



**CSA Standards
ROUNDTABLE ON HEALTHCARE &
EMERGENCY SERVICE SECTOR PANDEMIC
PREPAREDNESS**

VOICES FROM THE H1N1 INFLUENZA PANDEMIC FRONT LINES:

A White Paper About How Canada Could Do Better Next Time

June 8, 2010

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PREFACE

On December 15, 2009, CSA Standards (CSA) hosted a national *Roundtable on Healthcare and Emergency Service Sector Pandemic Preparedness* comprised of respected leaders across a variety of functions from Canada's leading healthcare and emergency service sectors – including infectious disease, family medicine, first responders (i.e., fire fighters), nursing and hospital / healthcare facility administration. The Roundtable was moderated by Dr. Allan Holmes, a Fellowship-trained Emergency Physician, President of Global Medical Services, expert on building pandemic plans and business toolkits, and pandemic advisor to federal and provincial governments and corporations across Canada. This one-day roundtable was possible thanks to arms-length support from Hoffmann-La Roche (Roche Canada). Roche did not participate in the discussion.

The H1N1 virus led to the first global influenza pandemic experienced in over 40 years. While the current *2006 Canadian Pandemic Influenza Plan* (with updates since) seemed to have been a step in the right direction for mitigating serious illness and overall deaths during this mild influenza pandemic outbreak, many believe that more can be done in the event of future, more moderate or severe influenza pandemics. Gaps exist in our pandemic planning for these types of scenarios. The CSA Roundtable discussion, therefore, focused on the challenges and opportunities faced by the healthcare and emergency service sectors about pandemic preparedness in Canada.

Why did CSA get involved? CSA is actively involved in the healthcare sector and wanted to contribute to the discussion of influenza pandemic preparedness in Canada, especially in light of the H1N1 pandemic. Additionally, CSA has been engaged in the emergency management field for many years, having introduced its first standard on the topic in the 1990s. In 2008, CSA introduced a comprehensive standard entitled *CSA-Z1600: Emergency Management & Business Continuity Programs*, and also has standards in related areas, including personal protective equipment.

A key discussion point at the Roundtable was lessons learned from the 2009 H1N1 influenza pandemic where participants shared their thoughts about successes and experiences, the actions taken by their respective organizations and by government, and their observations overall as to what worked and what didn't in the healthcare system. Roundtable discussion items included:

- Identification of the strengths and weaknesses of the current system in the event of a moderate or severe influenza pandemic
- The points of variance across jurisdictions
- Identification of what more needs to be done and the barriers that need to be addressed
- Healthcare continuity implications
- Suggested actions and timelines for potential improvements to existing plans

The following white paper is a summary of that informed Roundtable discussion and sets down the observations and recommendations in five key subject areas:

1. Pandemic Preparedness Planning
2. Personal Protective Equipment
3. Antiviral Medications
4. Vaccine Development and Delivery
5. Communications

The CSA Roundtable report, entitled *Voices From the H1N1 Pandemic Front Lines: A White Paper About How Canada Could Do Better Next Time*, highlights the informed opinions from the Roundtable participants about how Canada fared in each area, and lists constructive recommendations on how the leadership of Canada's healthcare and emergency service sectors can work in collaboration with governments and other decision-makers to improve on our pandemic preparedness plans going forward.

Sincerely,

A handwritten signature in blue ink, appearing to read 'DMorton', with a long horizontal stroke extending to the right.

Doug Morton
Director, Health and Safety
CSA Standards

PARTICIPANTS

The CSA Standards (CSA) *Roundtable on Healthcare and Emergency Service Sector Pandemic Preparedness* was comprised of senior representatives across a variety of functions from Canada's leading healthcare and emergency service sectors – including infectious disease, family medicine, first response (i.e., fire fighters), nursing and hospital / healthcare facility administration.

The Roundtable was moderated by Dr. Allan Holmes, a Fellowship-trained Emergency Physician, President of Global Medical Services, expert on building pandemic plans and business toolkits, and pandemic advisor to federal and provincial governments and corporations across Canada.

