

Responding to Pandemic Influenza

A Local Perspective

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ABSTRACT

Objective: To assess, via a tabletop exercise, the ability of a rural health unit to manage an influenza pandemic.

Participants: The exercise brought together community stakeholders including representation from public health, hospitals, long-term care, social services, first responders, morticians, local government and the media.

Setting: Leeds, Grenville and Lanark, a rural region of Ontario.

Intervention: In June 2002, exercise participants were presented with a scenario involving the local response to pandemic influenza. Facilitators prepared a framework for the mock emergency in advance. However, the scenario was guided by decisions made by participants and the probable consequences of those decisions. Following the exercise, a debriefing session identified recommendations to be included in future plan development.

Outcomes: The exercise identified critical issues, including communication, emergency decision-making, vaccination prioritization, local surge capacity, and disease containment. Both participants and observers deemed the exercise successful.

Conclusion: Improvements in the local contingency plan for pandemic influenza were identified. The exercise was an opportunity to familiarize participants with the contingency plan, practice working collectively and identify areas for further planning. The principles and lessons generated from the exercise can be used to guide the response to other large-scale infectious disease outbreaks.

La traduction du résumé se trouve à la fin de l'article.

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The 'Contingency Plan for Pandemic Influenza' and the full report from the tabletop exercise are available at www.healthunit.org/reportpub/pandemic/pandemic.htm.

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Influenza pandemics cause global devastation through unprecedented proportions of morbidity and mortality. The influenza virus periodically undergoes a major antigenic shift resulting in a 'new' virus to which the population has no immunity. Pandemic influenza is a global outbreak resulting from these major antigenic changes. Although experts are certain that another influenza pandemic will occur, the timing and pattern is unpredictable. In the last century, three pandemics occurred: the 1918-1919 Spanish Flu, the 1957 Asian Flu and the 1968 Hong Kong Flu. The Spanish Flu resulted in over 20 million deaths worldwide.^{1,2}

Federal pandemic influenza response planning has taken place but it is also essential that local planning occur. Planning in rural districts can be challenging, due to dispersed populations and multiple municipalities. The testing of plans is important to ensure their effectiveness and to identify any gaps in the local response.³

The Leeds, Grenville and Lanark area is a predominantly rural region spanning 6,454 square kilometres with a population of approximately 160,000. The area is made up of mainly rural communities. Brockville is the largest city, with a population of 21,000.⁴

A year prior to the exercise, a local Pandemic Influenza Planning Committee was established. This committee's mandate was to develop a contingency plan for pandemic influenza. Local preparedness plans are extremely important because there is limited capacity for federal support for a situation that potentially affects the whole country.^{3,5} After its completion, the pandemic influenza response plan was presented and distributed to a network of stakeholder agencies.

The exercise was intended to examine systems within the existing local infrastructure that would be called into action in the event of a real public health emergency. In order to assess local capacity, the exercise was designed to involve all community stakeholders. Exercise participants included representation from public health, hospitals, long-term care facilities, social services, morticians, first responders, municipal government and local media. Medical officers of health and personnel from neighbouring health units observed the proceedings and provided feedback. During the debriefing session, observations

and recommendations for future plan development were identified and have been incorporated into the plan.

INTERVENTION

Participants (n = 24) were asked to operate within the normal parameters of their authority. Facilitators guided the scenario and 'played' the role of individuals unable to attend. The exercise was compressed so that six weeks of activities were simulated in one morning. Exercise participants were provided with a date for the exercise as well as the objectives for the day. They were informed that the scenario would involve pandemic influenza (see Table I).

While facilitators agreed upon the scenario in advance, the exercise was participant-driven. The facilitators allowed for changes to the scenario based on the decisions made by the participants and the likely consequences of their decisions. Local casualty estimates were: 27,000 outpatient cases, 500 people requiring hospitalization and 200 deaths. Estimates were calculated using mathematical models developed by the Centers for Disease Control and Prevention and local census data.⁶

Participants were presented with the scenario and were expected to react to the situation by identifying response strategies. Examples include a police report involving the distribution of antiviral medications on the black market, and the Medical Officer of Health being unable to assist with the public health emergency because she develops severe influenza symptoms. Table II provides an overview of the exercise. Observers participated in the debriefing session only.

