



Communication Strategies for the 2009 Influenza A (H1N1) Pandemic

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Introduction

Public health emergency communication is important for promoting public confidence in the government's emergency response. Poorly planned communication by public health officials can lead to negative public reactions, lack of adherence to disease prevention recommendations and a disorganized response to the crisis (1). With the 2009 influenza pandemic, the need for carefully executed public health emergency communication was especially important in an era where information is rapidly disseminated through the Internet and a 24-hour news cycle.

The emergence of a novel pandemic H1N1 (pH1N1) influenza strain presented many communication challenges for public health officials. There were "unknowns" about the disease, such as severity and spread, during the initial stages (2). The challenge was to use the data available to provide the most accurate information in a timely manner. As the pandemic progressed, our knowledge of the disease evolved as well. As a result, guidelines and public messaging had to change. Pandemic H1N1 had unique characteristics which presented difficulties in risk communication. Although pH1N1

Key Points

- Limited behaviour change to prevent influenza infection was reported among the general public from surveys conducted in Australia, United Kingdom and France.
- Rapid communication with frontline health-care providers during the pH1N1 pandemic was challenging and effective mechanisms for communication with health-care providers need to be determined.
- Social networking tools were widely used as communication tools. Effectiveness and best-practices related to the use of social media requires further evaluation.
- Comparisons of provincial/territorial and local public health strategies are needed to inform future public health communication practices.

infection resulted in mild symptoms for the majority of the general population, critical illness occurred among certain sub-groups including young adults and pregnant women (3). There were also communication issues related to the pH1N1 vaccine including availability, safety, efficacy, and priority group distribution (4).

Various communication strategies and tools were implemented to address challenges that resulted from the pH1N1

pandemic. The objective of this literature review was to provide an overview of the approaches used to communicate pH1N1 information and summarize the results of initial evaluations. Focus was given to three target groups: 1) the general public; 2) health-care providers and 3) public health workers. Communication strategies and tools used in Canada were compared with the approaches used in other countries.



National Collaborating Centre
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des maladies infectieuses

knowledge that's contagious!

Des saviors qui se transmettent!

Table 1

Pandemic H1N1 communication strategies used in Australia, Canada, Mexico, US and UK for public health workers, healthcare providers and the general public

	Select pH1N1 communication strategies:		
Country	Public Health Workers	Healthcare Providers	General Public
Australia	<ul style="list-style-type: none"> Public Health Emergency Operations Centre Teleconferences/meetings Fax broadcasts Text messages Web-based: pH1N1 site, intranet, emails 	<ul style="list-style-type: none"> National Incident Room: daily situational reports A professional association initiated a task force and engaged other associations Teleconferences/meetings Faxes Laboratory results hotline Messages on Healthlink (pathology report) system Dedicated websites Designated liaisons with private hospitals *GPs: General Practice Divisions, state health department 	<ul style="list-style-type: none"> Traditional media: TV, posters, bulletins, radio Web-based: website, emails Dedicated hotline Laboratory results hotline Rapid consultations with Aboriginal groups Teleconferences with key community members School closures plans outlined for staff and district education office
Canada	<ul style="list-style-type: none"> Incident Management System Teleconferences/meetings Dedicated unit to handle new information Web-based: Wiki, instant messaging, emails 	<ul style="list-style-type: none"> A professional association initiated a task force and created specific recommendations for their members Teleconferences/information sessions Faxes Health-care provider hotline Web-based: websites and emails 	<ul style="list-style-type: none"> Traditional media: news, TV, posters, mail Liaisons for special populations: schools, day cares, Aboriginal communities Web-based: websites, Twitter, Facebook Dedicated hotline Presentations to local community partners
Mexico	<ul style="list-style-type: none"> Meetings with different levels of government Provided information for †WHO to develop vaccine 	<ul style="list-style-type: none"> Technical and procedures manuals for healthcare services 	<ul style="list-style-type: none"> Text messages Emails Dedicated hotline Leadership: secretary health spokesman Mandated mask use for bus and taxi drivers Declared “state of sanitary contingency” Real-time updates on epidemic status Health caravans delivered presentations

