

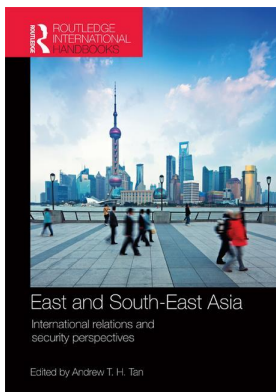
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Access details: *subscription number*

Publisher: *Routledge*

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East and South-East Asia International relations and security perspectives

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Publication details

<https://www.routledgehandbooks.com/doi/10.4324/9780203146026-20>

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Published online on: 21 Mar 2013

How to cite :- Allen Yu-Hung Lai, Adam Kamradt-Scott, Richard Coker. 21 Mar 2013, *Future pandemics from: East and South-East Asia, International relations and security perspectives* Routledge
Accessed on: 16 Oct 2021

<https://www.routledgehandbooks.com/doi/10.4324/9780203146026-20>

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Future pandemics

Transnational health challenges in East and South-East Asia

Allen Yu-Hung Lai, Adam Kamradt-Scott and Richard Coker

Introduction

Over the past few decades, East and South-East Asia have experienced several outbreaks of emerging infectious diseases (EIDs) that have contributed to widespread human suffering and death, as well as adversely affecting the region's economic and social well-being. For example, the 2003 Severe Acute Respiratory Syndrome (SARS) outbreak that spread to over 30 countries with over 8,000 cases of infection and 800 fatalities cost the region an estimated US \$60 billion in economic damage and also contributed to social disruption, such as school closures (Asian Development Bank Outlook 2003). Similarly, the emergence of a new strain of H5N1 (influenza A) initially in Hong Kong and its subsequent spread across Asia, Europe and into Africa had resulted at the time of writing in approximately 600 human cases and almost 360 deaths, and cost the region billions of dollars in lost revenue from poultry sales (Garrett and Fidler 2007). Even though the disease outbreaks were eventually contained through an array of public health counter-measures, and influenza H5N1 has not (yet) developed human-to-human transmission capability, there remains much that countries in this region can do in order to respond better to future pandemics.

In this chapter, we discuss lessons drawn from past experience, examine the challenges ahead and make recommendations. First, we describe the context of infectious diseases and its significance in transnational security. Second, we outline three key lessons that governments throughout the region have learnt from responding to the SARS outbreak and the H5N1 and H1N1 influenza crises. Third, we examine the transnational health challenges emanating from possible pandemics originating in this region and conclude with four key recommendations.

The context

Though a cliché, it is also a truism: EIDs do not respect borders. Globalization has impacted transport systems and mass population movements, agriculture and food production, water and sanitation, urbanization trends, the interdependence of financial markets, and advances in

information technologies in such ways that the effects of local disease outbreaks may no longer be geographically bounded events. Rather, disease outbreaks and localized epidemics are increasingly recognized to have implications for transnational security (Rodier *et al.* 2007; Ansell *et al.* 2010). Small, uncontrolled outbreaks can present a number of key challenges to governments, threatening national, regional and global interests. Though every disease is different in nature and behaviour, EIDs share several common characteristics: they have the potential to disrupt various policy sectors and critical infrastructure, adversely affect cross-sector jurisdictions, and generate public anxiety that undermines social functioning and cohesion.

Since the SARS and H5N1 crises, Asian countries have been pushed to the forefront of international efforts to address the threat from communicable diseases. Various pandemic plans and strategic frameworks have been developed (and in many instances tested) such as the Asia-Pacific Strategy for Emerging Diseases (APSED), which was developed by the World Health Organization (WHO) Western Pacific Regional Office (WPRO) and South-East Asia Office (SEARO) with considerable financial support from Australia and Canada (Western Pacific Regional Office 2005; AusAID 2007; Canadian International Development Agency 2010), and the Pandemic Influenza Preparedness (PIP) Framework that was developed in 2011 over an inability to secure H5N1 influenza vaccines (Kamradt-Scott and Lee 2011).

