generally only able to commit a limited amount of resources to influenza surveillance and response due to its other public health priorities and a significant pre-existing disease burden. In the case of H5N1, however, the global emergency associated with the disease resulted in resources being allocated towards the development of comprehensive pandemic preparedness plans, and the enhancement of capacity in diagnostics, case management and outbreak response. These activities, it was suggested, then provided the basis for similar responses in the case of H1N1. Future efforts could focus on formulating a clearer picture of the epidemiology of the pathogen at hand and building a comprehensive vaccine strategy. The existing H5N1 and H1N1 situation should also be monitored for possible mutations, adaptation and reassortment that could trigger a new outbreak.

It was noted that a number of key lessons could be drawn from the Indonesian experience. High-level political commitment and whole-of-society involvement on a continual basis are needed in order to ensure successful pandemic preparedness planning. Better collaboration needs to be forged between government departments, the private sector and civil society in order to more effectively coordinate response efforts. A stronger emphasis on public health ethics considerations is needed when assessing and executing pandemic response measures. Preparedness requires education and awareness at community, family and individual levels. Lastly, the growing resource gap is an issue that needs to be prioritised.

Enhancing the Responsiveness of a Pandemic Preparedness Plan: Hong Kong's Experience

It was noted that in Hong Kong, 'responsiveness', when used in a pandemic preparedness context, refers to flexibility in a pandemic situation. The emphasis on

responsiveness meant greater adaptability in the face of the varied, and often evolving, circumstances of a pandemic.

Hong Kong uses a five-pronged pandemic preparedness strategy: reducing the risk of human infection, emergency response planning, maintaining surge capacity, enhancing the preparedness of legal systems, and communication.

Pandemic preparedness planning was described as anticipating potential scenarios that could result from a pandemic, identifying the steps needed to handle it, and acquiring and mobilising the resources needed to implement those steps. These three elements are integral to the success of any response, as only by anticipating future needs could the necessary groundwork be laid before a pandemic struck. A pandemic plan was then likened to a type of software that enables the effective, centralised running of hardware (such as vaccines or medications and public health laws) to control and manage an outbreak.

Scenario planning is at the heart of preparedness planning within the Hong Kong context. Hong Kong employs a three-tier response system, with situations categorised as 'alert', 'serious' or 'emergency'. Each response level corresponds to a graded level of risk, depending on the epidemiological scenario. For example, in the case of H5N1, 'alert' meant confirmation of an H5N1 outbreak in poultry outside of Hong Kong; 'serious' referred to confirmation of H5N1 outbreaks in poultry within Hong Kong, or the confirmation of a human case of H5N1 in Hong Kong, but without evidence of efficient and sustained human-to-human transmission; and 'emergency' denoted confirmation of efficient human-to-human transmission of H5N1 either overseas or within Hong Kong.

Each level had specific public health objectives as well. The aim of the alert phase was to prevent the importation of disease, the serious phase to limit disease transmission and exportation, and the emergency phase to minimise mortality.

In terms of command structure, the alert phase mobilised mainly departments, the serious phase mobilised some bureaux, and in the emergency phase, a committee chaired by the Chief Executive would be formed, with the involvement of nearly all bureaux of the Hong Kong government.

Under this system, a pandemic plan would systematically set out response levels; state the possible scenarios that could undermine each response level; outline the public health objectives of the plan; enforce a strategic command structure and stipulate response measures that would be undertaken given different scenarios. It would also set out precisely which agency would undertake which actions during a pandemic, thereby enhancing coordination between sectors, agencies and bureaux.

It was argued that a very important function of a pandemic plan is as a public communications tool. Publics tend to panic during a pandemic, which has potential security ramifications such as social unrest and sometimes chaos. Given this tendency, a pandemic preparedness plan could be helpful in managing expectations, as it provides a framework for explaining the severity, or otherwise, of a situation, and also for communicating to the public what they can expect the government to do in the event of certain scenarios.

It was admitted, however, that Hong Kong's pandemic plan was not without its flaws. In 2005, the Hong Kong authorities drew up a plan specifically for highly pathogenic avian influenza (HPAI), but without reference to other strains of novel influenza. This was because at that time, they were under the impression that an HPAI strain would be the most likely candidate for a future pandemic. However, this turned out to be not the case. It was noted that this flaw is relatively easy to rectify; other strains of influenza could be added as reference points.

Another weakness was that the response plan was tied to specific events or scenarios, which led to inflexibility when events did not progress as expected. The plan also appeared to operate on the assumption of a specific level of outbreak severity, creating further problems when the outbreak did not turn out to be as serious as anticipated.

The point was made that, in the pandemic preparedness planning process, knowledge gleaned from prior pandemic outbreaks is of utmost importance. The previous two pandemics, SARS and H5N1, reminded the public health world that it would not be able to precisely predict what influenza strain would cause the next pandemic, or its impact, severity, geographical spread and epidemiology. Other uncertainties include the susceptibility of a population and a pathogen's sensitivity to antivirals.

In light of the uncertainties associated with trying to anticipate pandemics, it was proposed that pandemic response levels should be evaluated according to a graded risk profile based on an assessment of a set of factors, rather than on scenarios. This profile, it was argued, could better cater to unforeseen situations, as it assesses factors such as the transmissibility of the infection, the geographical spread of the disease in animals and humans, the pathogen's clinical severity, the vulnerability of human populations, how pre-existing immunity plays a role in the virus infection and the availability of preventive measures and/or equipment. At the beginning of a pandemic, information on these factors is often limited, if available at all. Therefore, it was argued, erring on the side of precaution would be a wise decision. As the pandemic evolves, it is likely that more information on the disease and the outbreak would become available, which would enable the periodic review and re-grading of responses and response levels to match the disease's changing risk profile.

In terms of legal preparedness, Hong Kong passed a major amendment to its pandemic-related laws in 2008, just prior to the 2009 H1N1 outbreak – Hong Kong's old pandemic-related laws was replaced by the Prevention and Control of Disease Ordinance (Cap. 599). The legislation was not designed to cover all infectious diseases; the initial list had about 40 selected diseases, including types H2, H5, H7 and H9 influenza (but not H1 influenza). It was deemed neither possible nor appropriate to advocate a one-size-fits-all legal approach to handle all infectious diseases. In particular, some measures, such as isolation and the destruction of infectious articles, are not necessarily applicable to all diseases.

However, the ordinance does incorporate a mechanism to cope with novel diseases as they arise; one of its key features is the ability to amend the list of applicable diseases within 24 hours. Legal powers to control a new pandemic could thus be conferred rapidly. This, it was argued, improves the capacity of authorities to respond to pandemics.

The ordinance's second key feature is the provision of statutory power to support a full range of response measures from surveillance through to isolation and quarantine of persons and places. The exercise of these powers is not tied to any particular scenario. Public health officials are given the discretion to use them according to the prevailing pandemic situation, which allows for a degree of flexibility of action.

Its third key feature is the Public Health Emergency regulation, which allows the government to make emergency regulations. This mechanism is admittedly slightly draconian, seldom used and subject to periodic review – but it is still important as it allows authorities to make rapid decisions during a Public Health Emergency, in many cases prior to new laws being passed. Interestingly, although this new legislation was not put together with H1N1 in mind, it actually served Hong Kong's purposes quite well during the H1N1 pandemic. Nevertheless, Hong Kong, it was observed, still struggled with inflexibility in terms of pandemic planning.

In conclusion, the point was made that flexibility in pandemic preparedness and planning remains key. However, this does come with a price. Allowing for flexibility means less clarity and less certainty of action and response during a pandemic outbreak. While a pandemic plan is useful for communicating risk to the public, this capacity can be severely impeded when clarity is reduced. To overcome this, it was suggested that the authorities increase communication during a pandemic. For example, in Hong Kong, during a pandemic, senior health officials would have regular press briefings to inform the public on the evolving status of an outbreak and the specific actions taken by the government to control and manage the situation, so as to reassure them that the situation was being adequately, efficiently and effectively handled.

Discussion

In an era where countries tend to err on the side of precaution, who would be the first to adjust their pandemic response? The first to do so, it was suggested, would be accused of being cavalier in their attitudes towards their public. Thus, governments would be more likely to wait for others to make the first move. For example, WHO Director-General Margaret Chan pointed out in a statement that despite the WHO advising that H1N1 was a mild disease that most people recovered fully from in a few days, many governments deferred to the precautionary principle. Often, there were private admissions of overblown responses, but in public, the official government line was promoted. A comment was made that if officials implement policies that they do not believe in, the real problem is a crisis of confidence among the elites.

A related issue was brought up: should governments start with a low alert level and scale up, or should they start high and scale down later? It was argued that erring on the safe side is justifiable in the context of a disease presenting a high-risk profile. It would also be reasonable at the initial stages of an outbreak when the information needed to build the risk profile of a particular disease outbreak is not yet available. Given the lack of information, the wisest approach would then be to institute a high alert level in the first instance, and adjust responses, including public communication, as more information comes in. While this is not a perfect solution, the panel opined that it could lead to better control of an outbreak situation. Such a strategy could, however, leave a government open to criticism of over-preparation. It was proposed that one way to manage this is to inform the public that the information they receive is subject to change and review, and that the government would do its best to keep them informed at all times.

The panel agreed that when dealing with disease outbreaks, expecting the expected is just as important as expecting the unexpected. It was argued that, in many parts of the world, pandemics are expected events; yet, problems in detection, response and evaluation of disease severity still arise. Early detection was one of the issues seen during Singapore's recent outbreaks. The

first signs of trouble came from practicing clinicians who had unusual information on illnesses. However, the information was murky and experts could not decipher it until epidemiological links between different patients at different facilities, but with the exact same symptoms, had been established. It was suggested that to overcome such problems, and prevent delay in responses, more sophisticated surveillance systems which incorporate ground-level information transfers need to be instituted.

There was a consensus that it would not be effective to use only a specific set of clinical indicators across a range of different pathogens. Instead of funnelling funding and resources into conventional indicator structures such as thermal scanners, it was proposed that authorities look more closely into allocating resources to other areas, such as deciphering a pandemic pathogen's characteristics. Much of this, it was admitted, is as much contingent on public and authorities' expectations as ground conditions. The panel observed that, during H1N1, many ASEAN countries continued to fall back on SARS control measures despite knowing that H1N1 had completely different clinical indicators. It is thus important to continually reassess whether strategies that were once effective in a prior pandemic would be valid and applicable in a new pandemic situation.

Another issue of concern was the reliability and use of information coming out of other countries. When there is a pandemic outbreak, countries look to each other for information on its severity. During SARS, for example,

nations not affected by the outbreak looked to the Asian region for information, even though the region was itself struggling to obtain information for its own uses. Nations affected by an outbreak, on the other hand, tend to look towards countries such as the US and member states of the European Union as these countries have the capacity to offer much-needed diagnostic assistance. However, information received from other countries may be difficult to make sense of. The information could make the disease out to be very severe; reliance on such information could lead countries to switch to high alert levels that might not match an outbreak's actual spread and severity. It is therefore important to allow information to freely flow in, and then titrate it to a more appropriate level depending on the scenario. There is also a need for better research on outbreaks in the Asian region. The medical and academic community could play an important role in collecting information and sharing it as quickly as possible.

There was also a question related to the link between legal mechanisms in Hong Kong for pandemic preparedness (which appear to be specific to disease prevention and control) and disaster management structures. It was explained that within the Hong Kong legal framework, there are specific plans for infectious diseases and separate legislation for other security issues, including natural disasters. Designated infectious disease frameworks exist for control and planning purposes. There are, however, shared frameworks for response, for example, to cope with events – be they natural disasters or a disease outbreak – that result in mass fatality.

Panel 2: Risk Communication during and after Pandemics

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During and after a pandemic, it is essential to consider how risk communications can be undertaken, particularly to ensure sustained vigilance and reduce complacency on the part of the various governments and the general populace. It is also important to conceive how to build flexibility into a risk communication strategy so as to cater to a broad range of scenarios, and ensure that messages are conveyed in a moderate, balanced manner which leads to a corresponding public response. This session focused on three distinct issues:

- Risk communication and over-communication of risk.
- Finding the balance between complacency and over-reaction.
- The evolving socio-cultural context of risk communication during and after pandemics.

Risk Communication and Over-communication of Risk during a Pandemic

During a pandemic, it is essential that measured, balanced risk communication to the public is undertaken by the authorities. However, in order to communicate risk to the public in an accurate, timely and moderate manner, a deeper understanding of the crisis, how the public reacts to the crisis, how to convey messages about the crisis, and how the public perceives and conceives these messages would be needed. To address these questions, a research study was designed.

A theoretical framework for understanding crises was first laid out. It was proposed that a crisis could be seen as a four-phase life cycle. The proactive phase refers to the beginning of a situation. In this phase, the perception of threat has not yet developed. This is followed by the strategic phase, when issues become more evident and threats are identified. Next is the reactive phase. This is when a crisis happens and crisis communication takes place. The cycle moves into the recovery phase when the crisis has ended, and governments are dealing with the recovery process.

Risk communication was then framed as a process that happens between the proactive and the strategic phase, that is, before a crisis happens. Risk communication, in this context, is defined as communicating the vulnerabilities (confronting a government) that has potential impact on stakeholders before a threat develops into a crisis. Risk communication is therefore a precursor to crisis communication.

According to best practices in risk communication developed by a panel at the US Department of Homeland Security, organisations should speak with one voice during a crisis. They should be open and react quickly; communicate with honesty, candour, compassion, concern and empathy; meet the needs of the media and remain accessible, and communicate messages of self-efficacy (i.e., of possessing the resources to help the public deal with the situation). These guidelines do not however address what happens when governments over-communicate. H1N1 was identified as a situation where over-communication may have occurred, with the WHO also acknowledging that that may have been the case.