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Results

Information on pH1N1 pandemic communication in Canada was extracted from provincial health reports from British Columbia (5) and Ontario (6), and regional public health reports from

Ottawa (7) and Middlesex-London (8). The National Collaborating Centre for Infectious Diseases published a series of debriefings on the pH1N1 pandemic responses from public health officials in Ontario, British Columbia and Manitoba

(9). The literature search did not identify reports from other provinces and territories. National health professional associations (10) and the Registered Nurses' Association of Ontario (11) provided their own reflections on how

Table 1 cont'd

Pandemic H1N1 communication strategies used in Australia, Canada, Mexico, US and UK for public health workers, healthcare providers and the general public

Country	Select pH1N1 communication strategies:		
	Public Health Workers	Healthcare Providers	General Public
U.S.	<ul style="list-style-type: none"> • Teleconferences/meetings • Web-based: website, emails • Health Alert Networks • Collaboration with different organizations to develop guidelines 	<ul style="list-style-type: none"> • Teleconference/meetings • Clinical Outreach and Community Activity calls • Web-based: websites, emails • Designated communication team • Health Alert Networks • Designated call centres 	<ul style="list-style-type: none"> • Traditional media: TV, radio, posters, ads • Workshop for media representatives • Web-based: websites, Facebook, Twitter, newsletters, emails, podcasts, media banner • Designated spokespersons • Communication in different languages
UK	<ul style="list-style-type: none"> • Flu Response Centers • Teleconferences/meetings • Website updates 	<ul style="list-style-type: none"> • Teleconferences/meetings • Internal bulletins • Web-based: website, intranet, emails • Direct communication with “freelance” GPs by professional leaders • Flu Response Centre hotline 	<ul style="list-style-type: none"> • Traditional media • National Pandemic Flu Service hotline • Web portal • Information leaflet sent to all homes
*GPs: General practitioners †WHO: World Health Organization			

communication was handled during the pandemic. Information on other countries was extracted from articles published in scientific journals and government reports.

Communication strategies were categorized based on the three target audiences (general public, health-care providers and public health workers). Strategies for Australia, Canada, Mexico, U.S. and UK are presented in Table 1. Strategies presented provide a general overview of the core communication approaches used at the national or provincial level. Differences in approaches used at the regional and institutional levels are not highlighted unless stated. Select communication tools used by countries other than Canada are shown in Table 2. Results from evaluations of communication approaches were summarized.

Role of pre-pandemic planning in communication

In preparation for an influenza pandemic, Canada developed the Canadian Pandemic Influenza Plan. The process of developing this plan initiated the necessary conversations and collaborations between the government, public health sector and health-care providers prior to the emergency. Communication routes were pre-established and allowed for rapid exchange of information between key partners during the pandemic (10).

The implementation of the Canadian Pandemic Influenza Plan revealed communication gaps which needed to be addressed for specific groups including frontline care providers and Aboriginal communities. Groups have advocated for the inclusion of Aboriginal community stakeholders in pandemic planning (12). Early in the pandemic, the Canadian Pandemic Influenza Plan was revised to include a section specifically

addressing issues related to the Aboriginal population (12). Frontline care providers were another group that found the pandemic plan insufficient in the first wave of the pandemic. They requested that information applicable to primary care settings be disseminated in a timely manner. After the first wave, the Public Health Agency of Canada (PHAC) collaborated with family physicians to develop “Pandemic H1N1: Fast Facts for Front-line Clinicians,” which frontline health-care workers found helpful (10).

In addition to national pandemic planning, the North American Plan for Avian and Pandemic Influenza (NAPAPI) was developed to establish communication and coordination between Canada, the U.S. and Mexico (13). International Health Regulations (IHRs) issued by the World Health Organization (WHO) required all member states to have a National Focal Point for direct communication