Considerable national and international investment (as well as political capital) has gone into boosting the region's surveillance and response capacities. Institutions like the WHO, the United Nations System Influenza Coordination (UNSIC), the Food and Agriculture Organization (FAO), and the World Bank, have been joined by other actors such as the Organization for Animal Health (OIE), and several key donor countries (including the USA, Australia and Japan) to strengthen health systems and encourage greater regional co-operation. Furthermore, regional organizations such as the Association of Southeast Asian Nations (ASEAN) and the Asia-Pacific Economic Co-operation (APEC) have established pandemic influenza technical working groups to facilitate greater regional co-operation while several regional surveillance networks, such as the Mekong Basin Disease Surveillance (MBDS), the Emerging Infectious Network (APEC EINet), and the South-East Asia Influenza Clinical Research Network (SEA ICRN) have been created to enhance the region's surveillance and response capabilities (MDBS 2010; Liverani *et al.* 2012).

Likewise, since 2006 the Japanese government has contributed some US \$135 million to the creation of a stockpile of personal protective equipment and antiviral medications (ASEAN 2007), currently stored in Singapore for the explicit use of the ASEAN countries in the event of an influenza outbreak (Ministry of Foreign Affairs—Japan—2007). However, capacities within and among countries in this region still vary greatly (Chongsuvivatwong *et al.* 2011; Rudge *et al.* 2012), and much more work still needs to be undertaken to ensure that countries are sufficiently prepared to respond rapidly to adverse transnational health events (Kamradt-Scott 2012).

Lessons learned from responding to adverse disease events

One of the most important lessons learned is the need to establish clear governance structures to deal with the uncertainties that stem from the outbreaks. The emergence of novel pathogens such as SARS or H5N1, though infrequent, reveals that routine disease control methods and their accompanying bureaucratic structures are often inadequate in dealing with unprecedented and multi-faceted crisis situations (Menon and Goh 2005; Pereira 2008; Ansell *et al.* 2010). The main benefit of having clear governance structures is that they can dramatically shorten response time and facilitate the implementation of health control measures across various sectors in extreme events (t Hart *et al.* 1993; Ho 2003; Tan 2006; Hanvoravongchai *et al.* 2010).

Singapore's experience in successfully containing SARS was a good example in this regard (Tay and Mui 2004; Tan 2006; Pereira 2008; Lai and Tan 2012). When SARS broke out in early 2003, Singapore's Ministry of Health (MOH) immediately set up a taskforce within that ministry. As more SARS cases came to attention, an inter-ministerial committee chaired by the Ministry of Home Affairs was set up to co-ordinate operations and respond to the outbreak. The SARS experience demonstrated the need for strong political commitment. Given the urgent need for leadership and co-ordination in crisis situations, a taskforce or committee is best placed under the head of state or its equivalent (Hanvoravongchai *et al.* 2010). This helps ensure strategies and decisions are properly implemented, the requisite resources allocated, and policies and procedures are rapidly adjusted according to the need.

The second key lesson learned is to maintain a flexible approach. This refers to being flexible in executing policy interventions and mobilizing resources according to the latest epidemiological evidence (Shalala 1998; Voo and Capps 2010; Leo 2011). Responding to events such as influenza pandemics, for example, may require a range of public health measures including travel restrictions, school closures, and social distancing to be deployed and adjusted as the event unfolds (Glass *et al.* 2006). Indeed, such response systems and capacities are frequently embedded only in health authorities. However, as the SARS crisis disclosed, resources that had to be swiftly drawn from a number of government agencies and private sectors did not fall under the authority of the health ministry (Shalala 1998). A flexible approach may also be required for the timely amendment of legal frameworks. For example, Singapore's legal framework played a key role in terms of facilitating a swift response to the disease outbreak. On 17 March 2003 a mere two weeks after the first imported case, Singapore's MOH swiftly declared SARS a notifiable disease that provided health authorities with a strong legal basis to enforce mandatory health examination and treatment, and quarantine and isolation of SARS patients (Ministry of Health—Singapore—2003; James *et al.* 2006). Being flexible in policy responses is, however, not sufficient for outbreak control if the public compliance with regulations is low. Hence, health authorities have to communicate effectively with the wide range of stakeholders that may be affected by these policies (Lai and Tan 2012).