A review of risk communication literature on the question of over-communication suggests that audiences who watch distressing video images repeatedly can develop excessive fear, and that this hinders their ability to respond to the risk at hand. Also, audiences can reach a point of saturation after multiple exposures to a message, particularly a threatening one. Multiple exposures at high levels are also linked to defensive avoidance and denial among participants. These findings are in line with Kim Witte's Extended Parallel Process Model, which states that when faced with a threat, individuals appraise whether they are susceptible to the identified threat and whether the threat is severe, and whether they are able to effectively minimise the threat through performing the recommended actions. This theory asserts that when efficacy is greater than the threat, people are more likely to respond positively because they believe they are equipped to handle the risk. When the threat is greater than efficacy, they ignore the threat and go into denial.

It was argued that the Extended Parallel Process Model does not consider three key factors in risk communication: (1) at what point risk is communicated; (2) paranoia as a possible outcome of over-communication of risk messages; and (3) biases arising from excessive repetition of negative or threatening messages.

To address these shortcomings, a new model, the Crisis Message Processing Model, was developed and a study designed to test it. The aim was to assess how crisis messages are processed by studying responses to three main questions: (1) at what crisis phase are risks communicated? (2) how intense are the messages communicated? and (3) how often are the messages repeated? Perceived levels of threat and extent of the experience of fear were used as variables. It was hypothesised that participants subjected to intense messages repeatedly would react to the threat in one of three ways: (1) reject it completely via defensive avoidance, message minimisation or perceived manipulation of the message; (2) accept the message and do something to deal with it; or (3) experience paranoia.

The study used experimental laboratory-based scenario testing to examine the hypothesis. A group of 350 undergraduate students was tested under 12 different conditions. The participants were informed of a new type of threat that they would have to face and the likelihood of the threat coming to Singapore. Initially, a rudimentary description of the crisis was given to the participants, with more details revealed over time. The intensity of the message was based on the number of deaths that occurred from the crisis; and the message was repeated to the participants either once, thrice or six times over a period of time.

It was found that during the initial phase of a crisis, participants appeared to respond similarly to messages whether repeated once or thrice. However, participants subjected to high-intensity messages were more likely to continue listening and to experience enhanced threat perception when repetitions were increased. Conversely, participants subjected to low-intensity messages and a high number of repetitions were found to become desensitised and disinterested.

At the strategic phase, when issues become more evident and threats are identified, a different pattern was observed. In this phase, a participant's optimal response was found to occur at three repetitions, but responses would drop off when repetitions were increased.

These results suggest that message intensity has a positive relationship with perceived severity and fear, which in turn have a positive relationship with audiences' attitudes and behavioural intentions. Thus, the higher the intensity of the message, the higher the perceived severity and fear, and the better the attitudes and the more resolved the people are to carry out protective measures to cope with the pandemic.

However, it was also found that intensifying messages could also lead to higher levels of paranoia. While a certain amount of paranoia is good (to a certain extent assisting survival), excessive paranoia could have negative effects such as panic and anxiety.

Ultimately, it was asserted, an effective balance of intensity and repetition remains imperative to successful and moderate risk communication during a pandemic – messages have to be intense and repeated enough to encourage positive action. Three crucial questions have to be asked: when does the communication become too much, how will we know when it is too much, and what constitutes the form and substance of risk messages?

Seeking a Balance: Risk Communication without Complacency and/or Over-reaction

An issue of concern to governments is how to communicate with individuals and communities during a pandemic without producing unwanted responses, whether complacency or over-reaction. Policymakers also recognise that communications during emergencies, and about them, have an influence on the culture at hand. There have been several pandemic scares and global emergencies that have not been as severe as expected and these have shaped perceptions of risk. These issues are explored within the context of the experience of Australia, Hong Kong and the UK during H1N1 in 2009.

It was argued that communications during H1N1 in 2009 in English-speaking countries recalled mid-20th century public health advertising with its focus on a single message calling all to action for the public good. This approach, it was explained, is based on the hypodermic model, which has been largely discounted in modern times because we now live in a society with multiple forms of media and a very different socio-political culture. Central here is how the relationship between self and society is recognised. It was argued that due to economic and political change, duty to the nation-state and social good no longer rules individual identity and conduct. Some have even gone so far as to argue that subjects have been individualised and the state has retreated from health and social care, among other matters. Therefore, appeals to citizens to act for the common good need to overcome these cultural realities.

It was further argued that conceptualisations of human behaviour and perception tend to be too narrow, underpinned as they are by the belief that the individual is normative, universal and rational. Accordingly, it was argued that how people respond to an outbreak is influenced by social forces. Material and social conditions restrain and constrain how people act in times of pandemics. For example, schools were closed in the UK in 2009 to moderate the spread of H1N1, but because most people were well, it was summer and many parents were working, children congregated in public places, confounding social isolation strategies.

People were also held to be active and creative in transmitting and shaping messages related to pandemics, and that these narratives and images prefigure any type of public health messages that might be fed to them. It was admitted that we still know very little about these aspects of communication during a pandemic, and that they need to be studied more closely in order to understand the publics and serve them more effectively.

It was argued that public health messages are framed by public perception of the relationship between the state and the individual citizen. This relationship was held to be weaker now than it used to be, and more open to questioning and being challenged. The form

that the relationship can take has always been a public health problem. For example, placing constraints on the individual (as with containment strategies) is in tension with ideas of individual autonomy, and has been politically troublesome. Public health communication during H1N1 in 2009 was argued to be the art and science of finding a politically and socially acceptable way of influencing the public, with authorities attempting to address the challenge through 'self-defence medicine', that is, by appealing to their citizens' own volition (in other words, using the citizens' own aspirations for health and well-being as a basis). The failure to act then becomes the responsibility of the citizen, not public health as an institution. However, H1N1 also reminded governments that it is still important to actively engage citizens more directly to have any effect on disease spread. It was argued that, ultimately, within this context, public health communication remains constrained by political considerations.

It was observed that there is still a lack of information which provides insight into the lived experience of the general population with regard to pandemic influenza. According to the results of surveys undertaken in May 2009 (during H1N1) in Hong Kong, the UK and Australia, most people endorsed governments' public health messages but few understood the disease itself and even fewer had carried out prevention measures. Additionally, there was marked variation in outbreak perception. Some respondents in the UK said that the outbreak was needlessly hyped up, some Hong Kong respondents were found to be complacent, and some Australian respondents said that H1N1 was low-risk even though at the time of the survey, the severity of the disease had not yet been determined. Some respondents also suggested that prevention advice was ineffective and that the prevention methods themselves were not appropriate for a case of an easily transmissible and relatively mild virus.

Therefore, it was argued that it is important to ask how people interpret messages and act on them in the light of the practicality of such messages in their lives. It was argued that the beliefs and practices people hold in relation to their own health and that of the communities they live in, and what everyday people take public health to be (a right, a responsibility, or something else), need

to be closely examined. A key point was the question of how citizens take on ideas of acting not so much in their own interests, but to inhibit the spread of the virus to protect the vulnerable. According to policymakers in the UK and Australia, members of the population and some healthcare workers struggled with acting on influenza when they themselves were fit and healthy. On the other hand, some failed to understand that Tamiflu was available not for them to use every time they were potentially exposed to H1N1, but was intended only as a method of containing the spread of infection in the early stages. It was argued that society has become used to conceptualising health in terms of an exercise of personal interest, making it harder to implement methods aimed at managing the health of populations.

Another concern was the way in which risk communication has had direct impacts on reactions to pandemic responses. Managing H1N1 required the use of vaccines and antivirals on a large scale. According to interviews with policymakers in the UK and Australia, there was resistance from the public at times, especially when it came to vaccine uptake. Many people thought they did not need to be vaccinated because they were healthy, or they thought they might experience dangerous side-effects. As with self-defence medicine, the public's engagement with the use of vaccines and the rationale that guides vaccine uptake remain important considerations.

Public health communication was perceived as being in general not well-resourced, and in relation to influenza, budgets for public communication of infectious diseases tend to be small and static. Public communications are often developed by central governments in collaboration with press offices, and on a more limited basis, by local press offices. The appointment of agencies charged with creating public communication of the more engaged and engaging kind has not been given enough consideration.

It was concluded that in the realm of risk communication during a pandemic, there is still a need to keep asking questions about the assumptions that are held and the assessments that are made based on those assumptions, and to continue examining the theories that drive communication during pandemics and the social changes that underlie (and undermine) those theories.

The Evolving Socio-cultural Context of Risk Communication during and after Pandemics

An examination of how societies handle emergencies in general would, it was argued, facilitate a better understanding of pandemic preparedness. In the aftermath of the recent tsunami and nuclear emergency in Japan, there were many commentaries and official government releases highlighting worst-case scenarios. Some may think such messages act as a public service, educating people on the situation and the precautionary measures that should be taken. However, it was argued that these communications led to an overload of information on the potential risks and hazards from the emergency.

It was suggested that there was a lack of professional risk communication. While the issuing of so-called facts from authoritative sources may have appeared to be objective and such sources did not deliberately seek to alarm people, the information compelled the public to respond in kind to potential worst-case scenarios. It was contended that, in the majority of cases, when commentators said that they were exploring worst-case scenarios, they were in fact discussing imaginary scenarios. For instance, it was known from the start that the control rods designed to ensure the immediate stoppage of fissile activity at the nuclear power plant in the event of an earthquake had moved into position. Yet, most scenarios remained speculative and hypothetical, especially in the mass media.

It was highlighted that the sociologist Frank Furedi has observed that the language used to describe events has changed dramatically in the last decade. For instance, words such as 'epidemic', 'toxic' and 'extinction' appear twice as frequently in newspapers today than in 2001, while 'pandemic' appears seven times as frequently. This is arguably not reflective of the increased dangers of pandemics in the world we live in. Instead, it tells us that we have come to view the world in a particularly distorted fashion.

Intelligence is a combination of information and how information is interpreted. Risk communication is often predisposed to prioritising the former over the latter.

It was argued that risk communication that focuses entirely on information is missing the point and the plot. It is crucial that more attention is paid to the mental models that people use to interpret the information they receive. It was noted that Prof. David Heymann said in a recent publication that the real point is to change the conversation and the framing of the world people live in rather than to convey facts more eloquently.

It was observed that the issuing of warnings on all manner of topics and activities – terrorism, toxic chemicals, the nuclear industry, the environment – has become a defining feature of the world we live in. The result of this overarching narrative of risk is a new industry of risk communicators who view the world as one big threat waiting to happen. The advice that the populace can never be too careful is not particularly specific or useful. It is not sudden shocks that undermine human activity, but rather a gradual drift that goes unnoticed until something happens. That is the context from which H1N1 emerged and was communicated.

Such a context is informed by negative narratives in television, movies and books. To ignore this and suggest that H1N1 risk communication was measured, balanced, appropriate or even just a useful exercise is to ignore the reality of the world as it is experienced by the public, the media, academics, scientists and even government officials. These groups cannot separate their messages from the environment that those messages are born into. An emergency does not simply comprise the events, actions and communications of an incident; it draws together the legacies of past events, actions and communications. It was noted that even when the WHO advised that fatality rates were low and that it was a mild disease, officials still decided to err on the side of caution. This, it was argued, is likely the result of a worst-case scenario framework which has created the sense that people today live in a particularly insecure and uncertain age.

H1N1 was said to be a catastrophe for public health. When the vaccine was released at the end of 2009, the uptake in many countries was very low. For instance, in the UK, less than 40,000 of the over 10 million persons eligible for the vaccine chose to take it. It was suggested that this was not the result of ignorance or a failure in

communication; after all, the rejection of the vaccine was largely led by health workers. It was argued that the gap between official preoccupations and the public's lived experience is the most important social policy issue that needs addressing in the next decade.

Such a phenomenon suggests that a deep cultural confusion has emerged following the end of the Cold War. It was once expressed that, for a virologist, a pandemic is akin to a solar eclipse in your own country for an astronomer. Yet, the response to H1N1 suggests a tendency or desire among certain health professionals witnessing the equivalent of their first personal solar eclipse to assume the worst. Even as counter-evidence came in, officials were reluctant to scale down the pandemic alert level. Countries which had previously been criticised for failing to contain SARS and H5N1, such as China, Hong Kong and Japan, were on full alert and implemented containment strategies (rather than adopt a mitigation approach as advocated by the WHO at the end of April 2009). This was despite the fact that H1N1 was quite unlike SARS; it displayed neither early onset of elevated temperature nor a relatively high fatality rate. Yet, the response was not adjusted accordingly.

At present, it appears that there is a constant war against pandemics with many articles referring to the need to 'fight' pandemics. This reflects how the language and practice of healthcare have become increasingly influenced by the discourse of security. After the anthrax scares post-9/11, Western society became increasingly disorientated as it became fixated on external threats such as bioterrorist attacks. When such situations proved highly unlikely, interest gradually shifted to health, and particularly emerging and re-emerging infectious diseases which could potentially cause social disorder.

Pandemics appear at present to be assessed and regarded as national security issues rather than purely medical concerns. This shift reflects a wider cultural shift that has occurred in post-Cold War society. The contention was that there has been a move away from probabilistic scenarios predicated on actual evidence, and towards

speculative worst-case scenarios. It was argued that it is imperative that policy is adjusted according to the situation in question and to emerging or new evidence.

Sociological literature indicates there are three distinct side-effects to authorities being out of touch with public norms, namely, that it encourages acts of deliberate defiance, generates exaggerated fears, and results in increasing distance and disengagement between the public and the authorities. The response to H1N1 came at a high cost, not just in economic terms but also in respect of the erosion of public trust in the authorities.