CSA would like to thank the following organizations for their time and input:

Association of Medical Microbiology and Infectious Disease Canada
Canadian Association of Emergency Physicians
Canadian Healthcare Association
Canadian Nurses Association
Centre for Excellence in Emergency Preparedness
College of Family Physicians of Canada
Hamilton Health Sciences
National Emergency Nurses Affiliation
Ontario Hospital Association
Ottawa Hospital
Prince George Fire Fighters Union

EXECUTIVE SUMMARY

The objective of the CSA Roundtable on Healthcare and Emergency Service Sector Pandemic Preparedness White Paper – entitled *Voices From the H1N1 Influenza Pandemic Front Lines: A White Paper About How Canada Could Do Better Next Time* – is to help those entrusted with making healthcare decisions, as well as those who deliver care and services to the public, as they continue to prepare for future influenza pandemics.

At the time that the CSA Roundtable was held in December 2009, the H1N1 virus remained a threat, Canadians were still in the process of being immunized, and the very real possibility of a third wave, mutation or a new viral strain (such as the threat of the H1N1 combining with the H5N1 virus) remained ever present.

What was clear from the Roundtable discussion was that many things went right during the recent H1N1 influenza pandemic: government decision-makers and healthcare and emergency service workers had made best efforts to plan appropriately, and when the pandemic hit, they worked extremely hard to implement those plans – often placing themselves and their families at risk. Among the successes were the early recognition of a new strain of influenza virus, governments and organizations moved quickly to put plans into action, and a new vaccine was developed, tested and delivered to Canadians approximately six months from identification of the virus.

But although there were successes – many of which were not apparent to the public – there were also failures and perceived failures.

The 2009 influenza pandemic was less lethal than it might have been and while there clearly were lives lost, a fact the Roundtable participants do not wish in any way to minimize, Canadians were fortunate in that it could have been much, much worse.

A mild pandemic, like what was seen with the H1N1, provides Canada with an opportunity to review existing pandemic preparedness plans, to determine how they could be readjusted to address gaps and failures, and to identify what could be done even better in the delivery of front-line care next time. And there will be a next time.

To that end, the CSA Roundtable took the opportunity to consult with respected leaders across a variety of functions from Canada's leading healthcare and emergency service sectors – infectious disease, family medicine, first response (i.e., fire fighters), nursing and hospital / healthcare facility administration – to collect immediate feedback regarding their experiences during the 2009 H1N1 influenza pandemic. The goal was not only to look back to evaluate how Canada fared, but also to look ahead to identify ways we could do better next time – when an influenza pandemic might be more moderate or severe than the 2009 H1N1 pandemic.

While it was impossible for Roundtable participants to fully explore and respond to every part of Canada's complex and comprehensive pandemic preparedness system in a single day-long session, participants were able to talk first-hand about their experiences and to describe how well our system did and did not function “on the ground” during the 2009 H1N1 influenza pandemic.

A number of themes emerged from the Roundtable discussions and are summarized below.

- There was considerable variability in the H1N1 virus' impact globally and across Canada which made consistency in planning and response more difficult.
- Canada's pandemic plans need a common baseline of preparedness at the grassroots level (e.g., among public health units, front-line healthcare workers and first responders) for training, readiness, processes and inter-operability – to ensure a nation-wide standard of care and an ability to provide mutual support to each other.
- Canada's pandemic preparedness plans lacked a severity index (sometimes referred to as a risk matrix) which could have helped guide decision-making by provincial and local authorities. A severity index tool would have helped local planners determine the extent of mitigation measures to put in place to slow down the progression of the pandemic.
- For any index to be effective, there is a need to review infectious disease and pandemic research to identify “triggers” – events or milestones in the epidemic or pandemic process that signal a qualitative change in the situation – and the need to recognize triggers and then apply relevant mitigation strategies against those triggers in order to reduce the risk of further infection spread.
- Concern that the 2009 H1N1 influenza pandemic – which was milder than anticipated – will now be used as the yardstick for future pandemic preparedness planning and concern that the public and the media will tune out public health messages the next time around.
- The need to remain vigilant in Canada's pandemic preparedness planning: infectious disease preparedness must always be on our radar screens, not just every 40 years.
- Recognition that as a pandemic unfolds, Canadians must be flexible in learning as we go, recognizing that despite the best-laid plans, mistakes will happen (or responses may be slower than the public expects) when dealing with the unknown.
- The need for consistency in messaging – from healthcare providers, government spokespersons, and the media – while recognizing the fluidity of a pandemic situation. Spokespersons shouldn't be afraid to say “we don't know that right now” or “we aren't sure”.
- The need for better acceptance of the “precautionary principle” in ensuring that the front-line healthcare system remains intact by ensuring optimal protection of front-line healthcare providers and first responders.
- The need for broader risk management frameworks with more mitigation efforts such as personal protective equipment and antivirals to prevent the spread of the disease between: 1) hand-washing, social distancing, sneezing into sleeves not hands, and staying home if one feels ill; and 2) vaccination against the virus once a vaccine is ready. A continuum of responses is needed to address the gap between hand-washing and the use of a vaccine.