The third key lesson from the SARS experience and H5N1 outbreaks is the need for critical information and regular crisis communication with target populations (Ho 2003; Hanvoravongchai *et al.* 2010; World Health Organization 2011). For example, the lack of knowledge on the epidemiology of SARS at the beginning of the outbreaks inevitably led to public fear and panic. As a consequence, health authorities world-wide were mostly ill-equipped to detect suspected cases, let alone monitor them. In response to this uncertainty, Singapore's MOH and Taiwan's Department of Health (DOH) instituted harsh control measures, such as mandatory isolation in a setting external to the traditional health care provider, which ended up raising a wide range of legal, political and ethical issues that could potentially result in a public backlash (Duncanson 2003; Wu 2006). However, both practised a high degree of transparency and forthrightness to engage the public by sharing information openly and regularly (Wu 2006; Menon 2011). Information was communicated to the public through multiple media to educate the domestic populace while reassuring the international community. In this respect, Singapore and Taiwan both created a government information channel dedicated to providing timely updates after the WHO issued a global alert of SARS. In Singapore, a dedicated TV station called the SARS Channel was requisitioned to broadcast information on the symptoms and transmission dynamics of the virus (James *et al.* 2006). In Taiwan the DOH purchased time from national and local radio stations to broadcast government messages in order to reach out to a wider audience (Wu 2006). Both used a multi-component communications network of timely and accurate information among public health and other officials, medical providers, first

responders, the media and the general public. Lessons learned from the H1N1 pandemic in the European Commission also show that there is a need to improve the co-ordination at all levels within and between member states to harmonize key messages, to use all possible channels to disseminate a clear, correct, coherent, balanced and uniform communication to the public and health care professionals (European Commission 2011). Crisis communication has to be built upon an effective surveillance infrastructure, as we learn from the experiences in fighting SARS (Tan 2006). However, establishing a sound surveillance and reporting system is one of the major challenges in this region.

The challenges ahead

The first challenge of transnational health threats stems from health and economic disparities in this region. The region of East and South-East Asia houses nearly 2 billion people spread over highly diverse countries, from economic superpowers like Japan and Singapore to poorer economies such as Laos, Cambodia and Myanmar (Burma). Rapid but inequitable socio-economic development has resulted in greater health disparities within the region, making it difficult to implement control counter-measures against EIDs. This is because, apart from being costly, it requires the establishment of basic health infrastructure and surveillance systems, strong enforcement from the health authority and sustained awareness from the general public (World Health Organization 2011).

The extent of economic and health disparity is closely related to the level of surge capacity in tackling future pandemics (Chongsuvivatwong *et al.* 2011). Surge capacity refers to resources and medical facilities to fight pandemics. Resources include skilled human resources (e.g. medical staffing, nurses and respiratory therapists) and stockpiles (e.g. personal protective equipment, vaccines and antivirals), whereas medical facilities denote beds, diagnostic tools, therapeutic equipment and supplies. A shortage of stockpiles and highly skilled health care workers in the health system are major limitations in the preparedness planning and response, and have hindered capacity building in detecting, assessing and responding to emerging public health threats (Krumkamp *et al.* 2010; Krumkamp *et al.* 2011; Coker *et al.* 2011). Without the surge capacity in place, it is not possible for public health organizations in this region to deal with pandemics (Coker and Mounier-Jack 2006). This challenge was reiterated in a high-level meeting held by the WHO for H1N1 pandemic control. Participants from low- and middle-income countries stressed that the pandemic response revealed many positive signs of co-operation, but the critique was that the surge capacity of health sectors was lacking, especially in countries that have not devoted significant resources to dealing with the outbreak within their own borders (World Health Organization 2010). Furthermore, there are questions about the sustainability of the current surge capacity if the expected pandemic does not emerge soon. Consequentially, such resources might be increasingly difficult to mobilize in the years ahead (Hanvoravongchai *et al.* 2010; Rudge *et al.* 2012).