Discussion

The questions raised during the session covered various dimensions of risk communication, including the role of the media, particularly social media, and the related issue of the changing nature of government-public communication; the issue of empowering communities to interpret and act upon public health information; and questions of hygiene.

The role of the media, in particular, the problematisation of the traditional one-way flow of communication from governments to publics due to the advent of social media, was one of the central issues discussed. The question of how risk communication could be improved to manage the related effects brought about by social media, for instance, the (mis)trust issues provoked by WikiLeaks, was raised, and two contrasting approaches were put forward.

One approach referenced the notion of an information vacuum, which was held to be automatically generated in a threatening situation. According to this view, authorities should seize control and proactively fill the vacuum with authoritative voices, conveying not just cautionary messages but also messages that increase the efficacy of individuals. These messages should incorporate propositions that both help individuals to adjust psychologically as well as instruct. This view is in line with a model of the world where truth is seen as an objective, discoverable fact, a model encouraged by

WikiLeaks. This is a model that governments appeared to buy into in positing that, with respect to the H1N1 crisis, all that was needed was accurate risk information.

However, some argue that people's mental modelling is more creative and interactive than suggested by a model that focuses on information. Deduction through synthesis or intellectual reasoning should not be discounted. Thus, there is another approach which argues that there is no deficit, or vacuum, of information at all. Instead, people seek to decipher the meaning of the information they receive, and that meaning is ultimately derived from their mental framework. According to this approach, information should be seen as secondary and the key role of a risk communicator should be to understand – and reshape if necessary – the value system which defines how information is received and interpreted.

Ultimately, it was suggested, the media has taken on an inordinately large role in today's society, and this will only be corrected with the regeneration of other authoritative social and cultural networks that have been eroded. Only then would there be other information avenues with the capacity to compete with and challenge the information and experiences disseminated by the media.

The role and voice of government versus that of the community also came under discussion. The importance of empowering communities was emphasised. In relation to this, there is a need to debunk the assumption that communities are weak and vulnerable, and know less than the authorities. Communities must be credited with intelligence and agency; in many cases, citizens on the ground are more informed and aware than policymakers. Governments must therefore avoid presenting communities with biased information or predetermined solutions.

An observation based on first-hand experience of working with pandemic-affected communities in Cambodia was shared. It was found that conventional messages (regarding basic hygiene, for instance) were replicating knowledge the communities already held. What was

needed was more detailed information, for instance, on the symptoms of different influenza strains, the aspects of transmission, how a specific influenza case should be handled at home, and when to seek service and support. The form of risk communication messages should thus shift to what is practical for communities and could potentially influence their behaviour.

One of the problems envisaged when it comes to empowering communities is that 'community' is today, although not entirely non-existent, rather disaggregated. It would be more accurate to imagine a sum of private individuals. However, this sum of individuals still does not equate to a measure of public interest or good. The question of whether it was indeed the role of government to recreate a sense of community, as opposed to merely fermenting a focus on private concerns, was brought up. There was consensus that there is a limit to what public health institutions are able to do, and that perhaps there is a need for more dialogue on how individuals and communities could take the initiative in responding to pandemics (instead of waiting for instructions from above).

Another issue that was brought up was the role of hygiene in the spread of a disease. How could authorities and societies succeed in preventing the spread of a disease if a country or community were lax on personal and public hygiene? An observation was made that there appears to be a patronising tone to the discourse surrounding the issue, given that the level of public hygiene is closely linked with the development level of a country or community. There is a need to remember that some countries and communities have more fundamental problems to deal with; and that pandemic preparedness, and hygiene, represents an additional burden. Another observation was that, when faced with a threat, perceptions of severity and fear are important drivers of behaviour. Without an element of fear, communications relating to hygiene would likely not be effective. Behaviour is also shaped by people's perceptions of their ability to carry out prescribed measures.

Panel 3: Fighting Crises with One Response Plan – Commonalities between Pandemics and Other Crises

Chair:

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In countries plagued with natural disasters, it is not uncommon for governments to focus more attention on disaster management. However, this is often at the expense of efforts and resources devoted to pandemic preparedness. This session aims to address commonalities between the planning and management of influenza pandemics and other disasters (e.g., earthquakes, typhoons) and how response plans for non-pandemic crises can be adapted to pandemic scenarios. With these considerations in mind, this session focused on two topics:

- Multisector pandemic preparedness planning.
- A single-response planning framework for pandemics and other hazards.

Multisector Pandemic Preparedness Planning

Pandemics are usually considered a health and medical issue. In recent years, however, the UN OCHA has been exploring the possible impacts of a pandemic on other sectors in hopes that by doing so, it would be possible to assess the steps that other sectors might have to consider in the event of an outbreak. Collaboration between health and non-health sectors could also lead to the implementation of systems and processes that would be useful in the event of other hazards.

From 2003 to 2005, due to the SARS experience and with H5N1 re-emerging, there was a strong perception that emerging infectious diseases were a serious threat, prompting high levels of government and international-organisation commitment by way of large amounts of funding to the cause. The UK thought that a severe H5N1 outbreak was relatively likely, with concomitant serious impacts. It was argued that if a pandemic as severe as the Spanish influenza outbreak of 1918–1919 occurred on the same scale in the world today, it could be considered a threat as serious as a tsunami, earthquake or other natural disaster in terms of loss of life, opportunity costs and multisectoral impacts. Thus, it would be imperative to develop preparedness systems.

The 2007 to 2009 period saw a waning of this priority. H5N1 fatigue set in when the outbreak proved mild despite the many warnings from the authorities and international organisations of a potentially severe and far-reaching pandemic.

It was argued, however, that after the H1N1 pandemic in 2009, merely talking about pandemic preparedness is no longer sufficient. The mildness of the H1N1 pandemic is no reason to discount the pandemic threat.

Pandemics are expected to put great stress on health systems as primary respondents. Therefore, the ministries of health or public health are generally charged with pandemic preparedness and response activities. However, it was argued, multisectoral pandemic planning would be more beneficial.

It was suggested that multisectoral planning has two main objectives:

- *Mitigating the indirect impacts of pandemics*

High absenteeism rates lead to the reduction of certain services such as education, and supply disruptions of essential services such as energy, communications and transportation. School closures, for example, are a common containment strategy taken by governments during pandemics. However, if schools are closed for prolonged periods of time, and not all schools remain closed for the same time-span, this could result in educational imbalances. It was thus suggested that plans for maintaining schooling processes need to be developed. Moreover, such plans could prove useful in the event of other hazards as well. For example, it was only after Typhoon Ketsana hit the Philippines that the authorities began to contemplate how to handle prolonged school closures due to flooding. It was argued that had the education sector been taken into consideration during pandemic planning, the measures planned for that sector could have been applied when the flooding occurred.

- *Preparing essential-service providers*

There is a need for sectors providing essential services, such as the aviation sector, to be prepared to deal with the aforementioned impacts. Although the sector is arguably contextualised within a pandemic situation only as a means of transmitting infectious diseases across borders through air travel, it actually plays an important role in the detection of a disease crossing borders as well as the safe and secure transfer of sick people to health facilities. In addition, during a severe pandemic, it is important to ensure that the aviation industry is able to still function at its best capacity given that, during a pandemic, a sector may temporarily lose up to 40 per cent of its staff capacity.

It was argued that it is impossible to predict absenteeism rates in the event of a pandemic or any other hazard. In many cases, it peaks at 30 to 40 per cent at the height of a crisis, though in some countries, that percentage has been shown to be higher. Causes of absenteeism include staff falling ill (and in some cases, dying), parents staying at home to take care of children due to school closures, personal choices made based upon government warnings, potential contact with an infected person or a general fear of being infected. It was argued that, in a situation of high severity, providers of essential services may not be able to maintain normal operations, which could exacerbate the situation and even give rise to humanitarian issues later on.

Sectoral planning, it was explained, has various benefits within the overall pandemic preparedness plan, the most vital of which is that it helps to maintain the continuity of essential services during an outbreak. Thus, it was argued, business continuity planning (BCP) has to be prioritised. BCP is also important because sudden impacts such as absenteeism or supply disruptions require specific measures. For example, energy (electricity) is an essential service during a pandemic. Without it, the capacity to deal within a pandemic would be severely curtailed; in the health sector, daily work would be adversely affected, especially if the disruption of electricity supply is prolonged. During a pandemic, however, a shortage of staff, equipment and supplies caused by low-functioning transport systems could lead to energy production being compromised. Thus, a power plant would ideally have plans for alternative resources that they could tap into to fill such a vacuum.

To assure sectoral preparedness, however, there is a need to look beyond the small scale of BCP. A broad overview of the different sectors that interplay with, and could have potential impacts on, one another would be required. A situation might arise where only a bare minimum of resources is available to operate essential services. In order to monitor the status of such operations, there might be a need for surveillance of non-health sectors to be activated. In health, surveillance systems include preparation of health facilities, reporting systems, and surveillance and other mechanisms. The ministry of health or public health, as lead coordinating agency

for those functions, would arguably be able to take the lead on how to incorporate such mechanisms into other sectors as well.

Multisectoral pandemic preparedness planning would thus involve more than the ministry of health. However, it was argued that this does not mean that it is feasible to address multiple hazards with just one response plan. In many cases, a pandemic would require more than one plan depending on the variety of sectors and service providers involved in the planning process. It was proposed that there should be a central body to coordinate the various sectors. In relation to this, it was noted that the experience of some countries shows that this might not even be the ministry of health, as this ministry often lacks the authority to coordinate other ministries and instruct them on how to act.

It was also argued that one implication of sectoral management is that ministries might have to develop BCP for their own operations. They would need to identify sector leads, and seek the help of those leads to identify the key actors within the sector, in order to bring the various actors together, inform them of what they might need to do and guide them through preparedness processes.

Finally, it was once again emphasised that the goal of multisectoral pandemic preparedness is to ensure that providers of essential services (from the public, private as well as civil society spheres) are well prepared. This could involve providing information to the relevant sectors, organising them and actively coordinating their behaviours and actions. High-level government commitment would be necessary to ensure the success of such efforts; only with such support could a holistic and comprehensive whole-of-society approach be put into practice.

A One-Response Planning Framework for Pandemics and Other Hazards

Although it is difficult to imagine a one-response plan for pandemics and other hazards, it was argued that it is not impossible to envision what a one-response planning framework would look like. This framework

would operate on certain assumptions: first, a pandemic, or any other hazard, can be severe or mild depending on the circumstances; second, complex issues require broad, multisectoral coordination and action; and third, while such coordination and action is not always necessary, it is justifiable when the issue at hand becomes complex and multiple sectors are impacted, whether directly or indirectly, by the situation.

It was argued that as a disaster's severity increases, secondary hazards and vulnerabilities can converge and cause common impacts. For example, Japan's recent tsunami and earthquake led to major flooding and the Fukushima nuclear crisis, which then disrupted the supply chains of goods and services (with impacts on businesses, trade and the domestic, regional and international transportation of goods and people). In light of this, it was proposed that pandemic preparedness and response should be integrated into a wider disaster management framework.

It was recognised that, unlike natural disasters, pandemics do not always occur suddenly and can spread quickly. Pandemics also cross boundaries, can affect entire regions and often trigger certain needs for external assistance in severe cases. Earthquakes, tsunamis and floods do not have the same reach as pandemics in many cases. However, there are commonalities between the two, especially when a certain level of severity is reached and loss of life escalates.

In addressing these commonalities, the pandemic planning and disaster management fields in Southeast Asia face similar challenges, one of which is the need for a high-level multisectoral and interministerial central coordinating body in each country. In some countries this is already a reality. Singapore was cited as a model for ASEAN member states in this regard. Other challenges include the need for operations and business continuity planning, the need to mobilise whole-of-government and whole-of-society measures, the need to develop mechanisms and build institutional capacity to assure national and regional security, the lack of high-level leadership, the lack of fund appropriations, insufficient sustained planning efforts and insufficient external support from international organisations. It was also noted that

some countries within the region have to further define their command and control structures for better efficacy, and there is a need to establish stronger linkages with major players in the private sector and civil society.

It was argued that for a highly integrated model to function optimally, its organisation and implementation has to be more structured, more funding has to be given to governments of ASEAN member states, and more support has to be provided by international organisations, particularly the UN. ASEAN has been a pioneer in developing such a framework, which is realised through the ASEAN Agreement on Disaster Management and Emergency Response (AADMER). The AADMER aims to provide a common planning structure for the coordination of systems and agencies and to help set standards of procedure and mechanisms as guidelines for ASEAN member states. The internal structure of the AADMER is very similar to the command structures described in pandemic response plans. It was also noted that within the AADMER, health is a major player with its own substructures. At the same time, there is provision for non-health sectors to be involved, with the degree of their involvement depending on the severity of the scenario.

Presently, most ASEAN states are transitioning to a fully functional interministerial and multisectoral modality. Although multisectoral pandemic preparedness and response frameworks do exist in many ASEAN countries, they need to be continually strengthened and reassessed through simulation and testing to ensure robustness. It was noted that ASEAN is currently reviewing its existing mechanisms so as to better direct regional responses to severe pandemics or other public health emergencies using the AADMER as a common framework. ASEAN is also advancing its regional BCP efforts, with these currently at different levels between countries and within countries (depending on regions, provinces and localities).

Finally, it was observed that multisectoral pandemic preparedness planning had helped reveal national, regional and international inadequacies in pandemic planning and disaster management as the demand to ensure the continuity of essential services increased. This knowledge is valuable, as it allows the shortfalls to

be addressed. Additionally, it was suggested that during a mild pandemic such as H1N1, responses which only address public health issues have sufficed, but in the event of a severe pandemic, such an approach might not be adequate.