Recommendations made following the exercise were based on an analysis of the decisions made by participants during the exercise, comments made during the debriefing session and a review of all evaluation forms, communication forms and logs used during the exercise.

FINDINGS

While the exercise was considered to be successful, the compressed timeline created increased pressure on those participating because they were required to react and make decisions that in reality would have taken days or weeks rather than minutes.

TABLE I

Objectives of Tabletop Exercise in Pandemic Influenza

1. Orient participants to the 'Contingency Plan for Pandemic Influenza'.
2. Identify measures implemented at the local level.
3. Promote interagency collaboration and coordination.
4. Orient participants to the roles and responsibilities of partner agencies.
5. Illustrate the need for clear communication.
6. Identify gaps in local preparedness and make specific recommendations for plan revisions.
7. Identify additional local resource and training needs.
8. Encourage participants to promote emergency response planning within their own institutions.

Issues that were raised included: communication, decision-making related to vaccination prioritization, local surge capacity, and disease containment. The following are lessons learned which can be applied to coordinating a community response to another naturally occurring or deliberately initiated large-scale infectious disease outbreak.

Early and ongoing communication

Effective communication is essential to ensure a prompt and coordinated response and to ensure cooperation.^{3,7} Early convening of the Emergency Control Group is essential. The most straightforward way to deal with an emergency that is affecting the entire region is to have one group coordinating management of the situation for the entire region, facilitating efficient decision-making and organizing consistent messages to the public and key community stakeholders.

Local decision-makers require expert advice

The Medical Officer of Health is granted specific authorities to protect the health and safety of the public during a public health emergency through the authority of The Health Protection and Promotion Act.⁸ However, difficult decisions require backing by national and provincial leadership and are essential to manage a situation of this magnitude. Clear guidance and coordination at the provincial level is imperative in a public health emergency so that all health units can respond in a similar manner.

The demand for vaccine and antiviral medications would likely exceed supply

Two key assumptions were made. At the outset, it was understood that vaccine would become available in the mock scenario much earlier than could realistically be expected in a real influenza pandemic.

It takes between 4-6 months from identification of a new virus to the time the vaccine is ready for use, and the time for distribution makes it very unlikely that vaccine would be available during the first wave of illness. With a novel virus, a second dose of the vaccine may be required 30 days following the first to ensure a significant immunogenic response.³

Participants expressed concern regarding the prioritization of vaccines and antiviral medications. 'Essential services' were identified as a priority for vaccination including: police, fire fighters, ambulance attendants, paramedics, hospital-based health care providers and public health workers. Decisions made were not unanimous and prompted disputes among participants who felt the definition of 'essential services' was too restricted. Individuals working in mortuary services, utilities, transportation and the food service industry were not included in the initial vaccination priority groups.

Pandemic influenza would create a strain on all agencies involved in the response

A useful strategy is to maintain a call-back list of potential volunteers, retired staff and healthcare students. During the exercise, the extensive use of decentralized care delivery, such as home care and alternative hospital sites, was necessary to minimize pressure on emergency departments.

Public health would need to increase the numbers of persons available to perform essential functions, including the following: surveillance, epidemiological investigations, provision of public health recommendations and communication with the general public and partner agencies. This would be achieved by canceling or deferring non-urgent public health programs, utilizing the services of volunteers and extending work hours of existing public health staff to meet the expanded commu-