Another challenge this region faces is the issue of capacity building. Capacity building refers to having both surveillance systems and surge capacity in place for outbreak responses. It is widely accepted that evidence-driven information from surveillance and clinical research is necessary to better inform policy makers about what works and what fails (Hien *et al.* 2009). Extreme adverse health events like SARS pose a great challenge to the current fragmented epidemiological surveillance system. The question is whether the capacity of surveillance systems is adequate and, more importantly, able to supply information for action in a timely manner (Ferguson *et al.* 2005; de Sa *et al.* 2010). In this region, this weakness is not only limited to low- and middle-income countries but also occurs in advanced countries like Japan and Singapore (Teo *et al.*

2005). At the moment, the surveillance process is predominantly carried out by health authorities at major border-crossings (WHO Writing Group 2006; WHO 2009a; Briand *et al.* 2011). In 2007 a new framework that places a range of obligations on countries to develop certain core capacities in disease surveillance, detection and response—the International Health Regulations (2005)—entered into force. Countries were expected to have developed these capacities by mid-2012 but approximately 80% of countries reported they were unable to meet this target (Kamradt-Scott 2012). Current national surveillance and containment capabilities in this region may not be sufficient to prevent a rapid outbreak.

Lack of trust among countries in this region surfaces as a third major challenge (Lee *et al.* 2012). Trust plays a critical role in the sharing of risks and social responsibilities that can lead to collective action. Lack of trust hinders effective response to a pandemic first because adverse health events are characterized by decisional urgency, high uncertainty and threat (Boin *et al.* 2005), and second, each stakeholder has a unique organizational orientation shaped by its mission, training background, political commitment, rhetoric issues, or prior experiences. Mutual trust among adjacent countries and multilateral organizations is necessary in order to combat the pandemic collectively and this, in turn, allows various regional bodies to push through a series of plans for the timely distribution of available medical supplies (Mounier-Jack and Coker 2006). Responding to pandemics requires multiple government agencies and private organizations to work together in close partnership (Shalala 1998; Webby and Webster 2003; Lai 2012).

Despite a deluge of financial investment and technical initiatives to enhance the region's pandemic readiness, a lack of mutual trust remains a stumbling block. This is exemplified in Indonesia's claim of a breach of trust against the WHO in 2007 when H5N1 influenza severely impacted Indonesia. It was claimed that the WHO Global Influenza Surveillance Network (GISN) had allegedly given the virus samples, without permission from Indonesia, to multinational pharmaceutical companies to produce vaccines. While high-income countries can afford to purchase the vaccines (Garrett and Fidler 2007), most of Indonesia's citizens would not have access to them. The apparent inequities resulted in considerable international tension and Indonesia decided that it would no longer share H5N1 influenza virus samples with GISN, thus jeopardizing the potential for vaccine development and, many argued, global health security (Sedyaningsih *et al.* 2008). The case, which has been the subject of lengthy debate and drawn out negotiations, was at least partially resolved by an agreement on standards for benefits sharing (Vezzani 2010). However, the debate on whether biological samples are a member state's sovereign property or international public goods is likely to be protracted. Without a mechanism of mutual trust among member states and global agencies, the region's pandemic preparedness remains limited.

Recommendations

This region has recently gained considerable experience in dealing with the 1997 avian influenza outbreak in Hong Kong, the 2003 SARS epidemics and the subsequent episodes of H5N1 avian influenza outbreaks across South-East Asia. As a result, the level of preparedness in the region has improved to some extent. New policies, such as the tripartite dialogue among health ministers from the People's Republic of China, the Republic of Korea (South Korea) and Japan, have helped raise awareness of greater co-operation in this endeavour. The political commitments made by state actors such as APEC and ASEAN, have enhanced the momentum in responding to the transnational threat from communicable diseases. Nevertheless, it is noteworthy that much more work needs to be done and that challenges still remain in this region.