Discussion

One issue that was brought up during the session was whether there was much work within the UN system and ASEAN on disaster management and emergency management, and if there is, whether the two are linked or parallel-tracked. The UN, it was explained, had integrated pandemic preparedness initiatives into disaster preparedness efforts, renaming it a 'multi-hazard approach' about five years ago. However, two years ago, the UN delinked the two. Meanwhile, the ASEAN Committee on Disaster Management (ACDM) still links pandemic preparedness and disaster preparedness.

Existing UN efforts include its International Strategy for Disaster Reduction (ISDR), the UN Development Programme's (UNDP) Bureau for Crisis Prevention, and on humanitarian assistance matters, the World Food Programme (WFP) and UN OCHA. However, it was suggested that these efforts remain fragmented and lacking in coordination. At present, the UN and its related agencies appear to be focused on response preparedness, to the detriment of an integrated approach linking disaster risk reduction, impact-mitigation preparedness, response preparedness and response coordination. It remains to be seen whether the UN system will change direction on this matter.

The question of Singapore's capacity to cope with a severe pandemic was discussed. It was noted that the driving force for many countries in coming up with a single framework was SARS. One major difference between Singapore and other countries in the region, it was observed, is that Singapore is geographically compact and has a centralised government, making it easier to coordinate coping mechanisms in the event of a pandemic or natural disaster. Other ASEAN countries appear to have run into many problems in coordinating local and national mechanisms. Despite this difference, national or subnational governments in the region could

still learn from Singapore's preparedness and response model. Nevertheless, it is still important to remember that any plan's effectiveness is highly contingent on vigilance and on acknowledging specific local vulnerabilities, not just overarching structures and systems.

The issue of whether Singapore could learn from other countries in terms of disaster management and vice versa was further explored. The panellists agreed that in terms of multisectoral planning, Singapore's disaster management system is robust, well-coordinated and proactively led. A particular strength of the Singapore system is its clear delineation of roles and responsibilities in the event of a disaster. Again, it was reminded that this system may not be perfect or universally applicable as Singapore is a small, dense city-state. The panellists used the examples of Indonesia and the Philippines, both archipelagic countries with highly decentralised systems, as states that might not be able to employ the same model. There was, however, a consensus that Singapore is one of the best prepared countries in the Asia-Pacific in terms of coping with a pandemic or a natural hazard.

The point was made that the most important lesson that countries in the region could share with one another is how to incorporate flexibility into a preparedness and response framework. The vital elements, it was suggested, include high-level planning and coordination through a lead body, committee or agency, clearly demarcated layers of responsibility and action, a crisis-specific command system and a specialised incident management system (i.e., each country would have to be flexible in terms of which agency is assigned responsibility for executing needed tasks during a specific incident).

Another concern was how to ensure that organisations are ready to handle a pandemic or natural disaster, and how to maintain the required level of readiness. The extent to which the systems in place could operate as a multisectoral operation was also raised, and it was noted that the poorer and less developed the country, the more problematic multisectoral coordination might be. Coordination between the animal- and human-health sectors, in particular, remains challenging despite much support (both political and financial). It was noted that the current systems remain far from perfect but much progress has occurred in developing countries, particularly since SARS in 2003. At present, simulation exercises and testing help keep existing systems relevant and robust. However, it was reiterated, continued support from governments and international organisations is needed for these processes to be further institutionalised.

Finally, the critical aspects of any systemic response to a crisis were discussed. It was agreed that flexibility, appropriate communication at different points (between different sectors and between levels) and leadership at different levels were the three most important aspects of crisis response. It is important to tackle the problems that we know and understand, but there is also a need to develop the capacity to detect, as soon as possible, anomalies and novelties that exist outside the realm of current plans. For example, it was noted that outbreaks of respiratory disease that occurred during the H1N1 period were all immediately assumed to be H1N1 even prior to any investigation of the pathogen involved. There is also a need to be more cognisant of how the impacts of disasters could be lessened, which outcomes are and are not within our control, and what vulnerabilities exist and how to deal with them.

Panel 4: International Collaboration in Pandemic Preparedness

Chair:

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In examining pandemic preparedness and response, it is essential to explore efforts to enhance pandemic preparedness at a country-to-country and regional level, and discuss what is lacking and how collaboration can be improved. The roles of international organisations and agencies, donor agencies, research institutions and private entities also need to be considered. With these thoughts in mind, the session addressed three different dimensions of international collaboration in pandemic preparedness:

- Primary surveillance.
- Research.
- Pandemic preparedness projects.

The Significance of Primary Surveillance for International Collaboration in Pandemic Preparedness

According to definitions by the WHO, the US Centers for Disease Control (CDC) and other expert organisations, a pandemic is assessed based on the severity of three features: the number of people affected, proliferation speed and geographical spread. A pandemic, therefore, is an epidemic ('an increase in the number of persons with an ... illness, in a given area over a short period of time') that spreads rapidly affecting a large number of people over a large region, be it a country, continent or the whole world.

In this context, international collaboration on primary surveillance was identified as vital to pandemic preparedness. A concept fundamental to the discussion of the importance of primary surveillance in a pandemic preparedness context is that of 'community'. This is a concept that holds different meanings for different actors. In the context of the current discussion, it could be defined as a population living in the same political jurisdiction (e.g., a city, municipality, country, state or province) which enjoys total or partial autonomy in policy decisions. Pandemic preparedness and collaboration at the global level are dependent on the local context, so it is vital that the discussion takes into consideration processes at the micro, or community, level.

It was argued that a main challenge to governance of pandemics at the various levels is surveillance. The standard public health definition of surveillance refers to the work of health officials (namely, public health personnel in the field) which comprises three related stages, that is, the systematic and active collection of pertinent data on a targeted disease or diseases, the assessment and practical report of the data, and finally, the timely dispatch of such reports to individuals responsible for the formulation of action plans.

It was noted that the definition given here should be examined more critically as it appears to be exclusively focused on the role of health authorities. It was argued that primary surveillance needs to be examined from a

sociological perspective. In the primary surveillance stage (the stage prior to standard surveillance), data is provided directly by original sources, that is, the individuals who experience symptoms, or the closest observers of those symptoms such as family members, friends and co-workers. In the case of infectious diseases originating from animals, the workers responsible for the handling of the animals alert authorities to possible infections and offer evidence which facilitates the early detection of cases. Studies have shown that primary sources may be unable to help if they do not know how to report cases, the signs to look out for and who to seek help from. This was argued to be particularly problematic where facilities are inadequate and access is limited.

In addition, across cultures, and development and education levels, people's gut reaction to something physically amiss is to postpone action or to attribute it to other factors. Consequently, it is argued, it is vital for health authorities to educate the public on the symptoms to watch for, and encourage them to not postpone relaying this information to the authorities.

Another surveillance problem is that some people may be unwilling to make reports or they may seek to conceal information. Previous studies on public health responses indicate that symptomatic individuals and observers are most likely to be cooperative when individual- and community-level factors are addressed.

Individuals are influenced by various factors, including their subjective perceptions of the disease, the public image of the disease and a desire to distance themselves from the disease. Effective primary surveillance occurs when attention is paid to these factors. It is thus not enough to just educate the public on a disease's symptoms. It is also vital to seek regulation and legislation which create instruments that enable individuals to seek help.

Community-level factors also have to be taken into consideration. These include transparency of state actions and decision-making, the level of community involvement and consensus building, and the level of a community's trust in health authorities, all of which contribute to the development of collective informed consent.

Collective informed consent focuses on the community rather than the individual patient or clinical-trial subject. The community, it was argued, should be treated as a collectivity of rational and autonomous individuals who have the right to consider the benefits and risks of alternative solutions to a health crisis, to make decisions, and to be seen as people who need accurate information to make those decisions. It was suggested that the authorities should not operate on the assumption that communities are vulnerable or ignorant. Instead, the authorities should listen to them as they have the wisdom of experience that the authorities lack. According to this perspective, the authorities should provide communities with the relevant information to make informed decisions.

Another factor that influences the granting informed consent would be the level of trust between a community and the health authorities. The level of trust has two dimensions. The first is the socio-emotional, which is based on community norms and expectations. The second is the rational, which is founded on the exchange of interactions and calculation of risks. Both dimensions are deeply influenced by assessments of a government's past performance and extrapolations from previous experiences of listening to the authorities or otherwise.

For successful governance of pandemics, it was argued that state decision-making requires transparency. That should happen at both the national and international level. Government actions and decisions have to be accessible to the public and open to scrutiny. There is

also a need to recognise the limits to the knowledge that the authorities have, and encourage collaborations with the people, to find collective solutions to common problems and to more effectively bring various sectors of society together. For successful communication to occur, authorities need to both disseminate and listen to messages.

Countries may have varied governance structures due to political, economic, developmental and cultural differences, and there was consensus that this substantially hinders international collaboration. It was proposed that countries should learn from one another, in order to lay the governance groundwork for effective prevention of disease spread as well as execution of preparedness plans.

The Role of International Research Collaboration in Pandemic Preparedness and Response

During SARS, H5N1 and H1N1, the public and the authorities turned to scientists and research for answers. It was noted that the words which appeared most often in the WHO guidelines on pharmacological management of pandemic influenza were 'oseltamivir', 'evidence' and 'inconsistency'. It was further observed that the US President's Council of Advisors on Science and Technology examined the scientific base for interventions during the H1N1 pandemic, and concluded that scientific advice received by authorities was extremely important in determining responses. The UK's Hine Report came to the same conclusion. There are however various challenges and pressures confronting scientific research endeavours.

It was noted that a variety of imperatives underlie the conduct of research, including political exigencies, and pressure from the public and from lobby groups. Another driver is a sense of moral obligation, that is, the desire to protect the health and welfare of citizens, and to help maximise the utility of available resources as publicly funded scientists and researchers.

Health emergencies exert additional pressure on scientific research. In addition to a well-formulated research question, and a thorough and ethically conducted study, there is a need for quick results which are relevant to the time-frame in which decision-making is executed. This represents a challenge for research publications. For instance, most articles on SARS were published after the outbreak, with a smattering during the outbreak, and only a few just before the outbreak ended. There are often delays between the submission of an article and its publication. This is problematic for many reasons, one of which is that by the time valuable information on a pandemic is released, the information is no longer relevant.

It was suggested that there are two major types of barriers to effective research which informs practice and policy, namely, structural and conceptual barriers. Structural barriers include the physical limitations of the environment, as well as the formal and informal rules that regulate the system. Conceptual barriers consist of, for instance, the lack of desire for international collaboration, issues of sovereignty, and demarcation issues between scientific research and collaboration.

It was noted that, at present, globally, the majority of published research comes from Europe, the US and Japan, that is, areas with access to research funding. However, there is very little funding, research and publications originating from Africa, South America and most of Asia. There have, however, been calls to rectify the imbalance. During the Global Ministerial Forum in 2008, voices were raised in favour of health research based on the principle that research should be a global public good which is essential to addressing existing health problems, finding solutions to future ones and coping with both predicted and unpredicted human security threats. However, one problem is that the global research agenda is not determined by national or global priorities, but is instead set by developed countries with spending power. There remains insufficient equity, interdisciplinarity, and alignment between funders and governments.





Participants of the Symposium

Seated (from left to right): Assoc. Prof. Leo Yee Sin, Dr Michael Fitzpatrick, Dr Bill Durodié, Prof. David Heymann, Assoc. Prof. Ho Peng Kee, Amb. Barry Desker, Assoc. Prof. Ralf Emmers, Mr Kwa Chong Guan, Dr Stella Quah

Middle row: Dr Liviu Vedrasco, Dr Za Hussain Reed, Dr Divina Cabral-Antonio, Dr Sarah M.Y. Choi, Assoc. Prof. Alan Chong, Dr I. Nyoman Kandun, Dr Supamit Chunsuttiwat

Back row: Dr Mark Davis, Dr Ingo Neu, Dr Richard Coker, Dr Peter Horby, Dr Rogier Van Doorn

It was argued that there should be more alliances and networks to improve research and pandemic preparedness. Clinicians should be more heavily involved in research networks as nearly all epidemics are reported by clinicians rather than public health surveillance systems.

Countries such as Singapore have a vital role to play in enhancing regional capacity. The security of the region depends on countries in the region working collaboratively to create effective networks. Local governments should also seek to secure local ownership and greater control of research agendas as this would serve to realign networks, leading to greater focus on the grassroots level and less confusion at the global level. Funding and research should also be established before health emergencies occur; generic problems could be studied to enhance localised capabilities to respond operationally.

There are various research regulations in place which inhibit research into new infectious diseases. For instance, there is often a long delay between the regulatory submission of a protocol and the enrolling of the first patient in a drug study. It was argued that there should be more sensible guidelines for the conduct of large randomised trials. Many groups have argued that the level of regulation is not congruent with the level of risk. A risk-stratified approach to clinical trials should be formulated to facilitate research that is both timely and not economically unviable.

Finally, it was noted that research is particularly important with it comes to emerging and new diseases. There is strong demand for information on such diseases, which raises the question – one that is still the subject of debate – of whether such information should be disseminated to the wider public or only to policymakers. It was also observed that research is especially difficult during crises, and it was argued that to facilitate research in such situations, structures should be established and barriers removed beforehand.

International Collaboration in Pandemic Preparedness Projects

Pandemic preparedness is often used to refer to such activities as ‘pandemic prevention’ or ‘pandemic planning’. In reality, however, pandemic preparedness should be seen as nothing more than preparedness to respond during a pandemic. It should not be understood as attempts to prevent an emergence of a spread of an agent that could provoke a pandemic.

In the last five to six years, several tools have been developed to measure a country’s level of pandemic preparedness. The problem is that the various tools do not employ common standards. There is also a lack of consistent cross-globe usage of these tools. Hence, data from different tools cannot be used to state where countries are in terms of their level of pandemic preparedness. Countries can, however, generally be categorised into three groups in terms of level of preparedness.