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TABLE II

Exercise Overview

Input	Outcomes
<p>Phase I: April 7-20 Re: General Scenario</p> <ul style="list-style-type: none"> • An influenza death occurs in China attributed to a new influenza subtype. • A media report is released by the World Health Organization (WHO) which identifies increased cases of influenza-like illness in the area where the subtype was identified. Numbers of symptomatic children and adults are high. • An international conference held in a large city in Ontario reports 400 cases of influenza-like illness in conference attendees. • The Chief Medical Officer of Health reports increased provincial influenza activity at a media conference but states that laboratories have not yet confirmed the sub-type. 	<ul style="list-style-type: none"> • Health Unit contacted the Public Health Branch (played by facilitator) to confirm reports/seek guidance. • PHB reported that antiviral medications and vaccine were unavailable. Health Units were placed on alert. • Health Unit notified internal and external partners of the situation. • Media contacted the Health Unit seeking clarity regarding the influenza reports. • Health Unit issued a press release regarding infection control strategies, the unavailability of vaccine/antiviral medications and encouraged communication tools such as the website. • Hospitals contacted the Health Unit requesting guidelines for testing. Information regarding surveillance was disseminated. • Health care agencies were advised to report absenteeism rates greater than 10%. • Health Unit contacted local school boards regarding absenteeism. The school board (played by facilitator) reported absenteeism rates between 25-40%. Upset parents began phoning the school board, Health Unit and physicians' offices. • Health Unit cancelled non-essential programs and deferred others. • Health Unit contacted nursing agencies requesting assistance once vaccine becomes available. • Social Services contacted Children and Family Services regarding childcare provisions for essential service providers. • The Psychosocial Response Committee was convened.
<p>Re: Hospitals, long-term care facilities (LTCF), community health centres and first responders/Facilitator</p> <ul style="list-style-type: none"> • 40% of staff absent due to illness or because of ill family members. 	<ul style="list-style-type: none"> • Agencies notified the Health Unit of absenteeism. • Hospitals cancelled/deferred non-essential services. • Hospitals contacted the Access Centre regarding the enhanced use of home care to avoid ER overcrowding. • Local hospitals met to discuss strategies: designating flu and non-flu hospitals, use of retired staff/students/volunteers. • First responders relied on overtime use and implemented a call-out procedure. • Hospitals and LTCFs inserviced staff regarding infection control.
<p>Re: Public Health Laboratory(PHL)/Facilitator</p> <ul style="list-style-type: none"> • Delays in lab work due to overwhelming demand for services. Excessive numbers of samples sent for testing. 	<ul style="list-style-type: none"> • PHL contacted the Health Unit regarding over sampling. Sampling guidance was provided to MDs and ERs by the Health Unit.
<p>Re: Medical Officer of Health (MOH)/Mayor</p> <ul style="list-style-type: none"> • Mayor requested a meeting with the MOH to address increasing community concerns. 	<ul style="list-style-type: none"> • Decision was made to convene an Emergency Control Group. Politicians, first responders, hospitals and other partners met in a central location (Smiths Falls). One Emergency Operations Centre (EOC) was established for the tri-country area. • Daily teleconferences were planned to discuss infection control, communication strategies. • Following the meeting, the MOH issued an order restricting public gatherings and announcing closures of schools and daycares. Local police agreed to enforce the order. • Each municipality declared an emergency. • A press release followed the meeting with the MOH acting as the group spokesperson.
<p>Re: Health Unit/Pharmacies</p> <ul style="list-style-type: none"> • Local physicians were providing prescriptions to patients seeking relief from symptoms. Supplies of amantadine low. 	<ul style="list-style-type: none"> • Health Unit provided guidance regarding antiviral prescribing and dispensing to local physicians and pharmacies.
<p>Re: Funeral Homes/Health Unit</p> <ul style="list-style-type: none"> • Requested guidance regarding post-mortem infection control. 	<ul style="list-style-type: none"> • Health Unit advised droplet precautions and not to embalm unless instructed further as per the MOH.
<p>Phase II: April 21-May 5 Re: MOH/Public Health Branch (played by facilitator)</p> <ul style="list-style-type: none"> • 10,000 doses of vaccine available with 'essential services' identified as a priority. 	<ul style="list-style-type: none"> • Health Unit contacted all hospitals and emergency service providers (police, fire, ambulance) requesting numbers of essential service providers. Health Unit organized worksite immunization clinics. • Funeral homes, LTCFs, home care agencies and others requested vaccine. Discussion ensued regarding the definition of 'essential services' with a consensus not being reached within the parameters of the exercise.
<p>Re: Health Unit/LTCF</p> <ul style="list-style-type: none"> • Abrupt onset of outbreak in a LTCF. Multiple deaths in seniors as a result of complications. • Physicians unable to pronounce deaths and sign death certificates due to work demands. 	<ul style="list-style-type: none"> • LTCF notified morticians regarding deaths. Morticians refused to remove bodies without signed death certificates. LTCF contacted MOH. • MOH declared the delay in removing bodies a health hazard under the Health Protection and Promotion Act and issued an order regarding prompt management of fatalities.
<p>Re: Health Unit/Facilitator</p> <ul style="list-style-type: none"> • Threats received: 'Make vaccine available or else!' 	<ul style="list-style-type: none"> • Health Unit notified police and internal staff regarding security issues. • Officers stationed at the Health Unit locations and immunization clinic sites. Additional security needs required the use of private security.