Therefore, we make four recommendations in particular for countries in East and South-East Asia to develop, strengthen and maintain core capacities to detect, assess and report infectious disease events.

Capacity building emerges as the first priority. Capacity building in preparing for future pandemics needs to focus mainly on building and strengthening disease surveillance for outbreak responses, through rapidly identifying and containing new outbreaks when this is feasible, and mobilizing resources effectively to mitigate consequences. Public health control measures have been successful in limiting disease transmission, particularly quarantine and isolation where both the transmission dynamics of the pathogen and the socio-political context allow, such as with SARS in Asia (Pittet 2001; Aledort *et al.* 2007). However, in the case of influenza 2009 H1N1, such measures were largely counter-productive owing to the epidemiology of the agent. Therefore, the region has to build and further strengthen national and regional surveillance systems. Effective surveillance systems may help anticipate, contain and mitigate influenza pandemics (Briand *et al.* 2011). In particular, the capacity building of surveillance systems serves three critical functions before and during pandemics. First, it provides a wide-net approach to identify all suspicious cases as early as possible for isolation; second, it may provide advance warning and detection of impending outbreaks; and third, surveillance indirectly lowers the mortality rate through better understanding of the pandemic (Aledort *et al.* 2007; Briand *et al.* 2011). At the local level, effective disease surveillance of the virus is extremely helpful in preventing the spread of the disease from one country to another. It is also imperative that the surveillance system be extended beyond border crossings to the community level, and this invariably requires close partnership between the health authorities and health care professionals, such as general practitioners, infectious disease specialists and laboratory scientists at hospitals (Wertheim *et al.* 2010).

In addition, surveillance systems need to be robust; they should be evaluated on a regular basis to ensure that they are fit for the purpose intended and able to provide timely and accurate information. In this regard, political leadership in each country is critical for developing integrated surveillance systems that address cross-border threats in a timely manner, and offer insights into what works, where, when and how policy responses can best be tailored. Such surveillance should better ensure interstate collaboration, a task especially crucial for regions with low overall health capacities. APSED perhaps constitutes the starting point for countries in the region to strengthen their capacities against EIDs through a multi-pronged approach of risk reduction, early detection, rapid response and effective technical collaboration.

Second, we recommend that state-based actors adopt a whole-of-society approach in pandemic preparedness and planning, a strategy that involves cross-sectoral collaboration and co-ordination in the national emergency preparedness frameworks (WHO 2009b). Pandemic preparedness is a continuous and integrated process resulting from a wide range of activities and resources involving various sectors such as food, water, defence, law and order, finance, energy, transport as well as telecommunications, rather than a distinct health sector activity (Shalala 1998; WHO 2009b; Lai 2012). This approach includes not only the creation of overarching committees at the highest level of government to facilitate rapid decision making and the allocation of resources (Rudge *et al.* 2012), but also the participation of governmental, civil society and private sectors to consolidate resources (Webby and Webster 2003). Optimum readiness of government and health sectors alone is impossible in the event of a pandemic to deliver key services if other sectors are unprepared, owing to widespread interdependencies among different sections of society. This is why all sectors of society should be involved in pandemic preparedness and response. At its core, the whole-of-society approach demands a concerted and collaborative effort by a wide range of government ministries, business

and civil society to sustain critical infrastructure and the functioning of society. The role of government is to guide other agencies to take measures, and modify regulatory framework and monetary policy to mitigate the economic impact of a pandemic (WHO 2009b).