In a majority of countries (and especially in Asia, parts of the Pacific, Africa and Latin America), pandemic preparedness is limited to the ministry of health (and sometimes also with the ministries of agriculture or livestock). In 2009, many countries did not have any multisectoral pandemic preparedness plans.

Another group of countries appear to be more progressive with regard to pandemic preparedness. Unlike those in the first group, they do have concrete pandemic preparedness plans. They rightly identify vulnerabilities, critical infrastructure and areas of importance; but that is where their preparedness stops. They do not do much to address the identified challenges.

Finally, there is a small group of countries (Singapore being one of them) that have comprehensive whole-of-society pandemic preparedness planning, and that have actually implemented specific measures, making them well prepared for emergencies.

Countries also differ in their pandemic preparedness capacities. It is difficult to assess a country's standards as there is a lack of consensus on how to evaluate a country's capacity. It was argued that most countries lack pandemic preparedness plans or only had virus-specific plans which they then applied to H1N1. A few countries have a comprehensive whole-of-society plan which is integrated into a disaster management system and is tested, simulated and revised frequently. However, it was noted that most countries lack the resources, systems, government structures and stability to have such a plan in place.

One initiative designed to assist countries to improve their pandemic preparedness is the PREPARE Project, implemented by an international NGO called the International Medical Corps and funded by the United States Agency for International Development (USAID). The Project aims to help countries be better prepared for public health emergencies and other events that share similar features. It encourages multisectoral involvement, a whole-of-society approach and the integration of pandemic preparedness into other disaster response frameworks to enhance pandemic response.

A whole-of-society approach involves cooperation and collaboration between and among civil society, the private sector and government; and these can be promoted in countries which need to be more prepared. Plans at the community, federal, subnational and national levels should be harmonised. A good pandemic preparedness plan should also explore the links between various actors across different sectors such as health, defence, law, telecommunications, energy, food, water and finance. These links warrant further consideration especially in a developing country context where health service delivery is strongly dependent on other essential services such as water and energy.

In conclusion, it was reiterated that the planning process needs to go beyond the health sector, as the sector is dependent on other critical sectors, and the lack of preparation in non-health sectors could cause larger disruptions to society. In addition, it was asserted that embarking on a whole-of-society planning process enhances institutional capacity, develops more holistic disaster management processes, and improves national and community resilience to other threats. It was also argued that more investment should be targeted at civil continuity, critical infrastructure and ensuring that there are no disruptions in essential services.

Discussion

There was some discussion over whether public health should be considered a private matter. The view was put forward that there is no such thing as public health without a private aspect, because every public is composed of many individuals. In medicine, for example, patients are all individuals. However, when considering communities, the collectivity of said patients must then be approached from a public health perspective.

Community reporting and related issues elicited much discussion. The point was made that community reporting plays an integral role in successful pandemic preparedness plans. As such, it is essential to understand what motivates people to cooperate with the authorities and report their symptoms; this highlights the need for the authorities to inform communities of the reasoning behind their actions and to offer individuals incentives for action.

Reporting was acknowledged to be a problem. This is particularly true for rural communities and the urban poor, among whom trust in government is often low. It was suggested that to overcome this, the authorities need to better convey the seriousness and urgency of a threat.

They also have to emphasise that the actions that have been instituted contribute to the individuals' well-being and that of their loved ones, and reiterate the apolitical nature of such actions.

Another important aspect that came under discussion was the suggestion that simplifying data collection and training processes so that they are more layman-accessible could help enhance primary surveillance capacity. Further, it was noted that a multidisciplinary team of experts would be better equipped to undertake primary surveillance efforts than a group comprising experts from one field. For example, medical officers sent to an area could be unfamiliar with the local cultural context, the dialects and the community. Thus, sending those officers along with, for example, social scientists could prove more productive. There was broad agreement on the point that a community based surveillance model would only function as effectively as the next layer of authority, that is to say, the government at the district or provincial level which is in charge of collating, analysing and interpreting data and responding accordingly. It was observed that local implementation of surveillance mechanisms is still a serious problem that requires more research.

The concept of collective informed consent was also explored. It was suggested that for collective informed consent to occur, further efforts towards providing information to communities and increased recognition of their rationality and rights were needed. In many places, schools and religious organisations have been successfully used as outreach vehicles to disseminate public health information to communities. It was noted that this method has seen considerable success in Indonesia. Such a means of communication could be used to supplement existing health avenues such as local clinics, health offices and hospitals. It was also proposed that these networks should be better mobilised and built upon.

A related question was on how trust and transparency in government decision-making play into collective informed consent. In many sociological and psychological studies, clear links have been established between government transparency and trust-building among communities. It was argued that the more transparent and open a government, the more a community would trust it and thus be willing to listen to it, share information with it, and cooperate with it when responding to a threat. It was agreed that fostering such a relationship could be made more difficult when a government proceeds to implement actions to deal with a situation without first possessing accurate information.

In response to a question on the increasing tendency of individuals to delay action when feeling unwell and how this plays out in a pandemic situation, it was suggested that the most important pandemic preparedness actions and mechanisms are those put in place prior to an epidemic's appearance. It is important, therefore, to provide the lay population with guidelines as to which symptoms are important or not important, what specific signs of trouble to look out for and immediately report, and who to report such signs to. It was observed that it is true that many questions remain unanswered as the medical sciences are still evolving. Nevertheless, to the extent that medical science is able to provide guidelines, they should be transmitted to the public in as much detail and as accurately as possible.

Another issue that was brought up is the fact that governments may sometimes not institute the most effective policies, simply because those policies would have been unpopular. This concern over negative public opinion also leads governments to act before enough information on a disease outbreak is available. It was noted that risk aversion during a pandemic kills people, but does not kill political careers; this is one reason

many policymakers and funders do not favour 'risky' actions when it comes to pandemics. It was argued that perhaps insufficient dialogue between policymakers and communities is a contributory factor; communities may be critical of certain actions because the authorities have not provided them with a clear understanding of the choices that can and need to be made.

The question of the lessons in crisis preparedness that could be learned from other disasters also came under discussion. The example of Japan was cited. It was probably one of the best-prepared countries in the world but that did not protect it from being severely affected by the recent tsunami, earthquake and nuclear crisis in Fukushima. The main lesson from this is that there is no way to prepare for the unknown. There will always be a degree of uncertainty regarding the type of scenario – best, worst or most likely – that will need to be prepared for. The panellists admitted that no one has a monopoly on truth on this matter and that it is important to continue learning from past incidents.

It was also agreed that it is difficult to assess the preparedness of a country because it is not possible to anticipate with any certainty the full spectrum of possible disasters or their nature. It was noted that, in many cases, preparedness is based on how much investment a country chooses to make towards such efforts. It was suggested that the true challenge lies in creating opportunities for more dialogue, not just between governments and communities, but also between and among sectors, in order to make preparedness a whole-of-society endeavour.

It was argued that the whole-of-society approach, while normative and comprehensive, is not really a panacea. The whole-of-society concept is not a solution, but instead aims to direct attention and resources to targeted areas of response. The whole-of-society approach allows governments to work towards offering a streamlined work

process for such response areas. Often, governments are overwhelmed by guidance coming at them from all fronts, such as from the UN and the WHO, and the streamlined process enables them to deal with that overload of information. It was further explained that the approach attempts to provide governments with practical steps that will lead to at least a minimum level of preparedness. The point of the approach, it was emphasised, is to help countries build capacity to better respond to crises, allocate available resources in a practical way and make informed policy decisions.

Sometimes, it was noted, difficult decisions have to be made, especially in very poor countries with inadequate infrastructure and financial resources. Here, making decisions based on country-specific circumstances is of utmost importance, and is strongly advocated by the whole-of-society approach. One problem in such situations could be the relationships of governments with donors and donor agencies that prioritise one resource over another (e.g., flu vaccines versus mosquito nets). It is thus important to engage with countries. There is a need to gauge their willingness to take steps, identify the steps they want to take, and work from there instead of imposing a set of generic measures upon them.

The problem of funding for international collaboration and aid projects was also discussed. It was noted that most major international collaborative efforts in pandemic planning and response are subject to short-term funding of three- to five-year cycles, and that it is difficult to observe any positive change or implement and execute any long-term programmes within such a short time-frame. There was consensus that this remains a serious issue in the international health world, and that because of this, there is a growing need to engage interlocutors in other agencies, governments and intergovernmental organisations (IGOs) so as to forge alliances that can survive short funding cycles and are able to continue planning and response efforts through other avenues.

Panel 5: Beyond Pandemics – Neglected Tropical Diseases, Emerging and Re-emerging Infectious Diseases and Chronic Non-communicable Diseases

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In considering the best ways to prepare and respond to pandemics, there is a need to take into consideration pre-existing disease burdens and their impacts on health systems, surveillance, research, and care facilities. Various health security threats and risks arise from non-pandemic sources, such as neglected tropical diseases, emerging and re-emerging infectious diseases and chronic non-communicable diseases. The management and control of the non-pandemic disease burden inevitably influence the effectiveness of existing health systems and their ability to cope within the context of a pandemic outbreak.

With this understanding in mind, the session addressed three topics:

- A global public health perspective that extends beyond and includes pandemic and non-pandemic diseases.
- The case study of the non-pandemic disease burden in the Philippines, how it has been managed and challenges for the future.
- Encephalitis and hand, foot and mouth disease (HFMD) as examples of non-pandemic diseases that contribute to the global disease burden.

Above, Beyond and Including Pandemic and Non-pandemic Diseases: A Global Public Health Perspective

There is a need to consider how to respond to health for the population in a balanced and rational way given limitations in terms of resources, and taking into consideration both pandemic and non-pandemic threats from a global public health perspective. In other words, it is vital to examine how to approach collective action for health improvement that includes health promotion, health protection and the provision of healthcare.

The pursuit of the global public health agenda is driven by various elements:

- Development (by bilateral donor agencies, aid agencies and development banks).
- Humanitarian (by organisations such as Doctors Without Borders / Médecins Sans Frontières and the International Committee of the Red Cross, which are focused on providing help where urgent medical needs exist and are unable to be met by local authorities or current resources).
- Philanthropy (by the rise of large foundations such as the Bill & Melinda Gates Foundation, the Rockefeller Foundation and the Wellcome Trust; this is also known as biomedical humanitarianism).
- Security and foreign policy.

Other influences on the global public health landscape relate to scope – global, regional and national; public and private; and local, community and individual (though the local/community/individual dimension is often not included in global public health schemes). In reality, health is only one sector among many on the international stage that need to be considered – and the governance of global public health is complicated by many actors, not only states.

The UN and the WHO remain unique actors in global public health, arguably unmatched in mandate as their aspirations are noble. However, it was observed, in terms of implementation, the trickle-down process leaves much to be desired. It is also important to consider the governance structure of the WHO and its funding mechanisms, as these elements raise many questions regarding large, powerful donor states driving and setting the global health agenda based on their own preoccupations and fears.

It was suggested that there have been three major phases of global public health in recent times:

- *Health for all*

The ‘health for all’ concept was established during the Alma-Ata Declaration of 1978, which declared that ‘[a]n acceptable level of health for all people in the world ... can be attained through a fuller and better use of the world’s resources, a considerable part of which is now spent on armaments and military conflicts. A genuine policy of independence, peace, détente, and disarmament could and should release additional resources that could be devoted to peaceful aims ...’ It aspired towards universal coverage of basic healthcare, food security, safe water, health education and promotion, maternal and child health, vaccination, prevention and control of local endemic diseases, treatment of common diseases and injuries, and the provision of essential drugs. It also sought to revitalise and reset the global order of the time, even looking at social, cultural, economic and political issues. In short, it capitalised on the new economic order

and used it to highlight the impact of an unjust global economic regime on global health, which at the time meant the prevention of access to public health goods.

- *Post-Cold War period: Health by global initiatives and assistance*

This period was arguably marked by the beginnings of the age of the pandemic with the emergence of HIV/AIDS and the ensuing global fears. This shift occurred in a time of global economic crisis, debt crises, energy crises, and relief strategies promoted by the Bretton Woods institutions (the International Monetary Fund and the World Bank) that forced countries to restructure, devalue and close or shrink social programmes, impacting public health structures and systems worldwide. These international circumstances led to the non-implementation of the tenets of Alma-Ata, and ultimately to the declaration’s aspirations being gradually buried under other economic priorities. These developments also resulted in the rise of a public health approach focused on targeted interventions and based on epidemiological data (a selective vertical approach as opposed to a comprehensive horizontal one). It also saw the rise of global initiatives and assistance, specialised agencies, IGOs and NGOs. Health priorities also became dichotomised during this time. Examples include selective healthcare versus comprehensive healthcare, vertically versus horizontally implemented policies, and child survival versus maternal health.

- *Health security*

Today, there persists a dichotomy between public health (population-centred) and health security (people-centred) priorities/approaches. The concept of ‘health security’ as promoted by the *UN Human Development Report* was described as compatible with the primary healthcare focus of contemporary global public health. This approach is community-focused and empowerment based. It also calls for the protection of at-risk and vulnerable populations, and is characterised by an emphasis on select diseases, causes or issues, such as maternal mortality and child health.

It was suggested that the focus has, in recent times, shifted to health security priorities, with the uncertainties surrounding the epidemiology of infectious diseases and the effectiveness of control strategies being emphasised. It was argued that health security has become a major concern because of the incalculable risks involved, as compared to the measurable risks of pre-existing disease burdens.

Another reason cited for health security having taken centre stage is the emergence of the era of pandemics, with SARS, bird flu, swine flu and the perpetual anticipation of the next one as the international health preoccupations of the past decade. It was argued that the focus on health security means that the pre-existing global disease burden may not be receiving the attention it needs. For example, thousands of children in the developing world continue to die from measles every year despite the measles vaccine being one of the cheapest and most widely available in the world. Also, while the double burden of communicable and non-communicable/chronic disease continues to increase in the developing world, public health policymakers continue to emphasise health security threats such as pandemic outbreaks.