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TABLE II... continued

Exercise Overview

Input	Outcomes
Re: Police/Facilitator <ul style="list-style-type: none"> • Reports received regarding the selling of antiviral medications on the black market. 	<ul style="list-style-type: none"> • Police contacted the MOH and a joint press release was prepared.
Re: Hospitals/Facilitator <ul style="list-style-type: none"> • Shortages of beds and ventilators across the tri-county. Influenza deaths continue to occur related to secondary infections. 	<ul style="list-style-type: none"> • Hospitals met to discuss limited resources. Planned to pool/share resources as much as possible. • Home care agencies contacted regarding expanding use of decentralized medical care. • All deaths were reported to the MOH as required.
Re: Emergency Management Ontario (EMO)/Emergency Control Group <ul style="list-style-type: none"> • Requested additional medical supplies (beds, ventilators, IV pumps) 	<ul style="list-style-type: none"> • EMO advised that some supplies would be forthcoming.
Phase III: May 6-13 Re: MOH/Facilitator <ul style="list-style-type: none"> • MOH develops severe influenza symptoms and is unable to work. 	<ul style="list-style-type: none"> • Health Unit designate contacted the MOH from a neighbouring Health Unit for guidance. • Media reported major concerns in the public. Story reads 'Top Doc has Influenza!' Conflicting reports of cases and fatalities are also occurring in the media. • Many agencies contacted the Health Unit regarding the situation. • Health Unit designated an alternate spokesperson and issued a press release.
Re: Funeral Homes/Facilitator <ul style="list-style-type: none"> • Influenza deaths topped 176 throughout the tri-county area. 	<ul style="list-style-type: none"> • Local morticians pooled resources and coordinated internment measures. • The responsibility for costs associated with fatality management was discussed but solutions were not identified within the parameters of the exercise. • Social services personnel continued to provide essential psychosocial assistance.

nity need. Public health plans for large-scale vaccination should not depend on assistance from hospital nursing staff nor depend on local police to guarantee clinic security because of increased demands of their services.

With limited vaccine supplies, alternative disease containment strategies would be critical to controlling the spread of disease

The Medical Officer of Health used stringent containment measures including school and daycare closures and limiting public gatherings. The use of public health restrictions in the past has resulted in a mix of community support and resistance.^{2,9} The effect of school and daycare closures on the willingness and ability of essential service providers to report to work needs to be resolved. Early communication to the public concerning school closures and the importance of essential service providers reporting to work would be a valuable strategy. Suggestions included: encouraging the use of smaller home-based daycares and the use of 'buddy' systems to meet childcare needs. Systems will need to be in place to ensure that essential service providers are able to continue working.

DISCUSSION

To our knowledge, this is the first published description of an emergency response exercise involving pandemic influenza. The authors are aware of only one other such exercise conducted in Canada occurring in Trois-Rivières, Québec.

The Pandemic Planning Committee approved the changes to the local plan that were identified during the exercise; Table III outlines these changes. Modifications also included recommendations from the draft Canadian Contingency Plan for Pandemic Influenza that was prepared by the National Pandemic Influenza Committee.¹⁰

A coordinated method to cope with mass fatalities during a pandemic would be crucial. Locally, a planning sub-committee was established to address the planning issues related to emergency internment measures, supply management, human resources and disease containment. A local mass fatality plan will be included as an addition to the existing pandemic plan.

In a real pandemic emergency involving a limited supply of vaccine, it is generally agreed that public fear and protest are likely.¹¹ Clear communication strategies,

including the rationale for vaccine and prophylaxis prioritization, should be conveyed to the public as a measure that is necessary to minimize morbidity and mortality as well as to maintain the essential services upon which the community depends.⁷ Managing an emergency situation in a large rural area requires coordination of the many municipalities in the region. Pandemic influenza could result in shortages in supplies such as food, medication, and health care. These issues and many others will be challenging.