BACKGROUND

A TIMELINE OF EVENTS IN THE 2009 H1N1 INFLUENZA PANDEMIC

March 18, 2009	The World Health Organization (WHO) issues the first reports of a new influenza strain; the first reported cases occur in Mexico ⁱ
April 29, 2009	WHO announces that the worldwide pandemic alert is now at Level 5 – i.e., the spread of disease between humans is occurring in more than one country of one WHO region ⁱⁱ
May 1, 2009	Canada confirms 51 cases of H1N1; WHO officially calls the virus H1N1 (instead of swine flu); announcements are made that scientists are starting to work on a vaccine to prevent H1N1 infection ⁱⁱⁱ
May 4, 2009	1,000 cases of H1N1 influenza are reported worldwide ^{iv}
May 11, 2009	First confirmed death from H1N1 in Canada (woman in northern AB) ^v
May 19, 2009	Authorities state that developing a vaccine will take longer than expected ^{vi}
May 31, 2009	Number of cumulative H1N1 deaths in Canada: 2 ^{vii}
June 4, 2009	Spike in the number of Manitobans sick with H1N1 influenza, number of cases of the H1N1 virus in Canada jumps 17 per cent in past two days ^{viii}
June 8, 2009	H1N1 has spread to 73 countries with 25,288 people known to have been infected since the disease was first uncovered in April ^{ix}
June 9, 2009	65-year-old woman from Quebec City dies after contracting H1N1; first known death in QC related to the virus ^x
June 11, 2009	WHO raises the alert level to 6 – i.e., widespread human infection in more than one WHO region – officially indicating that a pandemic of H1N1 influenza is underway ^{xi}
June 30, 2009	Number of cumulative H1N1 deaths in Canada: 25 ^{xii}
July 6, 2009	WHO confirms 429 deaths worldwide ^{xiii}
July 13, 2009	H1N1 virus vaccine production hits a snag; manufacturers report a disappointingly low yield with vaccine viruses grown in eggs ^{xiv}
July 31, 2009	Number of cumulative H1N1 deaths in Canada: 59 ^{xv}
August 6, 2009	Federal health officials order 50.4 million doses of H1N1 vaccine ^{xvi}

August 21, 2009	WHO says the number of H1N1 infections is about to explode ^{xvii}
August 24, 2009	Reports that vaccine won't be available until mid-November and could take 7 weeks to deliver it to all who need and want it ^{xviii}
August 31, 2009	Number of cumulative H1N1 deaths in Canada: 72 ^{xix}
September 17, 2009	H1N1 vaccine priority list is released including people with chronic medical conditions under the age of 65, pregnant women, children 6 months to 5 years of age, people living in remote and isolated settings or communities, and healthcare workers involved in pandemic response or delivering essential health services (first responders not included on the priority list) ^{xx}
September 30, 2009	Number of cumulative H1N1 deaths in Canada: 78 ^{xxi}
October 22, 2009	Health Minister Leona Aglukkaq announces Health Canada has approved the adjuvanted H1N1 vaccine ^{xxii}
October 27, 2009	An otherwise healthy 13-year-old hockey player in Ontario dies from H1N1; concern begins to mount ^{xxiii}
October 29, 2009	The first long line-ups for vaccination of priority groups begin. The government announces that fewer doses will be available in the short-term, but they expect there will be enough to vaccinate everyone who wants a shot by early December ^{xxiv}
October 31, 2009	Number of cumulative H1N1 deaths in Canada: 95 ^{xxv}
November 20, 2009	Canada's vaccine supplier says it will deliver enough doses to provinces and territories to allow for vaccination of general population ^{xxvi}
November 25, 2009	The federal government announces that the number of new H1N1 cases appears to be leveling off in many parts of the country ^{xxvii}
November 25, 2009	International Association of Fire Fighters (IAFF) states fire fighters are calling on government to have better access to antiviral medication for protection when vaccines are sparse ^{xxviii}
November 30, 2009	Number of cumulative H1N1 deaths in Canada: 309 ^{xxix}
December 4, 2009	WHO officials say it is too soon to decide whether to declare the H1N1 pandemic over ^{xxx}
December 31, 2009	Number of cumulative H1N1 deaths in Canada: 410 ^{xxxii}
January 19, 2010	WHO says that the H1N1 flu pandemic remains moderate and its effects are probably closer to those of 1957 and 1968 than the far more deadly 1918 version ^{xxxii}