Table 2

Select pH1N1 communication tools used in different countries

Target Audience	Producer
Public health workers / Healthcare providers	<ul style="list-style-type: none"> • NetEpi: national Web-based public health data collection system (Australia) • FLUZONE: Web-based database to capture all possible pH1N1 cases and contacts (UK) • Arkadin: audio-teleconferencing tool (EU) • Health Emergency & Diseases Information System: Member states of EU have access to a set of crisis tools and public health information distributed by the European Commission • Medisys: Web-based Medical Intelligence System for access to public health information by EU member states (EU) • Early Warning & Response System: Web-based system linking the European Commission and EU member states on crisis-related notifications (EU) • Health Alert Network: nationwide system to connect state and local health departments (USA) • Public Health Emergency Wiki (Australia) • Clinical guidelines and infection control guidelines (various countries) • Practitioner toolkits/ fact sheets (various countries)
General public	<ul style="list-style-type: none"> • Communication kits for small business and workplace management, child-care and higher education institutions (various countries) • Disease Outbreak Response System: different colours correspond to the level of pandemic response measures (Singapore) • Workshops on influenza prevention (various countries) • Door knob hangers for all houses (Mexico) • Health declaration cards for travelers (Singapore) • Tool to help parents assess severity of children's illness (various countries)

with WHO and report Public Health Emergencies of International Concern (PHEIC). These requirements allowed for a pre-determined flow of communication and rapid exchange of information between countries (13).

Communication with the general public

In Canada, traditional and Web-based media were frequently used by federal/provincial governments and public health units to disseminate information to the general public on pH1N1 prevention and control (5, 6, 9). Traditional media include television, radio and newspaper,

and other types of print media. Press conferences and regular public health notices were issued to the media (5). Influenza information pamphlets were delivered to households. Websites dedicated to providing up-to-date influenza information were accessible to the general public. Social networking tools such as Twitter and Facebook were also used for mass dissemination of information. For example, Ottawa Public Health used Twitter to send out regular updates on vaccination clinic wait times to residents (7). British Columbia Provincial Health created a Facebook page dedicated to providing pandemic

information to the general public (5).

In addition to mass communication approaches, information hotlines and targeted messaging were implemented. Pandemic H1N1 information call centres and hotlines were operated by provincial governments and local public health units to answer personal inquiries from the general public (5, 6, 9). Special populations were targeted with specific pH1N1 prevention and control messages. For example, in Ontario, key public health contacts were assigned to communicate with vulnerable groups in settings such as schools, daycare centres, universities/colleges, aboriginal communities and

homeless shelters (9). In British Columbia, public health consulted with First Nations communities to develop a pandemic action plan (9). Another targeted strategy used was holding information sessions with local community partners and cultural organizations to reach out to diverse groups (7). For example, PHAC conducted regular meetings with eleven national aboriginal organizations on pH1N1 (14).

Other countries used similar traditional media and Web-based approaches to communicate with the public but also had alternative communication approaches. Mexico's mass media campaign on pH1N1 featured an easily recognizable cartoon icon, which had been pilot-tested and used for other public health messages prior to the pandemic (15). The use of a cartoon icon was to ensure effective communication with less literate populations. The Mexican government also issued updates through text messages to individual cell phones (15). Meanwhile, in Singapore, a Disease Outbreak Response System (DORS) was implemented, where levels of pandemic response are represented by different colours (16). Instead of having separate information hotlines for each public health region, the UK initiated a National Pandemic Flu Service hotline (17).

Communication with health-care providers

Health-care providers obtain information from a variety of sources including their regional public health unit, provincial health organization and professional associations (e.g. Canadian Medical Association). During the pandemic, there were challenges in providing clinically relevant information for all settings in a timely manner. Frontline health-care providers, especially family physicians, reported a gap in receiving guidelines suitable for frontline clinics in the first wave of the pandemic (5). Before national

clinical guidelines for pH1N1 were available, provincial health authorities and professional medical associations provided their own interim recommendations for health-care providers at the beginning of the pandemic (10). Another challenge was managing the frequent number of updates as the pandemic progressed (11).

In Canada, routes of communication with health-care providers included teleconferences and information sessions held by provincial/territorial health ministries and regional health units (6, 7, 10, 11). For example, in Ontario, Local Health Integration Networks (LHINs) held critical care teleconferences, where strategies were shared and standards of care discussed (11). Federal and provincial websites had dedicated sections on pH1N1 information tailored to health-care providers. Federal and provincial clinical care guidelines and practitioner toolkits were disseminated electronically and by fax.

