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Exercise Paton: A simulation exercise to test New South Wales emergency departments' response to pandemic influenza

Adam T Craig, Paul K Armstrong

Exercise Paton was a New South Wales-wide simulation exercise conducted on 30 November 2006, to test the response of New South Wales emergency departments (EDs), multi-purpose services* (MPSs), and public health units to the presentation of single cases of pandemic influenza during the early stages of a pandemic. The exercise followed the release of the New South Wales policy document to guide New South Wales hospitals' response to an influenza pandemic, titled *Hospital Response to Pandemic Influenza, Part 1: Emergency Department Response*.[1] The exercise was named after Dr Robert Paton, the New South Wales Director-General of Public Health during the 'Spanish influenza' pandemic of 1918–1919.

This report summarises the planned approach for clinical assessment of suspected pandemic influenza cases in New South Wales, describes activities during *Exercise Paton,* and lists key lessons to emerge from the exercise that could be of relevance to pandemic planners in other jurisdictions.

Planned approach for clinical assessment of suspected pandemic influenza cases in New South Wales

In keeping with the over-arching national response strategies for pandemic influenza,[2] New South Wales has incorporated the concepts of 'containment' and 'maintenance of social function' into state pandemic planning. In the containment stage, the emphasis is on slowing the spread of a pandemic to lessen the burden on the health system and to 'buy time' for the development of a pandemic vaccine. Containment measures include preventing cases from entering Australia, rapidly finding, isolating, and treating cases with antiviral medication, and tracing contacts

* Multi-purpose services provide acute, high and low level health and aged care services to rural and remote communities in New South Wales. While some multi-purpose services operate permanent emergency departments most respond to acute care needs as required.

of cases, quarantining them and providing them with antiviral prophylaxis. When containment measures are no longer effective and the disease begins to spread widely in the community, maintenance of social function becomes the priority.

In New South Wales, assessment and management of suspected cases will be coordinated through the public hospital system. General practitioners (GPs) will be encouraged to divert patients with potential pandemic influenza to the closest public hospital with an ED or MPS. This will be aided by a public messaging campaign. The rationale for this approach is to: (a) lessen the burden on GPs and their staff so that they can continue core primary care activities; (b) mitigate the risk of transmission of the pandemic virus within GP surgeries; (c) facilitate a timely public health response by integrated data collection and reporting systems throughout the public health system; (d) facilitate rapid transport and processing of laboratory specimens in public health laboratories; and (e) allow the secure dispensing of antiviral medications from the national medical stockpile to cases and contacts. Although case management will not be focussed in GP surgeries, GPs will play a key role in bolstering the public hospital workforce during the response to a pandemic, especially in the later stages when case numbers increase.

The method for assessment of suspected pandemic influenza cases at a hospital or MPS will vary according to the likelihood of a true case seeking care at that facility. In the very early stages of a pandemic, when the likelihood of someone presenting is small (e.g. when clusters of pandemic influenza are being reported overseas but not yet in Australia), 'enhanced ED triage' will be activated. This consists of screening every attendee of the ED or MPS based on their travel history and symptomatology. When the likelihood of pandemic influenza cases presenting increases, 'ED screening stations' will be established outside the waiting area to minimise the chance of transmission to other people in that waiting area. Once the number of cases exceeds the capacity of an ED to manage them, a stand-alone influenza clinic will be established. The influenza clinics will assess suspect pandemic influenza cases that are not in need of high-level ED care; EDs will continue to assess those cases who require a high level of care. The Table summarises the levels of ED and MPS responses to pandemic influenza and the drivers that determine an increase in the level of response.

Exercise Paton

Exercise Paton was conducted to test the ability to implement the 'enhanced ED triage' level of response to pandemic influenza, as described in the NSW Health *Hospital Response to Pandemic Influenza, Part 1: Emergency Department Response* guidelines. The exercise objectives were to ensure all EDs and MPSs in New South Wales were able to activate a prescribed screening process for pandemic influenza; to identify barriers to effective early containment of pandemic influenza; to test the interrelationship between ED/MPSs and public health activities; to evaluate the preparedness of EDs, MPSs and public health units to respond to an initial case of pandemic influenza; and to progress facility-based planning. *Exercise Paton* was not designed to test surge capacity of the health sector during an influenza pandemic or to test the interface between the health sector and other government and non-government sectors.