January 28, 2010	Number of cumulative H1N1 deaths in Canada: 426 ^{xxxiii}
April 11, 2010	Number of cumulative H1N1 deaths in Canada: 428 ^{xxxiv}
April 12, 2010	WHO announces an in-depth review by external experts is underway to assess the global response to the pandemic and identify lessons for the future ^{xxxv}
April 14, 2010	Alert level for H1N1 virus remains at level 6 ^{xxxvi}

DEATHS FROM THE 2009 H1N1 INFLUENZA PANDEMIC:

In Canada, a total of 428 Canadians have died of complications from infection with H1N1 influenza (as of April 11, 2010). ^{xxxvii} According to the World Health Organization (WHO), there have been at least 16,226 deaths worldwide. ^{xxxviii}

CASES OF THE 2009 H1N1 INFLUENZA PANDEMIC:

Before laboratory testing for the virus was stopped in Canada in July of 2009, there had been more than 10,000 confirmed Canadian cases of the H1N1 infection. A total of 8,678 Canadians were hospitalized, including 1,426 (16.8%) cases admitted to Intensive Care Units since the beginning of the pandemic. (After July 2009 Canadian records were not kept on the number of people infected because at the time, the WHO announced there were so many new cases of H1N1 around the world that maintaining an accurate count had become impossible. WHO officials said governments did not need to know how many cases were in their countries in order to implement proper treatment protocols.)^{xxxix}

A report from Statistics Canada released on January 15, 2010 said that about 1.5 million Canadian workers aged 15 to 69, or 9% of the workforce, reported taking time off work in November 2009 because of influenza; this included both H1N1 and seasonal flu. (It’s important to understand that some of these self-reported cases of illness may not have been H1N1, since routine laboratory testing for the virus was inconsistent.) The report calculates that absenteeism, hours spent lining up for the flu vaccine, and caring for the sick cost the country almost 30 million work hours.^{xi}

PROPORTION OF CANADIANS VACCINATED AGAINST H1N1

According to a Canadian Press report dated January 29, 2010 about 45 per cent of Canadians had been vaccinated against H1N1 so far. (The percentages were calculated based on estimates of doses delivered by the provinces and territories, and population estimates from Statistics Canada.)^{xi}

IS H1N1 INFLUENZA STILL A THREAT?

At the time that the CSA Roundtable was held in December 2009, the H1N1 virus still remained a threat, Canadians were still in the process of being immunized, and the very real possibility of a third wave, mutation or a new viral strain (such as the threat of the H1N1 combining with the H5N1virus) remained ever present.

VOICES FROM THE H1N1 INFLUENZA PANDEMIC FRONT LINES

I. PANDEMIC PREPAREDNESS PLANNING

ISSUES:

Harmonization: The Public Health Agency of Canada's (PHAC) 2006 *Canadian Pandemic Influenza Plan* is useful in providing a *broad* resource for decision-makers, however there are a multiplicity of pandemic preparedness plans that were in play during the 2009 H1N1 pandemic – federal, provincial, regional, local, institutional, and international. This patchwork system of protection caused tremendous confusion on the front lines and resulted in an uneven delivery of care.

Scalability: The PHAC Plan recognizes that unknown factors such as age distribution (i.e., people under the age of 40 ended up being at risk for H1N1 infection, as compared to the very young or elderly who traditionally have been more at risk for seasonal influenza strains), the severity of the illness caused by the pandemic strain, and the transmissibility of the virus from person-to-person will impact response measures. However, the PHAC Plan and provincial plans lack both a severity index for H1N1 infections and implementation triggers (events or milestones in the epidemic or pandemic process that signal a qualitative change in the situation) which could have helped guide decision-making by provincial and local authorities.

BACKGROUND:

Harmonization

“We heard that nurses were going to the Ministry of Health for advice and direction. They weren't consulting the plan...front-line clinicians didn't bother with it, even though it had good information in it. We needed something much more concise.”