Other countries implemented similar communication approaches for their health-care providers. Prior to the pandemic, the U.S. established the Health Alert Network to facilitate health information exchange across the nation (15). This Network provided a quick and efficient method to disseminate pandemic information. The U.S. Centers for Disease Control and Prevention (CDC) used it to disseminate information nationally and regional networks (e.g. New York Clinical Information Exchange) used it on a local level with their health-care providers (18). Meanwhile, in Australia, the Thoracic Society of Australia and New Zealand (TSANZ) established a pH1N1 Task Force and assumed a lead role in engaging other health-care professional societies (19). TSANZ provided timely pH1N1 updates on their website and developed clinical management guidelines for professionals.

Communication with public health workers

In Canada, communication routes with and between public health workers were through regular teleconferences and meetings (6, 7, 10). Some public health units reported using an Incident Management/Command System to organize their pandemic response (7). Other units had designated departments to manage and update new information for other workers as the pandemic progressed (5). Emails, sharing of electronic documents and social networking tools allowed for rapid knowledge dissemination (5, 7). For example, Ottawa Public Health used Wikis to update the latest pandemic changes and an instant messaging service (Yammer) for announcing breaking news to staff (7).

Other countries used pre-established information exchange networks and Web-based sharing tools to facilitate rapid communication between public health workers. Australia developed a public health emergency Wiki, which is a repository of response documents that public health units could view and edit (20). Public health workers could also access NetEpi, a national Web-based public health data collection system (20). Meanwhile, in the UK, the Health Protection Units were grouped to form Flu Response Centres during the pandemic (17). Among the European Union, different communication tools were used, including Arkadin (audio teleconferencing tool provided by the Health Security Committee) and information exchange networks (Medisys, Health Emergency and Diseases Information System) (21). The literature search did not identify any evaluation of communication strategies for public health workers.

Evaluation of communication strategies with the general public

The literature search identified two studies that evaluated the direct impact of a public communication strategy to disseminate information and to promote protective behaviour specific to the pH1N1 pandemic. There were also several studies on the general public's pH1N1 knowledge, attitudes and behaviour. These studies are useful for understanding the mechanisms through which the population received their pandemic information, attitudes towards different information sources and the gaps in public education. However, these studies do not evaluate the effectiveness of communication strategies on public knowledge or behaviour change.

In a study of UK residents, an informational pamphlet had no effect on pandemic behaviour change (22). A pH1N1 informational pamphlet was delivered to all UK households at the beginning of the pandemic and provided three recommendations: 1) increase hand-washing; 2) increase surface cleaning; and 3) discuss plans with friend/family if one person becomes infected. Of the 1,000 participants interviewed, only 39% reported receiving the informational pamphlet and 26% reported reading the pamphlet. There were no differences in behaviour change between those who received the leaflet and those who did not (OR=0.9; 95% CI: 0.7-1.2). Only 38% of the respondents reported performing any of the recommended behaviour changes in the past four days.

Similar to the UK study, Australia's national pH1N1 information awareness campaign (radio, TV, print media) had little impact on behaviour change within the general public (23). After the first pandemic wave, 44% of 830 Australian residents noticed campaign messages about once a week and 20% did not even notice any of the media messages. Among individuals who were exposed

to the campaign, 88.2% reported that the information had little or no effect on their behaviour.

Pandemic H1N1 knowledge, attitudes and behaviour studies were conducted at different stages of the pandemic and across different countries. Early in the pandemic, attitudes towards pH1N1 messaging differed across countries. Of the 506 Norwegian residents interviewed, 80% felt that authorities provided good and balanced information and half of the respondents did not think authorities were exaggerating the risks of

In a post-pandemic evaluation, U.S. residents had low awareness of pH1N1 vaccine priority groups and relied mainly on their health-care providers for vaccine advice.

pH1N1 (24). Approximately 60% of the respondents thought there was too much media on pH1N1. By contrast, 44% of 620 Australian respondents felt they did not have enough pH1N1 information and 42% agreed that health authorities were exaggerating pH1N1 risks (25).