In a nutshell, contemporary global public health's focus on health security has resulted in an emphasis on urgency in relation to, and crisis management of, a few selected threats. How can this preoccupation be overcome and the focus realigned back to achieving long-term, sustainable public health benefits?

To achieve this, a framework focused on the strengthening of health systems as a key component of any public health planning and response activity and function was proposed. Currently, the IHR is legally binding on all WHO member states and requires them to have the capacity to assess, detect, notify and report events. Other key functions that need to be anchored within such a framework are: leadership and governance, financing, delivery of health services, health workforce, information,

supplies, procurement and logistics management, and access to medical technologies, products and vaccines.

Another challenge is that many developing nations remain strongly dependent on donor aid, and in many cases, the priorities of donor countries are not aligned with the actual health needs of the population. This, along with the pre-existing weaknesses in some health systems, most notably a lack of access to health services, leads to parallel structures that can undermine efforts to strengthen and improve oversight of health systems. A host of different health priorities all appear to compete for the attention of governments, health personnel, donors, aid agencies and IGOs, thereby diluting the focus of public health at various levels.

Health systems financing was cited as a final obstacle. Consistent investment by governments was argued to be critical. Funding for development assistance had doubled from USD5.6 billion in 2011 to USD13.6 billion in 2006. However, this still falls short of the WHO estimate of USD30 billion. The increasing focus on managing the crisis of one or two specific diseases was said to weaken the ability of health systems to respond to all crises. It was warned that without general health-systems strengthening being addressed in concert with other pandemic preparedness and response plans, only short-term and limited gains would result.

The Philippine Non-pandemic Disease Burden

The Philippines has a host of different factors to consider when evaluating health security threats. As an island country, disease transmission can occur through many of its entry and exit points as well as via ports. The country also experiences an average of 22 typhoons and floods per year, which increases the risk of communicable disease spread. Additionally, the Philippines encounters many different outbreaks of neglected tropical diseases, zoonotic diseases, and emerging and re-emerging diseases.

Neglected tropical diseases are a particularly persistent health security threat for the Philippines. The WHO has identified 17 diseases as primary neglected tropical diseases. Of these, the Philippines has dengue, rabies, syphilis, leprosy, paragonimiasis, lymphatic filariasis, schistosomiasis and soil-transmitted helminthiasis. These diseases have their own infection control programme headed by the Philippine National Center for Disease Prevention and Control. Two of these diseases, dengue and rabies, are included in the Department of Health's routine surveillance efforts.

In response to this disease burden, the Philippine Asia Pacific Strategy for Emerging Diseases (APSED) was designed by the Philippine Department of Health in collaboration with the WHO in 2007. The plan was formulated to help the country strengthen its core capacities for effective preparedness, in the areas of planning, prevention, prompt detection, containment and control of emerging infectious diseases. The APSED identified several key obstacles to effective disease preparedness:

- *Surveillance and response.* The country lacked an established policy, an integrated national information system and trained personnel at the subnational level. The disease notification law also needed to be revised.
- *Laboratory capacity.* There was no designated overseeing agency or any capacity building policy. The following were also lacking: quality control, a national biosafety programme and laboratory personnel.
- *Zoonoses.* There was no formal response protocol for animal-to-human transmission or a formal case reporting system. Inter-agency gaps in responsibilities and coordination were found.
- *Infection control.* There was no hospital infection control programme in the Department of Health. Smaller and rural hospitals did not have infection control committees.

- *Risk communication.* There was a lack of established communication guidelines. Health personnel were also inadequately trained.
- *Entry and exit points.* There was no established communication flow between offices. The southern provinces had many entry points but weak surveillance.

To cope with these challenges, the Department of Health undertook a series of proactive measures. Among these was the establishment of the Philippine Integrated Disease Surveillance and Response (PIDSR) system, aimed at strengthening the capacity of local government units in early detection of and response to disease outbreaks or epidemics, in an effort to reduce morbidity and mortality rates. Before the advent of the PIDSR, there were many surveillance systems (e.g., event-based, health emergency surveillance) operating independently of one another. Under the PIDSR, these disparate branches were integrated under a cohesive institutionalised surveillance and response framework.

To strengthen the public health functions of laboratories, the 2008–2009 National External Quality Assessment Scheme helped develop a macro framework for the Philippine Laboratory Network. Nevertheless, progress remains slow. Although the National Center for Health Facility Development has now taken charge of coordinating laboratory planning, there is still no specific agency to oversee the public health functions of laboratories. To deal with the lack of clear operational standards in an infection control setting, the Department of Health set out the Standards in Infection Control in Healthcare Facilities. Also, the National Center for Health Promotion was assigned to lead the implementation of risk communication activities.

Although there have been significant actions taken to bridge the gaps in disease outbreak preparedness and response in the Philippines, certain obstacles remain. It was stated that there remains a need to formulate

plans that will facilitate the implementation of new and continuing activities meant to strengthen the response to outbreaks, establish the animal-human interface collaborative research agenda, bolster support for surge capacity, promote standards in the area of infection control, enhance existing risk communication approaches and expand coverage to include other public health threats.

To overcome these obstacles, several key steps were suggested:

- Reassessment of the relevance and adaptability of existing policies to ensure that they are aligned with international standards.
- Establishment of mechanisms that will facilitate the linkage of existing systems in surveillance.
- Establishment of an integrated and streamlined monitoring and evaluation system to track the progress and results of policy implementation.
- Provision of relevant data to implementing units and agencies so as to enable them to better manage their programmes.

The Global Non-pandemic Disease Burden

Encephalitis is a devastating disease with an estimated incidence rate of 9 to 22 cases per 100,000 persons in Asia. Etiological research has shown that, in children in Vietnam, the major culprits behind encephalitis are Japanese encephalitis virus (JEV), dengue virus and enteroviruses. In adults, the herpes simplex virus (HSV), JEV and dengue virus are the main causative agents. However, a majority of both patient groups remain undiagnosed even after an extensive workup for multiple pathogens using PCR and serology tests. As the major pathogens are vaccine-preventable and the majority of cases remain undiagnosed, upscaling of vaccination programmes and pathogen discovery research are possible options for preventing and researching encephalitis.

HFMD can be caused by enteroviruses of genotype A. Infection with enterovirus 71 (EV71) is associated with a high prevalence of acute neurologic disease, especially in children less than 5 years of age. The prevalence rate of EV71 infection in the Asia-Pacific region has greatly increased since 1997, concurrent with an increase in acute neurologic disease. At two paediatric hospitals in Ho Chi Minh City, Vietnam, more than 7,000 patients are admitted each year with HFMD, 700 of whom have severe HFMD (grades 3 and 4). Besides supportive care, there is no specific therapy available for severe HFMD. Intravenous immunoglobulins (IVIg) are currently administered to some patients with severe HFMD in an ad hoc manner but there has been no systematic analysis of its clinical efficacy and no randomised controlled trials.

Discussion

During the discussion session, it was argued that the post-Cold War period gave rise to a plethora of public health initiatives. However, these initiatives were disparate, rather than centred around a single strategy or guiding principle. A remark was made that, perhaps, in modern times, uncertainty has replaced risk as the underlying sentiment guiding the cultural narrative.

The session also addressed questions of how health systems and infrastructure have direct impacts on health outcomes, particularly in the event of complex emergencies or natural disasters. Countries with well-established health systems and infrastructure such as Japan and the US were better able to cope with the health impacts of natural disasters (including fatalities and other health-related issues, e.g., injury and trauma, disease spread and increased need for medical care) compared to less developed countries such as Pakistan.

Ultimately, it was reasserted, the strengthening of health systems would be the most beneficial course of action to take in order to both assure public health and mitigate

potential health security threats. It is only through the effective management of known/expected health problems and the existing disease burden that we can be better prepared for 'unknown unknown' health threats.

It was also observed that, over the past several years, influenza has been identified and prioritised as a global public health and health security concern. Accordingly, pandemic preparation and response measures – such as vaccine stockpiles and personal protective equipment – have been geared towards influenza or influenza-like illnesses. Such a narrow focus could lend itself to blind spots and render us unprepared for the next outbreak, which might not be influenza-like at all.

A follow-up question was then asked: what type of pandemic disease would most likely affect Southeast Asia next? The response was that although it is easy to speculate on the candidates for a future pandemic, it is more important to take stock of the lessons from the past few years. Nobody expected the onset of SARS in 2003, no one expected an outbreak of influenza originally found in birds a few years later, and no one expected the outbreak, let alone the overwhelming response to, what was finally deemed a 'wimpy' virus originally found in pigs. Thus, it was argued, public health attention should not be solely focused on one (or one type of) pathogen; there is a need to instead work on being prepared for a variety of different possible scenarios.

It was argued that the organisation best equipped to provide technical advice in pandemic preparedness to a country is the WHO which, despite its limitations,

possesses the mandate to do so. Also, the WHO is best placed to foster technical collaboration, cooperation and information sharing, given its relationships with not only states, but also regional bodies and other agencies and organisations, both governmental and non-governmental, both policy- and research-based.

Nevertheless, it was opined, it is time that the WHO consider structural changes. The WHO was likened to a board comprising stakeholders in the world of public health, with the most powerful stakeholders having the biggest say in the policies that are implemented, in spite of its doctrine of equal representation. However, whether any structural changes occur, or how they occur, remains to be seen.

It was also suggested that successful and effective implementation is still the key to the success of any preparedness and response plan. However, it remains difficult for authorities to communicate messages, information and policies from the top down to the grassroots level – and efforts are ongoing to overcome this major obstacle.

Finally, the panel agreed that it would be near to impossible to achieve all the health Millennium Development Goals by 2015, particularly the goal of reducing maternal mortality. The child mortality target, however, is likely to be reached by most countries, a reality that could be partly attributed to the dichotomy seen in public health, where one health issue is prioritised over another and the approach to health issues remains singular as opposed to holistic.

Panel 6: Ways Forward and Policy Recommendations

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In working towards better pandemic preparedness and response, and in formulating steps forward and policy recommendations towards achieving more comprehensive health security, various questions need asking. The issues include: how pandemic responses can be more effectively tailored to the pandemic itself, the role of multisectoral collaboration in reinforcing health security, and the specific lessons that could be drawn from the successes and failures of the pandemic preparedness and response plans that have been executed so far. This final session addresses three main topics:

- The politicisation of public health.
- Lessons learned from pandemic influenza in Thailand.
- The purpose of pandemic planning and its achievements.

Looking Ahead in an Age of Pessimism

In the summer of 2009, health authorities in the UK announced that there could be up to 100,000 new cases of H1N1 every day within a month, with up to 40 deaths a day. The chief medical officer speculated that the death toll in the UK could hit 65,000 overall. However, the total number of deaths according to the post-pandemic-produced Hine Report was 457. This highlighted the vast difference between the actual scale of the problem, and the scale as perceived by the authorities.

The immediate impact (of the initial estimates) on clinicians was that by the middle of July 2009, they were receiving tens of telephone calls a day from worried members of the public fearing they had been infected or were at risk, with many of them coming into clinics seeking advice. This influx of patients occurred on top of the everyday patient load, putting significant stress on health facilities.

By the end of July, however, the WHO declared that H1N1 would be a mild outbreak. In spite of this, it was argued, the UK government continued to be driven towards raising public anxiety, because they had invested in large stockpiles of Tamiflu and were eager to get rid of them.

The question was then asked: what would have happened if the public had not received the cascade of awareness-raising information and strategic plans? Would the outcome of the 2009 pandemic have been that different had that been the case? The answer is perhaps not, since, based on first-hand clinical experience, there was only a slight increase in children and young people coming in with viral infections, with some sporting more severe viral infections than normal (which were, as per routine, treated with antibiotics to prevent secondary infection) and no deaths and no hospital admissions from H1N1.

It was noted that the last influenza pandemic of historical significance in the last 50 years was arguably the 1968 Hong Kong influenza outbreak, which caused an estimated 1 million fatalities worldwide. More difficult to

measure was the impact of this outbreak on primary care. In 1968, when the outbreak occurred, there were only 10 references to influenza in the *British Medical Journal* (BMJ), one of medical research's most respected academic publications. There were only 11 such references the following year, of which none referred to the outbreak as a 'pandemic'. This, it was argued, shows that the outbreak had little impact on the medical research field.

It was argued that the outbreak's impact on society on a wider scale was also minimal. The Hong Kong influenza outbreak was not listed as a major event of 1968. Other events of the period – the Tet Offensive, the upsurge of civil rights, women's liberation and black power – seemed to have been more memorable. In other words, pandemic influenza made little to no impact on the popular consciousness of the era, and the general spirit towards health at the time was the oft-cited wartime adage of 'keep calm and carry on'. Similarly, it was argued that the Spanish influenza outbreak of 1918–1919 (to which many observers tried to compare the 2009 swine flu) only came into the public consciousness in the 1970s, when the first book on the topic was published.

Attitudes towards, and perceptions of, disease outbreaks are very different today, and it was suggested that this could be attributed to the spirit of the age that we live in, which is deeply pessimistic, and focused on worst-case scenarios, and negative possibilities and outcomes. It was argued that, in the past, science and society were perceived to be in a much stronger position to innovate and cope with much larger-scale medical problems. Today, however, we are said to live in 'inter-pandemic' times, according to some pandemic-related literature. It was argued that the 'apocalypse from now on' mentality began with the rise of HIV/AIDS and has been reinforced by the growing attention given to natural disasters and perceived environmental threats, emerging or novel diseases and bioterrorism. This overwhelming notion, it was explained, frames the context in which societies now respond to relatively minor threats, leading to accordingly exaggerated responses being launched.