The Public Health Agency of Canada's 2006 *Canadian Pandemic Influenza Plan* offers what it calls a “national public health approach to preparing for an influenza pandemic” in Canada. There are detailed and comprehensive guidelines for a wide range of health-related activities – from monitoring the spread of disease to using the most effective vaccines and medicines to prevent and decrease illness. The PHAC Plan encouraged “planners at all levels in the health and emergency service sectors to think about the ‘phase’ under which their specific jurisdictions would fall based on influenza activity within the jurisdictions,” with the goal of helping provincial and local responders to “operationalize an appropriate response for the jurisdiction, recognizing that their plans also will be affected by the epidemiology of the pandemic nationally and globally.” Roundtable participants agreed that the PHAC Plan was very useful in establishing a broad up-front planning framework for lower level decision-makers to develop their own plans.

As intended under the PHAC Plan, other levels of government – provincial, regional, municipal – as well as individual healthcare institutions have also written pandemic preparedness response plans to meet their particular needs. In addition, in some instances plans also have been created for individual institutions, agencies and businesses, and in other instances, many organizations relied heavily on the U.S. Centers for Disease Control (CDC) Guidelines, rather than any of the Canadian-based plans.

Roundtable participants noted that while the PHAC Plan was useful in terms of the front-end planning cycle, it lacked clarity in terms of what to do on the front lines which led to an uneven level of preparedness across the nation. As a result, Roundtable participants felt that the Response Guidelines from the U.S. Centers for Disease Control were referenced by many front-line workers more often than the PHAC Plan in the middle of the 2009 influenza pandemic.

This patchwork system of protection and information caused confusion on the front lines and resulted in an uneven delivery of care. For example, at the onset of the H1N1 influenza pandemic PHAC made it clear that the vaccine would be available to any Canadian who wanted it, which created the perception that when the vaccine arrived, you would be able to get it right away. However, responsibility for the actual delivery of the vaccine to the public was tasked to local governments and municipal public health agencies. The disconnect between the PHAC message and the reality of the distribution challenges experienced by local authorities on the ground led to long line-ups and angry and disappointed Canadians being turned-away because they did not fall into one of the priority groups. It would have been better if PHAC had been clear at the onset that there was the strong potential for the vaccine to arrive in stages – that producing and delivering large amounts of H1N1 vaccine was going to slow things down.

Further, while Roundtable participants acknowledged that “top-down” planning is essential, they also stressed that broad-based emergency disaster planning and training was not consistently taking place across the country. Emergency disaster planning and training need to be priorities on the front lines, and pandemic planning and training must be integral elements. Furthermore, front-line pandemic preparedness plans should be developed and evaluated through standard accreditation processes.

Participants also felt a need to create a feedback mechanism from the “bottom-up” to ensure that the implementation realities that are unfolding on the ground during training and testing, and also during an actual pandemic, are considered, which will help ensure that federal, provincial, local and institutional plans are fully integrated and work in the real world.

Roundtable participants identified a lack of business continuity planning standards – including both risk assessments and readiness assessments. Participants also noted that the primary planning document (the PHAC Plan) focused mostly on public health and hospital settings. As a result, it was difficult in some provinces to obtain timely and exact information related to treating and preventing the spread of H1N1 influenza in *non-public health or non-hospital* settings such as doctors’ offices, home care, long-term care, walk-in clinics and community care settings. Roundtable participants concluded that these non-hospital voices also need to be heard as part of that “bottom-up” feedback mechanism, and that resources need to be provided to community physicians and other public health providers to encourage them to proactively manage the outbreak and put themselves at risk. In addition, Roundtable participants agreed that planning and feedback should include first response communities because first responders (i.e., fire fighters, etc.) would play an important role in mitigating societal disruption.

Roundtable participants said there is a need for the development of one harmonized federal and provincial planning framework from which one pan-Canadian benchmark standard approach for pandemic preparedness planning can be created for public health, hospital, non-hospital and first response settings, while preserving the critical flexibility for local level implementation. Recognizing that local planning will differ from location to location, the framework should provide a baseline for training, readiness, processes and inter-operability to ensure a standard of national care and a better ability to provide mutual support to each other.