One study of Chinese-Americans with a limited understanding of English examined their attitudes and behaviours at the beginning of the pandemic (26). Almost all respondents knew about pH1N1. However, 39% of 100 respondents were not aware of anti-influenza medication and 43% believed that the pH1N1 vaccine was already available. The most common pH1N1 information sources were television (81%) and Chinese newspapers (69%). Only 2% reported obtaining information from public health units or information hotlines. Extra effort by public health units may be needed to communicate

with ethnic minority populations.

During the middle of the pandemic, two studies on pandemic attitudes and behaviors were conducted in Australia and one in France. These survey studies reported limited influenza prevention behaviour change in some segments of the population and a lack of intent to receive the pH1N1 vaccine. In one study, 63% of 625 Australian respondents understood what was happening with the pandemic and 57% agreed that authorities were doing a good job in managing the pandemic (27). For pH1N1-related behaviour, 48% of respondents reported increased handwashing, 38% used alcoholic hand-gel more often and 31% increased surface cleaning frequency. However, very few respondents (3%-8%) reported social distancing behaviour such as keeping away from crowded places, cancelling social events, and preventing their children from going to school. In another Australian study, 2,882 university staff and students responded to an online survey on pandemic behaviours (28). 76% of participants did not change their behaviours because of the pandemic (28). Of the 1,876 students, 75% reported they would still attend school even if they were sick. Meanwhile, in France, only 17% of 2,253 interviewed residents intended to receive the pH1N1 vaccine or had already been vaccinated (29). Individuals who received positive vaccine advice from their primary care provider were significantly more likely to receive the pH1N1 vaccine (OR=4.57; 95% CI: 2.92-7.14).

In a post-pandemic evaluation, U.S. residents had low awareness of pH1N1 vaccine priority groups and relied mainly on their health-care providers for vaccine advice. Only 29% of 4,040 U.S. respondents were able to correctly identify themselves as part of a target group recommended to receive the pH1N1 vaccine (30). Among individuals who received provider recommendation for

vaccination, awareness of vaccine priority groups was higher (56%). In another national survey of 3,917 U.S. residents, health-care provider was the most commonly reported information source used in making a decision on the seasonal influenza vaccine (31). In contrast, for information on the pandemic vaccine, respondents considered information from various sources including their health-care provider, CDC/public health departments, and news reports. Agreement with statements on safety and effectiveness of influenza vaccines was highest among those who stated their most influential sources of information were from CDC/public health departments, health-care provider, and employers (31).

Evaluation of communication strategies with health-care providers

Three evaluation studies on health-care provider perceptions about behaviours related to pH1N1 were identified. Studies were conducted after the first pandemic wave. In a national Canadian survey, 77% of 207 Canadian family physicians and 83% of 714 pediatricians intended to receive the pH1N1 vaccine (32). Most respondents would recommend the pandemic vaccine to their patients. However, 47% of the family physicians and 36% of pediatricians considered their knowledge on the pH1N1 vaccine insufficient. Approximately 38% of family physicians and 54% of pediatricians stated being highly influenced by vaccine recommendations issued by professional associations. Similarly, a survey of 1,434 general practitioners in France reported that 62% of respondents intended to receive the pH1N1 vaccine (33). The majority of the general practitioners (86.3%) read the national preparedness plan for an influenza pandemic. Meanwhile, of 367 general practitioners surveyed in the UK, 79% understood how to obtain anti-influenza drugs for patients (34). However, 61% of the

respondents believed that the advice provided by the National Health Service and Health Protection Agency on pH1N1 management was not always clear and was sometimes conflicting. Forty-four percent of the surveyed UK general practitioners did not feel engaged with the pandemic planning process.

Evaluations of Web-based H1N1 information

Two studies evaluated pandemic information available on the internet.

Social networking tools, such as Facebook and Twitter, were widely used and may be useful communication approaches during a pandemic.

One study examined the English content related to pH1N1 on YouTube posted between April and June 2009 (35). Content was categorized by two independent researchers as useful (scientifically correct information), misleading (scientifically unproven content) or new updates (no information related to prevention or treatment). The majority of the YouTube videos on pH1N1 were classified as useful (61%) and 16.2% were misleading. Themes in the misleading videos included messages on anti-vaccination, conspiracy theories on man-made pH1N1 virus, government propaganda, and exaggerated pH1N1 risks. There were no significant differences in viewership between useful and misleading videos. CDC videos had the maximum share of viewership.

