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The Canadian Pandemic Influenza Plan: an evolution to the approach for national communicable disease emergencies

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Abstract. Advance planning for a large-scale and widespread health emergency is required to optimize health care delivery during an influenza pandemic. The Canadian Pandemic Influenza Plan (CPIP) is an example of a successful communicable disease emergency plan that ensures a national, coordinated approach to preparedness, response and recovery activities in the event of an influenza pandemic. The general concepts incorporated into the CPIP may be utilised in the contingency planning for a bioterrorism event or other communicable disease emergencies, including: a national, coordinated approach in planning; an emergency management structure to conduct the response; the use of common terminology to facilitate communication and response coordination, and the establishment of specific technical, communications and operational response groups and networks in advance. The multinational outbreak of Severe Acute Respiratory Syndrome (SARS) in 2003 offered the opportunity for the testing of these concepts. The experiences and lessons learnt during the SARS response may be utilised to strengthen communicable disease preparedness and response capacity. © 2004 Published by Elsevier B.V.

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1. Introduction

A future global epidemic or pandemic of influenza is highly likely if not inevitable, but is unpredictable in timing. When a novel influenza virus that is capable of efficient human-to-human transmission and causing high morbidity and mortality emerges, countries will have very little time to carry out the many key activities required to minimise the health, societal and economic impact of a pandemic. With the increasing recognition of the threat posed by the next influenza pandemic internationally, there is an accelerated effort by the World Health Organization (WHO) and many countries to develop or strengthen existing

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pandemic preparedness plans.[1,2] The world is still inadequately prepared for the next pandemic, however, ongoing efforts in preparedness activities and testing of the pandemic plans will continue to strengthen our response networks, processes and infrastructures.

2. Pandemic influenza preparedness in Canada

At the inception of the Canadian Pandemic Influenza Plan (CPIP) in 1988, the main focus was on a vaccine strategy. After the Hong Kong influenza A/H5N1 incident in 1997, the pandemic plan evolved to include a more comprehensive approach, incorporating the following key components: surveillance, vaccine programs, and use of antivirals, health services, emergency services, public health measures and communications. One of the main challenges of pandemic preparedness was to establish the essential close linkages between public health, health care and emergency response sectors. After the terrorist attacks of September 11, 2001 and the subsequent anthrax attacks in the United States, national authorities became acutely aware of the need to strengthen public health infrastructure to respond to health emergencies. In addition to the national Pandemic Influenza Committee (PIC), which provides technical advice on influenza pandemics, a national network for health emergency communications and a national forum which integrates public health and emergency measures were formed. The CPIP evolved to include three main sections: (1) preparedness, (2) response and (3) recovery, to be consistent with the general principles of emergency response and with the phased approach of the 1999 World Health Organization (WHO) framework.

The general concepts incorporated into the CPIP that may be utilised in the contingency planning for other infectious disease emergencies include: a national, coordinated approach to planning; an emergency management structure to coordinate and conduct the response; the need for common terminology (e.g. using the same response phases), and the need to have specific technical, communications and operational response groups and networks formed in advance. The recent national response to an influenza A/H5N1 alert and a multinational outbreak of Severe Acute Respiratory Syndrome (SARS) offered the opportunity for the testing of these concepts.

3. Lessons learnt from the national response to SARS

On February 19, when the WHO confirmed a report of two cases of influenza A(H5N1) associated with one death in the Hong Kong Special Administrative Region, Health Canada activated the Pandemic Influenza Committee and alerted the national surveillance system, ‘‘FluWatch.’’ The newly formed national health emergency communication network was also activated and fact sheets on influenza H5N1 were developed. Within hours after the first WHO global alert for atypical pneumonia on March 12, 2003, Health Canada received reports of the first cases of SARS in Canada from provinces that were already on the alert for H5N1. The pandemic influenza response structures and processes were rapidly and successfully translated to respond to SARS. PIC was expanded to form the national SARS technical advisory group. Existing national technical groups (e.g. the Canadian Public Health Laboratory Network) and pandemic influenza working groups were transformed into SARS working groups, with links to the WHO SARS laboratory, clinical and epidemiology networks. Although the public health measures for limiting the

impact of an influenza pandemic may be different from that for the containment of SARS, we are now able to learn from the SARS experience the types of measures that have been effective, feasible and acceptable to the public and health care providers.