During *Exercise Paton*, all EDs and MPSs in New South Wales were required to prepare for, and activate, 'enhanced ED triage'. This entailed identifying and isolating patients; taking respiratory samples from, and treating suspected cases of pandemic influenza, and liasing with the public health unit to ensure contact tracing was undertaken. The quality of respiratory specimens (nose and throat swabs) collected and the time taken for transportation of these specimens from facilities to a specialist testing laboratory using conventional transport methods was also tested.

While all 210 EDs and MPSs in New South Wales were required to be prepared to receive a patient during *Exercise Paton*, mock patients were only deployed to 18 (8.6%) facilities. The sites to be tested were not revealed before the exercise. Half of the mock patients had a simulated symptom/clinical observation profile that would ordinarily result in admission to hospital, while the remaining half had a profile that would ordinarily result in being discharged home.

Performance against the exercise's objectives was assessed using observers at each of the tested sites, feedback from stakeholder debriefing sessions, and data collected from a state-wide participant questionnaire.

Lessons of relevance to other jurisdictions' biopreparedness planning

While many of the outcomes of *Exercise Paton* relate specifically to New South Wales facilities and processes, many of the lessons learnt may be of relevance to other jurisdictions. These are summarised below.

Method of exercising

The method used to test EDs and MPSs during *Exercise Paton* proved to be a valuable way to achieve the exercise's outcomes, in particular in progressing

Description, drivers for activation, and purpose of emergency department response to an influenza pandemic in New South Wales

Response	Description	Drivers for activation	Purpose
Enhanced ED triage initiated	Additional screening conducted at the usual ED triage point, based on travel history and symptomatology.	Declaration of World Health Organization overseas pandemic alert phase 4* (OS phase 4)— clusters with human-to-human transmission overseas— where the clusters are occurring in a relatively isolated region (if first clusters are in a major centre overseas, a move directly to pandemic influenza screening stations may be required.)	**Containment stage** To decrease the rate of transmission of pandemic influenza in the community, general practice surgeries, hospitals EDs, wards, and other health care facilities by: • ensuring rapid identification and isolation of suspected cases • allowing diagnosis and treatment of cases with antiviral agents, if indicated • providing a linkage with the public health response of contact tracing and provision of antiviral prophylaxis • allowing collection of epidemiological and clinical data to inform clinical management and public health decisions.
ED pandemic influenza screening station established	Pandemic influenza screening station established at the entrance to ED to identify patients who meet the pandemic influenza case definition before they enter the waiting room.	No cases in Australia (Australian pandemic alert phase 0–3) but outbreaks occurring in areas overseas from where it is likely that people will be travelling to Australia. Widespread outbreaks overseas. Significant morbidity and mortality from pandemic influenza overseas. Declaration of Australian pandemic alert phase 4 (i.e. clusters with human-to-human transmission in Australia).	**Containment stage** As for enhanced ED triage, and to allow a higher level of vigilance than provided by enhanced ED triage in light of an increased likelihood of pandemic influenza cases being encountered.
Stand-alone influenza clinic established	A separate influenza clinic facility established to identify and treat those who meet the case definition for pandemic influenza. Note: an influenza screening station at the entrance to ED will still need to be maintained.	**At containment stage** ED capacity to isolate and manage suspected cases is exceeded. **At 'maintenance of social function' stage** Inability to contain pandemic influenza outbreaks (resulting in declaration of 'maintenance of social function' stage). Declaration of influenza pandemic (Australian phase 6b).	**Containment stage** As for enhanced ED triage, and to allow effective management of an increased number of pandemic influenza patients. **'Maintenance of social function' stage** To provide standardised assessment, triage, and management of patients with suspected pandemic influenza. To reduce patient presentations to EDs and general practices, thereby allowing those facilities to continue their core business and reduce the risk of transmission within those settings. To collect epidemiological data to monitor progress of the pandemic and inform optimal resource allocation.