Another study examined pH1N1-related content posted on U.S. state and local health department websites (36). The researchers evaluated information

posted within 30 hours after the U.S. Department of Health and Human Services declared a public health emergency response to pH1N1. For state health department websites, 96% had information on pH1N1 and most information was easily accessible with one click or less. Information for health-care providers was present in 59% of the websites. Only nine websites had information in another language on the homepage. Among the sample of 153 local health department websites, only 34% had pH1N1 information.

Implications

In Canada, pH1N1 communication with the general public, health-care workers and public health workers was frequent and wide-spread. Federal and provincial health agencies, regional public health units, and professional health associations were all involved in delivering information throughout the pandemic. Pre-pandemic planning established communication routes needed for rapid mobilization of resources. Traditional media, Web-based media and information hotlines were used widely in communicating with the general public. Evaluation results reinforced the need for multiple communication approaches. For example, information pamphlets alone and traditional public awareness campaigns did not have a significant impact on behaviour change. International surveys indicated that segments of the population believed pH1N1 risks were exaggerated by health authorities and many reported no behaviour change to prevent influenza infection. Future research efforts should examine the factors associated with the lack of influenza prevention behaviour and negative attitudes regarding pH1N1 messaging.

Teleconferences/meetings with health-care providers and information hotlines specifically for health professionals were commonly reported. Survey

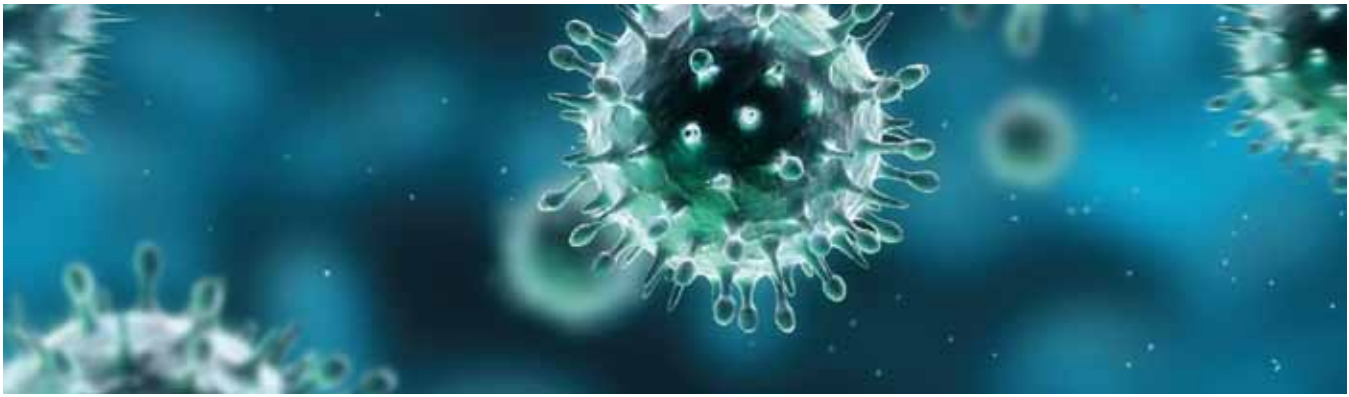
results suggested that only some family physicians were highly influenced by vaccine recommendations made by professional associations. Future studies should assess the different sources of information used by health-care providers during the pandemic and the influence it has on their decision-making. Additional research is needed to determine effective mechanisms for rapid communication with frontline health-care providers and local public health units.

Social networking tools, such as Facebook and Twitter, were widely used and may be useful communication approaches during a pandemic. Further research is needed to determine the target groups of such approaches and the effectiveness of such tools as compared to traditional approaches (radio, television, pamphlets). Public health officials should be aware of the misleading pandemic content on the internet and continue to counteract the false messages that can be easily accessed by the general public.

This report provides an overview of the communication approaches used during the pH1N1 pandemic. Published reports on provincial/territorial and regional communication strategies in Canada were limited at the time of the review. Evaluations of pandemic communication are still ongoing. As more studies are published, future reviews should compare different provincial/territorial and local public health strategies to identify best practices for rapid communication.

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