It was further elaborated that a dialectic has now developed between the individual and government. The isolated, atomised individual in society has an intense consciousness of individual risk and vulnerability in relation to threats. Meanwhile, public health and governmental authorities seem happy to seize the opportunities offered by the emergence of a new virus to promote global and national solidarity in a world where politicians appear to be lacking in authority and legitimacy. Politicians could encourage moral direction and purpose in society and connect with their constituencies by rallying the public around the health threat.

It was noted that the world of health has become more connected than ever before to the political sphere. The interaction between the isolated individual and the state trying to connect with them could be seen in the context of the wider moralising mission of public health in modern society. Today, the public health realm has taken on the role of encouraging or discouraging behaviour in the personal lives of individuals, from sexual activity to dietary consumption.

In this moralising environment, it was argued, mild outbreaks have grown to be perceived as far more than what they are, resulting in corresponding actions and a series of opportunity costs including high absenteeism rates and unnecessarily overcrowded health facilities (which ironically increased the risk of infection of not only influenza but also other infectious diseases, due to the high number of patients occupying one enclosed space at the same time). This problem is far from new, having also occurred during previous outbreaks, including SARS and H5N1. It was argued that, as a direct consequence of this social context, public confidence in health authorities has been greatly undermined. This manifested itself most clearly in the low uptake of the H1N1 vaccine when it was made available, and also in the rampant conspiracy theories of WHO officials financially benefiting from the vast amount of vaccines produced and sold to different countries.

Ultimately, it was observed, two main lessons should be taken away from this. First, during a pandemic, public platforms should be reserved for appropriate figures. It was argued that scientists, virologists and clinicians should operate exclusively within their realms of expertise during an outbreak, where they can perform vital work within their fields at optimal levels instead of operating from public platforms where often, their comments may act against the public's best interests. Second, an embargo on the media taking on a public health role was suggested.

Contingency planning during an outbreak was supported, but it was suggested that it has to be conducted in a discreet and subtle manner (without being secretive) as there is very little public value to immediately transmitting every new piece of information to the public, because said information is often unsubstantiated by evidence, solutions and advice on proper responses. The focus, it was suggested, should be realigned towards collating quality, considered and measured information, and disseminating it to healthcare professionals as they are the first reactors and respondents in such situations. Informing the press and the public should be a secondary priority. In other words, the focus needs to be on targeted, specific, reliable messaging and not public relations.

In conclusion, it was reiterated that the politicisation of public health needs to be reversed. It was contended that this politicisation has had negative impacts on public perceptions of health issues and generated anxiety disproportionate to the severity of the situation at hand. It has also exerted unnecessary demand on health services, thereby distracting them from other important health issues that need addressing, thus causing considerable opportunity costs.

Lessons Learned and Ways Forward from the Thai Pandemic Influenza Experience

It was argued that, in the case of Thailand, avian influenza H5N1 served as a catalyst for the making of plans for dealing with pandemics. Prior to H5N1, Thailand did not have a comprehensive pandemic preparedness and response plan, only one for natural disasters. After being hit by H5N1 in 2004, the perception of pandemic risk among Thai authorities changed and the formulation of a pandemic preparedness and response plan began.

Thai authorities successfully implemented a national plan with the goals of maintaining preparedness and response in the event of a pandemic influenza outbreak. The first plan began in 2005, the second plan ended in 2010, and authorities are in the midst of formulating a third plan. The plan was centrally coordinated by the National Committee on Avian Influenza Control and was supported by various subcommittees and working groups.

As the national plan provided a comprehensive framework for multisectoral cooperation, the involvement of various sectors in pandemic preparedness and response in Thailand was relatively high. The different sectors were encouraged to be involved in the planning process, which included simulation exercises and testing at all levels. The plan also introduced BCP supported by the private and public sector. It was observed that large corporations were cooperative, but the participation of small and medium enterprises (SMEs) remained low.

The first case of H1N1 in Thailand was discovered in mid-May 2009. The pandemic that hit the country was arguably not very serious, but brought to light issues of public health, political stability and adverse socioeconomic implications. The Thai authorities responded in three waves:

- *First wave.* This stage involved intensive surveillance and containment efforts to delay local outbreaks, and the provision of early treatment. Risk communication also took place.
- *Second wave.* During this stage, mitigation strategies were maintained, and H1N1 vaccines were introduced. A major roadblock was the impact of increased public fear on vaccine uptake rates: in a country with a population of 69 million, only 2 million vaccines were consumed over the second-wave response period.
- *Third wave.* Surveillance efforts were maintained. At the same time, risk communication was improved in the wake of the problems faced in the second wave, and seasonal flu vaccinations were provided to high-risk/vulnerable populations. The better risk communication practices appeared to pay off, as shown by an increase in vaccine uptake.

In terms of capacity, it was argued that Thailand was well-equipped to cope with H1N1 because surveillance efforts had been stepped up post-H5N1. Also, Thai authorities had synchronised multiple types of surveillance (local, subregional, provincial and national), increased hospitals' surge capacities and amassed a national stockpile of vaccines and drugs. The Thai authorities also mobilised communities by recruiting 1 million health volunteers nationwide. They also engaged with community leaders, local NGOs and members of the business community. Many industries were observed to have adapted well to changing market supply and demand trends during and after H1N1.

Notably, authorities appeared to seize on the opportunities to foster multisectoral cooperation. They sought technical support, financial assistance and response guidelines from IGOs, and engaged with regional entities such as ASEAN and the Asia-Pacific Economic Cooperation (APEC) forum for regional coordination purposes. Also, with the WHO supporting R&D efforts, Thailand started producing its own drugs and vaccines. The authorities also established a comprehensive risk communication network to enhance and support public communication through the mass media.

It was argued that H1N1 highlighted various gaps in Thailand's existing pandemic preparedness and response policy. Prior to H5N1 and H1N1, the Thai authorities treated pandemics as health issues under the auspices of the Ministry of Public Health. Command and coordination of response efforts were left to the Ministry of Public Health because a pandemic constituted a Public Health Emergency. It was observed that, within this framework, communication was problematic and authorities saw a public overwhelmed by scepticism and panic. Additionally, perhaps due to the lack of a central coordinating structure and an ineffective trickle-down mechanism to local authorities, some instructions such as school closures were not uniformly implemented,

leading to a wide range of questions on the validity and practicality of the measures undertaken.

After H1N1, there were calls from various parties from the public and private sectors to expand the scope of the plan to cover diseases beyond pandemic influenza. This led the National Committee on Avian Influenza Control to cover other emerging infectious diseases within the provisions of the national plan.

Various suggestions for ways forward were made. It was noted that capacity building and improvements in public health infrastructure, including diagnostic facilities and laboratories, should continue to be prioritised. Surveillance systems should be strengthened, with the need to expand surveillance and rapid response capabilities to the local level being highlighted. Other national-level suggestions included encouraging case reporting from private healthcare facilities and hospitals, expanding hospital surge capacity in public healthcare facilities and diversifying national stockpiles of antivirals and vaccines to address other emerging infections.

Other important steps which were identified included: strengthening multisectoral cooperation, promoting and encouraging the role of local administration within a Public Health Emergency setting, establishing firmer links with legal and financial authorities and streamlining risk communication strategies.

It was also suggested that linkages with regional bodies such as ASEAN and international bodies such as the WHO needed to be further reinforced in order to maximise the potential for regional and international cooperation. The establishment of regional stockpiles of vaccines and antivirals was strongly recommended in order to strengthen both regional and national capacity. Finally, with regard to regional coordination, it was proposed that new areas of cooperation, such as vaccine and antiviral production, should be further explored.

The Purpose of Pandemic Preparedness Planning and Its Achievements

Pandemic preparedness planning has featured heavily in both national and international political realms in the past decade, with many plans created and implemented to cope with outbreaks from SARS to H1N1. However, it was argued, in spite of this, there remains a lack of clarity on the purpose of such plans, and more importantly, on what these plans have achieved.

Three main problems with pandemic preparedness plans were identified. First, the purpose of such plans is often not well-defined. Plans are often vaguely worded, with non-specific targets. Second, even those objectives that are narrowly defined contain broad, imprecise concepts. The majority of plans include mentions of public health (which in itself is a relatively vague concept) and emphasis is often placed on economic priorities and security aims, with no further elaboration of the concepts referred to. The third problem is the subjectivity of each plan. The purpose of a plan often depends on the geographical location of a given country which means that achieving a universal standard of control is challenging. The lack of a common approach could hinder efforts to control an outbreak and its spread. For instance, in 2009, Southeast Asia focused on the containment of H1N1. In Africa, the emphasis was more on the formulation of plans and proposals to deal with the issue. Meanwhile, in the West, mitigation strategies were employed.

It was noted that some of the best pandemic preparedness plans, such as the French, Irish and New Zealand plans, circumvented these problems by setting defined triggers that were strategic, measured and clearly allied to a set of activities and actions to be carried out in an outbreak situation.

Given that most countries had strategic plans in place before the 2009 pandemic, it was then asked if it could now be determined whether those plans were effective. According to the *Fifth Global Progress Report*

on *Animal and Pandemic Influenza* jointly produced by the UN and the World Bank, there was a sense of significant improvements in investments and planning, especially under the UN agencies. However, some doubts were expressed over whether there were quantifiable improvements as a direct result of the plans.

The report indicated that surveillance did improve in certain parts of the world and the data from such surveillance raised issues that had not previously been addressed. The remit (given to surveillance) that had emerged with SARS was extended. Also, some issues related to the scope of the IHR 2005 with regard to pandemics were consolidated. This report and many others, including the UK's Hine Report, indicated that the processes associated with responding to pandemics, including the responses of institutions at national, regional and global levels, likely resulted in greater coordination of efforts. Nevertheless, proving that preparedness activities lead to improvements in public health outcomes remains challenging.

A recent study on this issue argued that one reason for this is that national influenza surveillance data offer few insights into the effectiveness of preparedness plans. The vast differences between countries make it difficult to correlate data. Also, the study found no correlative patterns between pandemic preparedness plans, delays in peaks of cases during a pandemic and differences in the relative number of cases in the pre-pandemic period. Additionally, peaks in influenza cases were not dramatic relative to the pre-pandemic period, as the pandemic under study was mild and there were not many cases to begin with.

The study concluded that, to an extent, preparedness plans did delay and flatten curves, which allowed health systems to respond adequately and more effectively to the outbreak. However, a striking finding was that almost all countries observed in the study reached their pandemic peak at the same time, which suggests that preparedness systems did not have that much of an

impact on controlling the outbreak itself. There was also no real correlation between the aggregate planning scores of different countries in relation to WHO preparedness and response criteria, coordination, surveillance, public health interventions, vaccines and health service responses.

This study was rejected by medical research journals because they did not look favourably upon inspecting plans, preferring to focus on revisiting actions. However, it was strongly argued that looking at plans should be prioritised because while there is a great deal of information on actions undertaken during a pandemic, very little is known about what works with regard to such public health interventions.

In order to address the gaps in knowledge, it was argued that there is a need to acknowledge that, at the moment, there is a tendency to focus only on examining those questions that could be answered; and that, as a consequence, many problems are left unaddressed. It was noted that infectious disease threats, particularly in Southeast Asia, should not be ignored. Nearly 75 per cent of emerging and re-emerging diseases affecting humans are zoonotic; some of these have pandemic potential. It was further iterated that new infectious diseases emerge as a result of a complex set of multifactorial circumstances, including population growth, changes in nutritional, agricultural and trade practices, and shifts in land use (in the form of accelerated urbanisation, and deforestation and encroachment on wildlife). Therefore, it was argued, there is a growing need to investigate how diverse and changing natural environments offer ecological niches that could be exploited by new micro-organisms. Unfortunately, the study of when, where and how these micro-organisms develop remains in its infancy; more needs to be known about human-to-human contact, how diseases are transmitted, and the relationship between humans and animals. It was proposed that there is a need to be more strategic in terms of research, and this could include looking at the history of diseases. In addition, better and more intensive interdisciplinary

research would be required. An example cited was the need to look at the interaction between socioeconomic dimensions of diseases and the environment, and how this changes pathogens in terms of their mutation patterns and transmission dynamics.

The question of funding allocation for the mitigation of pandemic risk was raised. There was consensus that the most problematic issue is inequity between wealthier countries and other countries. Poorer countries in regions more likely to suffer from newly emerging diseases usually see more rationality in investing in containment strategies while rich developed countries focus their energies and resources on mitigation.

Also, it was asserted that many countries base their pandemic preparedness and response plans on the assumption that resources will always be available, with little to no consideration for what might happen should the resources be no longer available or run out. It was noted that prevention has been rather neglected in the grand scheme of pandemic plans, and that there is a need to rethink priorities, reassess risk, reconsider the operationality of plans and strategies, and most urgently, invest more in finding out what works both clinically and public-health-wise when it comes to mitigation practices.

Discussion

During the discussion session, several fundamental issues came to light. With regard to expecting the unexpected in terms of outbreaks and disasters, it was argued that authorities and governments need to move away from a mental model that assumes human vulnerability in a crisis situation. Taking the quiet dignity and diligence of the Japanese people in responding to the recent tsunami, quake and nuclear crisis as an example, it was argued that great inspiration can be drawn from the responses of ordinary people when catastrophes do happen. Other examples include the solidarity of community responses to the 9/11 attacks and the London Underground bombings.

The discussion also saw the topic of contingency planning for emergencies raised as an important consideration. However, some objected to certain aspects of the conduct of such planning efforts; public alarm was perceived to have been raised out of proportion to public benefit in many instances. It was argued that the capacity to adjust plans in response to changing circumstances remains an issue (while noting that even when authorities recognised that the scale of the pandemic was not proportional to the response, the response continued to be driven by the politicisation of health initiatives).