* This assumes that a pandemic starts overseas. If a pandemic starts in Australia, an elevated level of response will be immediately required.

facility-based pandemic planning. In a post-exercise questionnaire, 84% of facilities 'strongly agreed' or 'agreed' that *Exercise Paton* prompted their influenza pandemic planning. The strategy of involving all facilities across the state, not just those that received mock patients, maximised the impact of the exercise.

Infection control

Significant breaches in infection control practice were noted during *Exercise Paton* including incorrect use of personal protective equipment, poor hand hygiene and, in some cases, inappropriate packaging of specimens for transport. Compared with medical staff, nursing staff were generally

more aware of, and likely to comply with, infection control policies and procedures. A continued emphasis on the importance of infection control in preventing hospital acquired infections needs to be taken, which should include ongoing training and monitoring of infection control practice.

Decision making relating to patient disposition

The decision to either admit an ED patient to a ward or discharge them is normally based upon whether or not that patient is ill enough to require hospital care. When a patient poses a serious infectious risk to others, however, admission of a relatively well person into hospital isolation is also a clinically acceptable decision. Such a situation could arise in the early stages of a pandemic when the behaviour of the virus may not be well understood, and there is a risk of spreading pandemic influenza in the community from non-compliant cases in home quarantine.

Since *Exercise Paton,* New South Wales pandemic influenza ED response guidelines have been revised to include a stipulation that any decision to discharge a potentially infectious patient must be made in consultation with the public health unit and relevant medical specialists. In the very early stages of a pandemic, all patients suspected of having the illness will be admitted into isolation wards until the infectious period is over or an alternative diagnosis is made.

Communication and information management

Exercise Paton highlighted the importance of having multiple communication channels for an effective response. An in-house, password-protected Internet website was established during the exercise that enabled players to access all relevant documents. This proved an effective incident management tool and NSW Health intends building a more sophisticated system to help manage future real and simulated public health emergencies.

Another web-based data management system used during *Exercise Paton* was NetEpi, an open-source outbreak management software being developed by NSW Health and adopted (on an interim basis) nationally. The version used was much improved compared to previous versions and its use during the exercise will help inform development of the final version, due for release in September 2007.

Collection and transportation of clinical specimens

During the early stage of a pandemic, the pre-test probability of a person presenting with influenza-like symptoms having pandemic influenza will not be high. An important priority therefore, will be to obtain a laboratory diagnosis as rapidly as possible. The steps to ensure this occurs are first, to obtain an adequate specimen, second, to suitably package, process and transport the specimen, third, use a reliable, rapid test method, and finally, relay the result to the clinicians. *Exercise Paton* tested the first two of these steps.

Nineteen nose and throat swab specimens were collected during the exercise and the quality of all of them was deemed adequate by the laboratory. The quality of packaging was poor overall and clearer packaging guidelines will be developed. Using conventional specimen transportation methods, transit times for specimens ranged from 30 minutes to 4 hours in metropolitan areas, and 20 to 28 hours in rural areas. These transit times would have been longer if specimens had been taken outside of business hours. Given the urgency of confirming a clinical diagnosis during the early stages of a pandemic, strategies to expedite specimen transport from some areas to diagnostic laboratories need to be developed.

A comprehensive report, titled *Exercise Paton Evaluation Report,*[3] provides a more detailed evaluation of the activities and outcomes of the exercise and is available on the NSW Health website, www.health.nsw.gov.au In 2007–2008, NSW Health is planning to conduct further exercises to test containment policies and strategies.

Author details

Mr Adam T Craig, Exercise Paton Coordinator/Public Health Officer Trainee

Dr Paul K Armstrong, Director

Biopreparedness Unit, NSW Department of Health

Corresponding author: Mr Adam Craig, NSW Health, Locked Mail Bag 961, North Sydney NSW 2059. Telephone: +61 2 9391 9000. Facsimile: +61 2 9391 9101. Email: adam.craig@doh.health.nsw.gov.au

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