

1. Background

The rapid containment (RC) strategy aims to stop, or at least slow, the spread of pandemic influenza at the source of its emergence to minimize global morbidity and mortality. Containing the spread of a virus likely to produce a pandemic is an activity that has never been tested before. It is distinct from rapid response to outbreaks of human infection with avian influenza, as well as efforts to mitigate the impact of a fully evolved pandemic virus in a community. Recent studies based on mathematical modelling suggest that rapid interventions including mass prophylactic administration of antiviral drugs might contain an emerging pandemic virus or at least delay its international spread.



Cambodian government officials and WHO staff members discuss incoming information about rising case numbers during PanStop 2007.

RC builds upon traditional public health practices that are used to detect, investigate and control clusters of human infection with avian influenza. However, containment of a large-scale outbreak is expected to take these efforts to unprecedented levels and require extensive international coordination and cooperation. The success of these interventions in forestalling the start of a pandemic or delaying its spread cannot be guaranteed. Nonetheless, the RC strategy represents one of the few preventive options available. Deployment of a containment operation requires extraordinary advance

planning to strengthen fundamental capacities within countries. The process can be adapted and used to address other emerging infectious diseases.

For this endeavour, the Association of Southeast Asian Nations (ASEAN) has stockpiled 500 000 courses of antivirals and 700 000 sets of personal protective equipment (PPE) in a warehouse in Singapore with the support of the Government of Japan, and is developing and refining operational strategy to put RC into place at a regional as well as country level with the technical support of WHO.

As a part of this process, the ASEAN Secretariat, The Royal Government of Cambodia, WHO (Headquarters, Regional Office for the Western Pacific and Country Office in Cambodia), the Government of Japan and selected logistics companies jointly conducted a simulation exercise called *PanStop 2007* on 2–3 April 2007 to practise and evaluate the ability of various partners to work together in an RC operation.

2. Objectives

PanStop 2007 was conceived to evaluate the decision-making, communications and logistical elements of an evolving RC and control strategy to suppress an outbreak of a novel strain of H5N1 avian influenza. This strategy is specifically a response to an influenza virus that demonstrates pandemic potential through efficient person-to-person transmission.

The exercise had three purposes: first, to test the ability of the principals involved in the protocol to make the required decisions and effect the necessary communication with partner agencies to launch and manage a containment operation; second, to train staff in the operation of the protocol; and third, to develop a replicable model exercise that could be made available to other jurisdictions for training purposes.

The purpose was to evaluate not the viability of the containment strategy itself, but the capability of the principals to launch and manage it. In the absence of an actual outbreak to contain, evaluation of the efficacy of containment presents significant operational and ethical challenges.

3. Participating agencies and organizations

Agencies and organizations	Role
ASEAN Secretariat	Participating as the policy-level authority for releasing stockpiled materials
Japanese International Cooperation System (JICS)	Participating as the operational authority to direct the movement of the released materials
Singapore Technologies Logistics (STL)	Participating as the contracted agent to arrange delivery of the released materials
The Ministry of Health of the Royal Government of Cambodia and the Cambodian National Committee for Disaster Management	Participating as the host country with responsibility for initiating and supporting, at the national level, a containment operation in an affected area
WHO Country Office in Cambodia	Participating as a support agency to the Cambodian Ministry of Health and National Committee for Disaster Management
WHO Regional Office for the Western Pacific	Participating as the support and coordinating agency between the country and regionally held resources
WHO Headquarters	Participating in simulation of the central policy and global coordination role
Government of Japan, Ministry of Foreign Affairs	Participating as a donor agency

In addition, other ASEAN member country representatives observed the exercise at WHO Regional Office for the Western Pacific and WHO Country Office in Cambodia.

4. Type of exercise

The type of exercise selected was a modified form of a functional exercise, wherein participants perform the exercise processes from the locations that would be assigned to them during a real event, or from similar locations. Normally a functional exercise is conducted as close to real time as possible; however, a communicable disease outbreak is a slow-moving event, so the exercise model required modification to create an artificial compression of exercise time such that one hour equalled nearly one-and-a-half days in real time.

5. Preparation for the exercise

An exercise control and simulation team, with expertise in public health, virology, epidemiology and emergency management, was created at WHO Regional Office for the Western Pacific and tasked to develop and refine scenarios and a master events list (MEL), and articulate and run exercise and documentation processes. A preparatory meeting was held in Japan on 26 January 2007, followed by a pre-exercise meeting on 8–9 March 2007 in Bangkok to develop consensus on the scope, objectives and plan for *PanStop 2007* among participating agencies and countries.

6. Conduct of the exercise

PanStop 2007 lasted for 11 hours over a one-and-a-half-day period and was conducted in six venues – WHO Regional Office for the Western Pacific in Manila, WHO Cambodia Country Office, JICS and the Japanese Ministry of Foreign Affairs (both in Tokyo), the ASEAN Secretariat in Jakarta and the offices of STL in Singapore.

The exercise scenario involved the simulated discovery of cases of avian influenza in a village among people who had no contact with infected birds but who did have contact with people who were infected with avian influenza from infected poultry. Later, the disease was found to have been transmitted, a second time, by those once and twice removed from the primary poultry infection, thus providing evidence of sustained human-to-human transmission and providing the basis for practising and testing the processes involved in mounting an RC operation.

As in all exercises, the events in the MEL were fed by exercise controllers and simulators to the participants as exercise messages by e-mail, telephone or fax. Participants then handled the information in the messages in much the same way as they would in a non-exercise situation, by analysing and clarifying information, consulting and conferring with colleagues, and making and simulating the implementation of decisions. Over the course of the exercise the participants were presented with 31 of 32 intended injects (one was deemed superfluous). Additional ad hoc messages were used

to enhance context and stimulate exercise play when necessary. The scenario and injects solicited hundreds of e-mails and several telephone and conference calls.

7. Evaluation

Two independent evaluators were positioned to monitor the conduct of the exercise and assess whether exercise objectives were satisfactorily addressed. They were provided with an *Evaluators' Handbook* and basic paper-based data collection tools with the option of electronic completion. This was augmented by similar tools provided to all participants so that they could record personal observations, problems and track any of their activities, such as telephone calls and personal consultations, that were not captured through routine electronic communication. Immediately following the exercise participants, evaluators, controllers and observers were debriefed to identify those aspects of the exercise experience that were most immediately memorable and significant for people. The *After Action Report* provided a distillation of the more important lessons to be learnt from the exercise.

8. Lessons learnt

The exercise provided an excellent opportunity to discover strengths and areas for improvement in attempts to control large communicable disease outbreaks and in



Discussing containment zone at the WHO Regional Office for Western Pacific.

the way simulation exercises are conducted. The findings are described in detail in the official after action report.⁹ A key strength clearly demonstrated by the exercise was the inherent technical expertise of WHO, which is available to countries during communicable disease outbreaks. One prominent lesson identified through the exercise was that, given the logistical constraints in deploying materials and personnel and the risks of not responding quickly, it is safer to be proactive and deploy resources in waves, despite the consequences of lacking data, than to suffer the consequences of responding too late.

⁹ *ExercisePanStop 2007*. Manila, World Health Organization Regional Office for the Western Pacific, 2007, (<http://www.wpro.who.int/NR/rdonlyres/FD2AEAB9-1072-42EF-85E5-0B9F6537DABA/0/ExercisePanstop.pdf>, accessed 7 August 2008).