Third, as recent outbreaks of avian influenza and SARS show that human and animal health remain intimately interconnected, we propose the concept of one health in response to co-operation between medical and veterinary sectors (Coker *et al.* 2011). The One Health concept comes to the fore in communicable disease control and prevention because of the preponderance of zoonoses among EIDs: three-quarters of new human communicable diseases have arisen from animal reservoirs (Lederberg *et al.* 1992). Increased complexity in food supply chains and different systems of food production and consumption also lead to rising importance of food-borne zoonoses. Despite the importance of animal and human health and the economic consequences of zoonotic diseases, until recently comprehensive approaches to the diverse challenges in terms of prediction, prevention, containment and mitigation have been neglected. This convergence of animal and human disease threats and the likelihood of the continued emergence of new zoonotic diseases suggest an urgent need for a corresponding co-operation between animal and public health officials, professional organizations and partners to meet these challenges. This is what the One Health initiative aims to achieve (Fisman and Laupland 2010). The One Health initiative aims at ‘expanding interdisciplinary collaborations and communications in all aspects of health care for humans, animals and the environment’ (One Health Initiative 2012).

Fourth, crisis communication strategies should be developed and tested well ahead of the next adverse health event. Getting the right message across to the general public can often be a major challenge, especially when no established and respected organization can act as the central authority for information collection and dissemination. This situation deteriorates further when public concern, political interest and media hype further fuel a reactive approach to the adverse health events and enable rumours to thrive. Crisis communication strategies serve to build actively upon communication channels with target populations to strengthen health education and information dissemination while building trust with the general public. To achieve this, we suggest that governments: 1) identify a trusted and respected figure to serve as the central point to communicate clearly and concisely to the media; and 2) hold daily press conferences to update the general public about what is known while also outlining the areas of what is unknown.

At the core of crisis communication is the exercise of moral suasion. Moral suasion is the use of persuasion by an authority to influence and pressure, but not to force individuals or groups into complicity with a policy (Reddy *et al.* 2009; Aimone 2010). For example, when the pandemic is contained, the public is educated that the gradual return to ‘normal’ life should not be taken as a signal to relax control measures and be less vigilant. Rather, the government continues to exercise moral suasion, advising that precautionary guidelines be implemented, monitored for compliance and evaluated for effectiveness.

Conclusion

Local disease outbreaks are no longer geographically isolated events. As communicable diseases are increasingly recognized to have transnational implications, the region of East and South-East Asia emerges as the epicentre for disease outbreaks. The EIDs originating from this region have contributed to global threats, widespread anxiety, as well as adversely affected the region’s economic and social functioning. This underlines the importance of developing surveillance systems and maintaining disease outbreak alert and response capacity not only for East and South-East Asia, but also internationally.

It is noteworthy that some governments in this region have begun to enhance the region's capacity to fight against transnational communicable diseases, in preparing the region for future pandemics. First, establishing an abridged and clear governance structure so that health control measures can be implemented in a timely manner across various sectors in extreme events. Second, maintaining flexibility based on the best available evidence and information. Third, delivering critical information and conducting regular crisis communication to the target population.

Although repeated outbreaks in this region were eventually contained, there should be no room for complacency throughout the region. Much more work still needs to be undertaken to ensure that countries are sufficiently prepared to respond rapidly to adverse health events. We indicate in this chapter major challenges to national and regional security in this region. The challenges mainly arise from health and economic disparities that cripple the process of capacity building nationally and regionally. Capacities still vary greatly among countries and within countries, and this is made worse by the spread of mistrust towards one another.

To confront these challenges, it is our belief that the task of capacity building best takes place within the context of competing national priorities and limited resources. Therefore, it is critical for each country in the region to adopt a whole-of-society approach that integrates pandemic preparedness into the general national emergency preparedness frameworks and cross-sectoral activities to achieve a common goal. Together with the One Health initiative, this approach ensures effective co-ordination across multiple sectors, between human, animal and environment, and allocates sufficient resources and/or stockpiles of equipment/drugs as well as non-pharmaceutical measures. All in all, preparedness should remain a central issue on the national agenda as pandemic and public health experts caution against a false sense of complacency. Pandemic preparedness should be articulated in such a way that the general public and the target population remain vigilant and alert at all times.

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