Communication protocols that were developed during pandemic planning and testing proved invaluable during the recent SARS (Severe Acute Respiratory Syndrome) outbreak. This revealed the applicability of lessons learned from one outbreak to another and the importance of prior planning and well-designed communication strategies to ensure an effective public health response.

CONCLUSION

The Leeds, Grenville and Lanark experience illustrates that although developing a contingency plan for pandemic influenza is a daunting task, such work is achievable and beneficial for a community. The exer-

TABLE III
Key Local Plan Changes

Issue	Change Made	Source
Plan Phases	Phases were changed to correspond to the Canadian Pandemic Plan which utilizes the WHO (World Health Organization) phases.	<ul style="list-style-type: none"> Canadian Contingency Plan for Pandemic Influenza.
Vaccine and Antiviral Eligibility	Clear definition of 'essential service providers' included so that in an emergency they can be quickly identified, vaccinated and permitted to return to work promptly.	<ul style="list-style-type: none"> Canadian Contingency Plan for Pandemic Influenza. Committee members also carefully considered which local services, if interrupted, would pose a serious threat to public safety or would significantly interfere with the pandemic response.
Childcare Provisions	Public health restrictions involving school and daycare closures required addition of alternative childcare arrangement for essential service providers including 'buddy systems' and smaller home-based daycares.	<ul style="list-style-type: none"> Exercise debriefing.
Role of Pharmacists	Pharmacists were added to the communication protocol and a representative was added to the Pandemic Influenza Planning Committee.	<ul style="list-style-type: none"> Exercise debriefing.
Mass Fatality Management	Specially modified freezer trucks will be temporarily utilized to store corpses once mortuaries reach maximum capacity, rather than arenas.	<ul style="list-style-type: none"> Exercise debriefing.
Immunization Clinic Staffing	Local police will assist with clinic security if possible. Otherwise, security personnel will be hired. Hospital staff will not be expected to assist with immunization clinics. Public health nurses, volunteers, agency nurses and students will administer vaccine at clinics.	<ul style="list-style-type: none"> Exercise debriefing.
Centralized Decision-Making	One centralized Emergency Control Group would be convened for the entire region rather than in each municipality to ensure a coordinated response.	<ul style="list-style-type: none"> Exercise debriefing.

RÉSUMÉ

Objectif : Évaluer, en table ronde, la capacité d'un bureau de santé rural de gérer une pandémie d'influenza.

Participants : L'exercice a rassemblé des intervenants communautaires, notamment des représentants de la santé publique, des hôpitaux, des établissements de soins de longue durée, des services sociaux, ainsi que des secouristes opérationnels, des entrepreneurs de pompes funèbres, des fonctionnaires locaux et des journalistes.

Lieu : Le comté de Leeds, Grenville et Lanark, une région rurale de l'Ontario.

Intervention : En juin 2002, les participants à l'exercice ont mis en scène leur intervention locale probable à la suite d'une éclosion de grippe pandémique. Les animateurs avaient préparé un cadre à l'avance pour cette fausse urgence. Le scénario a toutefois été orienté par les décisions des participants et les conséquences probables de ces décisions. Après l'exercice, une séance-bilan a donné lieu à des recommandations à inclure dans l'élaboration d'un futur plan.

Résultats : L'exercice a permis de cerner des questions névralgiques liées à la communication, au processus décisionnel d'urgence, à l'établissement des priorités en matière de vaccination, à la capacité tampon dans la localité et au confinement de la maladie. Tant les participants que les observateurs ont jugé l'exercice fructueux.

Conclusion : On a suggéré des améliorations à apporter au plan d'urgence local en cas de grippe pandémique. L'exercice a permis aux participants de se familiariser avec le plan d'urgence, de s'exercer à travailler de concert et de cerner les domaines exigeant une planification plus poussée. Les leçons et les principes que l'on a tirés pourront orienter les interventions en cas d'éclosion à grande échelle d'autres maladies infectieuses.

cise promoted discussion and identified areas for improvements in emergency contingency planning, which came in very useful during the SARS epidemic.

While responding to a true pandemic emergency will be challenging, the development and testing of the plan during the inter-pandemic period will help lead to an effective local response. Plans for pandemic influenza and other emergencies are only effective if the community has the ability to respond. It is imperative to continue working with key stakeholders and community partners to regularly test and improve contingency plans.

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