In Canada, SARS highlighted the deficiencies in the public health infrastructure, policies, procedures and legislation to support urgent public health action. SARS reminded us of the need for a clear command structure with dedicated team leadership during a health emergency. Health organizations are generally not set up with the command and control structures necessary to respond effectively to a large-scale emergency. Jurisdictions that did not have well-developed pandemic influenza plans had to create structures immediately to deal with SARS. The province of Ontario, with the most involvement with SARS, was not able to participate on an ongoing basis in national level technical discussions as all of its experts were contributing to the front line response. A national, technical planning group with members who are able to dedicate their time would be important in future responses.

Although federal, provincial and territorial public health departments are able to communicate alerts for emerging infectious diseases very effectively through telephone or e-mail systems, there is a need to enhance the delivery of information in a timely manner to front-line health and emergency workers. Real time data sharing between hospitals and public health and between different levels of the public health system was a particular challenge, as was timely epidemiological analysis. The development of integrated mechanisms and processes for hospital- and community-based surveillance is required, including the strengthening of hospital surveillance capacity. Pre-established data elements and data sharing agreements between local, national and international governments/organisations for emerging infectious diseases will facilitate the determination of key epidemiological parameters at the time of the emergency.

The national case definitions designed for monitoring the spread and impact of SARS were utilised inappropriately in some situations, e.g. for clinical management. Although public health and infection control measures were implemented immediately and effectively, the classification and reporting of cases were delayed as retrospective epidemiological linkage of cases were made. Case definitions should be developed and the rationale for any changes to case definitions should be clearly documented. There should be a consistent use of national case definitions and we should strive for international consistency where possible to facilitate international surveillance and communications.

There was an unprecedented rapid generation of knowledge on SARS through the existing influenza networks and new partnerships. The public health and research laboratories within Canada made an immediate and valuable contribution to the international effort of elucidating the etiology of SARS, the genetic sequencing of the SARS-associated corona virus and the development of new diagnostic tests. However, especially at the provincial laboratory level, the inability to limit testing and to link laboratory data with epidemiological and clinical data resulted in over-testing and the inability to prioritise specimens.

The public health measures instituted during SARS were effective in containing the epidemic; however, the effectiveness of specific strategies is still being assessed. Quarantine and isolation were generally acceptable to the public. Cancellation of public gatherings will happen regardless of public health recommendations. In order to implement community-based public health measures and institution-based infection control measures, the involvement of multiple partners is needed, including key health professional groups, non-

governmental organizations, the media, businesses and schools. Issues pertaining to international borders, such as travel advice, screening, quarantine and embargo of supplies, arise quickly and must be an integral part of emergency plans. Blood safety and supply issues will also arise quickly at the start of any emerging infectious disease emergency.

All jurisdictions need to strengthen human resource planning and surge capacity in their health emergency plans. There is a need to enhance our ability to mobilise resources across the country for outbreak investigation and control and to support health care services, including infection control. The SARS response highlighted the need for more trained infection control personnel. The focus of hospital infection control resources on the containment of SARS may have negative impacts, such as an increase in other nosocomial infections and failure to recognise or report other infections, e.g. tuberculosis. Ongoing training of health care workers on the correct method of putting on and removing personal protective equipment is required before and during an epidemic. The negative impact of stringent infection control and other hospital policies on the wellbeing of health care workers, as well as the impact of work exhaustion and post-traumatic stress on responders, must be addressed in emergency plans.

Since SARS was primarily a nosocomial disease in Canada, managing hospital triage and patient transfer was essential to the local response. The experience gained in patient triage and in setting up dedicated clinics and other alternate care sites (e.g. screening units established outside hospitals) during the SARS response is valuable for pandemic influenza preparedness. The feasibility and effectiveness of using specific hospitals or units within hospitals dedicated to the assessment and management of an emerging infectious disease should be assessed. Establishing the security of medical and other supplies, e.g. through stockpiling and multiple suppliers, should be an integral part of logistics planning for health emergencies. Preparedness for an influenza pandemic in Canada currently includes the security of vaccine supplies and options for stockpiling antiviral drugs.

Communicating the progress and impact of an epidemic in real time to decision makers and the public is very challenging. Considerable resources are required to translate scientific data (especially epidemiological data) into public information. In Canada, information on health events is communicated openly and rapidly to the public, experts and health care providers to the media; therefore, public health spokespersons must be proactive in providing the correct information expediently to the public.

4. Summary

The first phases of the Canadian Pandemic Influenza Plan have been tested and applied to another emerging infectious disease emergency. The plan requires ongoing review and evaluation through emergency exercises and the incorporation of lessons learnt from SARS. Common approaches to communicable disease emergency plans, with an emphasis on the strengthening of public health infrastructure and infection control in health care facilities, will be the key to future response to emerging infections.

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