A related problem is Western society's fear of sudden unexpected outbreaks, attributed in part to the legacy of the bovine spongiform encephalopathy (BSE, or mad cow disease) outbreak in England in the 1990s. Prior to the outbreak, all scientific advice indicated that such an outbreak would be very unlikely, so it was particularly shocking for the public when it did occur. It was argued that the authorities responded by assuming that if the worst were to happen, and they did not predict a worst-case scenario at the outset, they would be blamed for underestimating the potential of a public health emergency occurring. Therefore, even today, responses to threats of that nature are driven by blame avoidance on the part of health authorities and evasion of responsibility on the part of governments.

A great deal of financial and manpower resources go into pandemic planning. Nevertheless, it might be too sweeping to assume that planning is irrelevant or useless if no pandemic occurs or if a pandemic does not justify the costs injected into planning for it. It was argued that the real problem with many preparedness plans is the lack of both flexibility and measured, severity-dependent response measures, likely due to the fact that they were mainly crafted after SARS and the re-emergence of H5N1, and were based on fears of a serious epidemic along the lines of the 1918 Spanish influenza outbreak. It was thus

suggested that plans should be revised regularly to meet the demands of different scenarios. It was also iterated that it is important not to wait for an outbreak, but to push forward with developing better capacity to estimate new hazards and their potential impacts, as this would enable informed decisions to be made on how and where to allocate investments both within and outside the public health sector.

The discussion also focused on the use of surveillance data as information for action. It was noted that this would require surveillance systems that could provide more accurate predictions and information on the direct impacts and outcomes of any actions taken, and identify the most effective measures. At present, a major flaw of surveillance systems is that they do not provide useful information for improving response.

It was also proposed that further investment should be channelled into anticipating future problems. At the same time, attention should be paid to where the funding is being directed, and how it is being used. It was stated that while allocating monetary and human resources to pandemic preparedness is necessary and expected, distortions between regions with regard to how resources are utilised remain contentious. For example, a large proportion of pandemic preparedness and response funding in Southeast Asia still goes towards H5N1 and its prevention. In other words, countries still invest in prevention rather than mitigation despite knowing that the transmission dynamics of a new virus means that the likelihood of containing its spread is low. It was thus recommended that there should be a shift in the focus of funding. More should be allocated to building the capacity of health systems in general and studying human-animal health links. It was emphasised that this would probably be more useful than applying specialised and targeted responses or interventions to pathogens that little is known about.

Programme

Day 1

18 April 2011 (Monday)

11:00 – 12.45

Panel 1: Flexibility in Pandemic Planning, Preparedness and Response and Its Security Implications

This session will discuss how a more flexible approach to tackling a potential pandemic outbreak can lead to its more effective management and control. It will also attempt to identify the facets of pandemic planning, preparedness and response that can be adjusted and tailored to effectively tackle multiple scenarios – from the worst-case scenario to the most likely outcome.

Chair

Mr Kwa Chong Guan

Head of External Programmes,
S. Rajaratnam School of International
Studies (RSIS),
Nanyang Technological University,
Singapore

Panellists

Associate Professor Leo Yee Sin

Department of Infectious Diseases,
Tan Tock Seng Hospital, Singapore;
and Clinical Director,
Communicable Disease Centre,
Singapore

Dr I. Nyoman Kandun

Director, Field Epidemiology
Training Program, Indonesia;
and Former Director-General,
Centre for Communicable Diseases,
Ministry of Health,
Indonesia

The Gallery, Level Two, Traders Hotel, Singapore

08:45 – 09:15 **Registration**

09:15 – 10:30 **Welcome Remarks**

Ambassador Berry Desker

Dean, S. Rajaratnam School of
International Studies (RSIS),
Nanyang Technological University,
Singapore

Address by Guest of Honour

Associate Professor Ho Peng Kee

Senior Minister of State for Law
and Home Affairs,
Singapore

Introductory remarks

Associate Professor Ralf Emmers

Acting Head, Centre for
Non-Traditional Security (NTS)
Studies,
S. Rajaratnam School of International
Studies (RSIS),
Nanyang Technological University,
Singapore

Keynote address

Professor David Heymann

Head, Centre on Global Health
Security at Chatham House, UK;
Professor, London School of
Hygiene & Tropical Medicine, UK;
Chairman, Health Protection
Agency, UK;
and former World Health
Organization (WHO) Assistant
Director-General for Health
Security and Environment, and
Representative of the Director-General
for Polio Eradication

Dr Sarah M.Y. Choi

Head, Emergency Response
and Information Branch,
Centre for Health Protection,
Hong Kong SAR

Dr Augustine Pang

Assistant Professor,
and Deputy Head, Division of Public
and Promotional Communication,
Wee Kim Wee School of
Communication and Information
College of Humanities, Arts and
Social Sciences,
Nanyang Technological University,
Singapore

12:45 – 14:15 **Lunch**

14:15 – 16:00 **Panel 2: Risk Communication during
and after Pandemics**

This session will highlight how risk
communications can be undertaken
during and after pandemics, particularly
to ensure sustained vigilance and reduce
complacency on the part of the various
governments and people. It will also
examine how to build in flexibility into
the risk communication strategy, to cater
to a broad range of scenarios.

Chair

Associate Professor Alan Chong

S. Rajaratnam School of International
Studies (RSIS),
Nanyang Technological University,
Singapore

Dr Mark Davis

Senior Lecturer,
School of Political and Social Inquiry,
Faculty of Arts, Monash University,
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Dr Bill Durodié

Senior Fellow, and Coordinator of the
Health and Human Security Programme,
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Panellists

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College of Humanities, Arts and
Social Sciences,
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Singapore

16:15 – 18:00 **Panel 3: Fighting Crises with
One Response Plan – Commonalities
between Pandemics and Other Crises**

Understandably, in countries plagued
with natural disasters, it is not
uncommon for governments to tend to
focus more on disaster management.
However, this is often at the expense
of efforts and resources for pandemic
preparedness. This session aims to
address commonalities between the
planning and management of influenza
pandemics and other disasters (e.g.,
earthquakes, typhoons) and how
response plans for non-pandemic crises
can be adapted to pandemic scenarios.

The issues to be addressed include: (1) the common challenges and common responses (e.g., the use of similar crisis management structures); (2) the unique characteristics of each crisis which requires a different set of planning/response parameters; and (3) examples of countries which face natural disasters and have adopted similar response frameworks for pandemic and non-pandemic crises.

Chair

Dr Rajesh Manohar Basrur

Senior Fellow,
Centre for Non-Traditional
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Singapore

Panellists

Dr Ingo Neu

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and former Senior Planning Officer,
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Pandemic Influenza Contingency (PIC),
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Dr Noel Miranda

Advisor, Multisectoral Pandemic
Preparedness and Response,
ASEAN-US Technical Assistance
and Training Facility,
Indonesia

End of Day 1

Day 2

19 April 2011 (Tuesday)

10:00 – 11:45

**Panel 4: International Collaboration
in Pandemic Preparedness**

This session looks at current efforts at the country-to-country and regional level (e.g., at the ASEAN level) to enhance pandemic preparedness, and discusses what is lacking and how collaboration can be improved. The session will also address the roles of international organisations such as the International Federation of the Red Cross and Red Crescent Societies, the World Food Programme, etc. Some issues for discussion include an assessment of pandemic preparedness in ASEAN countries, whether having a master response plan would help in facilitating humanitarian assistance and support from international/non-government agencies, and whether there are existing disaster management plans that could be adapted to the context of a pandemic, e.g., the ASEAN Agreement on Disaster Management and Emergency Response (AADMER).

Chair

Dr Bill Durodié

Senior Fellow, and Coordinator of the
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Dr Stella Quah

Adjunct Professor,
Health Services and Systems
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Duke-NUS Graduate Medical School,
Singapore

Dr Peter Horby

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Research Unit (OUCRU),
Nuffield Department of
Clinical Medicine, Hanoi,
Vietnam

Dr Liviu Vedrasco

Chief of Party, PREPARE Project,
International Medical Corps,
Washington, DC,
US

11:45 – 13:30 **Lunch**

13:30 – 15:15 **Panel 5: Beyond Pandemics –
Neglected Tropical Diseases,
Emerging and Re-emerging
Infectious Diseases
and Chronic Non-communicable
Diseases**

This session will examine the health security threats and risks that arise from non-pandemic sources: neglected tropical diseases, emerging and re-emerging infectious diseases and chronic non-communicable diseases. It will also look at how the management and control of the non-pandemic disease

burden can influence the effectiveness of existing health systems and their ability to cope within the context of a pandemic outbreak.

Chair

Dr Arpita Mathur

Former Research Fellow,
South Asia Programme,
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Panellists

Dr Divina Cabral-Antonio

Head, Regional Epidemiology
and Surveillance Unit,
Centre for Health Development,
Department of Health,
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Dr Za Hussain Reed

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Singapore

Dr Rogier van Doorn

Virologist, Oxford University
Clinical Research Unit (OUCRU),
Wellcome Trust Major Overseas
Program,
Ho Chi Minh City,
Vietnam

15:30 – 17:15 **Panel 6: Ways Forward and Policy Recommendations**

This session will suggest potential steps forward and policy recommendations for achieving more comprehensive health security by addressing several key questions, including how pandemic responses can be more effectively tailored to the pandemic itself, the role of multisectoral collaboration in reinforcing health security, and the influence of economic development on health security through the strengthening of public health systems, surveillance and diagnostic mechanisms, and infrastructure.

Chair

Dr Jochen Prantl

Visiting Senior Fellow,
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Panellists

Dr Michael Fitzpatrick

General Practitioner,
Barton House Health Centre;
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Dr Supamit Chunsuttiwat

Senior Expert, Department
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Ministry of Public Health,
Thailand

Dr Richard Coker

Professor of Public Health,
Communicable Diseases
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London School of Hygiene &
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Mahidol University,
Thailand

17:15 – 17:45 **Concluding Remarks**

Dr Bill Durodié

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- End of Conference -



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About the RSIS Centre for Non-Traditional Security (NTS) Studies

The **RSIS Centre for Non-Traditional Security (NTS) Studies** conducts research and produces policy-relevant analyses aimed at furthering awareness and building capacity to address NTS issues and challenges in the Asia-Pacific region and beyond.

To fulfil this mission, the Centre aims to:

- Advance the understanding of NTS issues and challenges in the Asia-Pacific by highlighting gaps in knowledge and policy, and identifying best practices among state and non-state actors in responding to these challenges.
- Provide a platform for scholars and policymakers within and outside Asia to discuss and analyse NTS issues in the region.
- Network with institutions and organisations worldwide to exchange information, insights and experiences in the area of NTS.
- Engage policymakers on the importance of NTS in guiding political responses to NTS emergencies and develop strategies to mitigate the risks to state and human security.
- Contribute to building the institutional capacity of governments, and regional and international organisations to respond to NTS challenges.

Our Research

The key programmes at the **RSIS Centre for NTS Studies** include:

- 1) Internal and Cross-Border Conflict Programme
 - Dynamics of Internal Conflicts
 - Multi-level and Multilateral Approaches to Internal Conflict
 - Responsibility to Protect (RtoP) in Asia
 - Peacebuilding
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 - Mitigation and Adaptation Policy Studies
 - The Politics and Diplomacy of Climate Change
- 3) Energy and Human Security Programme
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 - Stability of Energy Markets
 - Energy Sustainability
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- 4) Food Security Programme
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- 5) Health and Human Security Programme
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 - Pandemic Preparedness and Global Response Networks

The first three programmes received a boost from the John D. and Catherine T. MacArthur Foundation when the RSIS Centre for NTS Studies was selected as one of three core institutions leading the MacArthur Asia Security Initiative in 2009.*

Our Output

Policy Relevant Publications

The **RSIS Centre for NTS Studies** produces a range of output such as research reports, books, monographs, policy briefs and conference proceedings.

Training

Based in RSIS, which has an excellent record of post-graduate teaching, an international faculty, and an extensive network of policy institutes worldwide, the Centre is well-placed to develop robust research capabilities, conduct training courses and facilitate advanced education on NTS. These are aimed at, but not limited to, academics, analysts, policymakers and non-governmental organisations (NGOs).

Networking and Outreach

The Centre serves as a networking hub for researchers, policy analysts, policymakers, NGOs and media from across Asia and farther afield interested in NTS issues and challenges.

The **RSIS Centre for NTS Studies** is also the Secretariat of the Consortium of Non-Traditional Security Studies in Asia (NTS-Asia), which brings together 20 research institutes and think tanks from across Asia, and strives to develop the process of networking, consolidate existing research on NTS-related issues, and mainstream NTS studies in Asia.

More information on our Centre is available at www.rsis.edu.sg/nts

** The Asia Security Initiative was launched by the John D. and Catherine T. MacArthur Foundation in January 2009, through which approximately US\$68 million in grants will be made to policy research institutions over seven years to help raise the effectiveness of international cooperation in preventing conflict and promoting peace and security in Asia.*

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The S. Rajaratnam School of International Studies (RSIS) was inaugurated on 1 January 2007 as an autonomous School within the Nanyang Technological University (NTU), upgraded from its previous incarnation as the Institute of Defence and Strategic Studies (IDSS), which was established in 1996.

The School exists to develop a community of scholars and policy analysts at the forefront of Asia-Pacific security studies and international affairs. Its three core functions are research, graduate teaching and networking activities in the Asia-Pacific region. It produces cutting-edge

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The School's activities are aimed at assisting policymakers to develop comprehensive approaches to strategic thinking on issues related to security and stability in the Asia-Pacific and their implications for Singapore.

For more information about RSIS, please visit www.rsis.edu.sg

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