To ensure a new pan-Canadian harmonized plan is a living document that factors in both “top-down” and “bottom-up” input from hospital, primary care and other settings, Roundtable participants recommended that the plan be reviewed and updated every two years to ensure that it is sustainable. This bi-annual review should include both a risk analysis and a business impact analysis to define which services and resources need to be set aside or re-allocated during a time of crisis and to determine how individual organizations should manage their operations during a pandemic. These reviews also should serve as practice to ensure challenges can be worked out in advance of a real-world situation. In addition to regular bi-annual reviews, whenever there is an actual pandemic, the harmonized plan also should require a post-pandemic review.

Scalability

“Developing one plan for a huge country like Canada is hard. That’s one reason that invariably, local plans develop. We should still aim for some degree of uniformity, but with a certain amount of scalability.”

While the PHAC Plan recognized that unknown factors such as age distribution, the severity of the illness caused by the pandemic strain, and the transmissibility of the virus from person to person would impact response measures, it did not attempt to provide any “scalability” options. The PHAC Plan assumes that “progression to a pandemic will occur if novel influenza activity occurring during the Pandemic Alert Period is not halted. Therefore the response to novel virus activity during the Pandemic Alert Period may need to be significantly modified from what is outlined in the PHAC Plan if the epidemiology...does not suggest the need for aggressive measures.” That said, Roundtable participants noted that Canada’s pandemic preparedness plans lack a severity index for H1N1 infections which could have helped guide decision-making by provincial and local authorities.

Roundtable participants concluded that in addition to implementing a severity index for H1N1 infections, there is a need to review infectious disease and pandemic research to identify implementation “triggers” – events or milestones in the epidemic or pandemic process that signal a qualitative change in the situation, such as an elevated and sustained rate of absenteeism in the schools – and the need to apply those triggers in the implementation of pandemic preparedness plans.

RECOMMENDATIONS:

Harmonization

- Develop one harmonized federal and provincial framework to create a pan-Canadian benchmark standard approach for pandemic preparedness planning, while preserving the flexibility for local level implementation.
- Ensure appropriate training and testing on the front lines, and review local pandemic preparedness readiness – including through standard accreditation processes.
- Create a feedback mechanism from the “bottom-up” to ensure that the implementation realities that are unfolding on the ground (in public health, hospital, non-hospital and first response settings), either through training and testing or in an actual influenza pandemic, are fully considered – and to ensure that federal, provincial, local and institutional plans are fully integrated and work in the real world.
- Implement a mandatory bi-annual review of the new harmonized plan to ensure that the plan is sustainable. Also implement a mandatory post-pandemic review.

Scalability

- Incorporate a severity index into the harmonized plan to help guide front-line decisions about prevention and treatment.
- Incorporate implementation triggers (events or milestones in the epidemic or pandemic process that signal a qualitative change in the situation) into the harmonized plan.

2. PERSONAL PROTECTIVE EQUIPMENT

ISSUES:

Fear of contagion: A primal fear of contagion, which exists in the public and among healthcare providers and emergency service personnel (especially prior to the availability of a vaccine), is real and must be factored into both planning and implementation during an influenza pandemic event. Such fear leads healthcare and emergency first responder organizations to adopt a “precautionary principle” – in other words, strive to do everything possible to protect vulnerable workers.

Deployment strategy: The existing PHAC Plan provided a broad outline for best practices in how personal protective equipment such as specialized masks, gowns and gloves should be used to protect front-line healthcare providers and emergency service personnel who faced regular exposure to the H1N1 influenza virus. But the information was not concise or specific enough, and thus not always helpful in “real world” situations – including those working in non-hospital environments, such as primary care settings.

BACKGROUND:

”People were nervous...typically we would equip one person with a gown, mask and goggles so he or she could go in close to assess a patient. This allowed us to narrow things down and deal with patients while avoiding unnecessary exposure, but we made it up as we went along. What standards should we have been following?”

Fear of contagion

The use of protective equipment – particularly masks which can filter out infectious particles shed by those with influenza – serves as a stop gap in the early stages of a pandemic. Social distancing (i.e., creating a virtual six foot radius) and hygiene tactics – for example, staying home when sick, washing hands frequently, and sneezing into your sleeve, not your hands – do not offer sufficient protection in the months prior to a vaccine being available. This is where protective equipment and other mitigation efforts such as antiviral medications play a role, especially for vulnerable first responders and healthcare providers.

Roundtable participants said that to be effective, plans about the use of personal protective equipment must have clear and consistent guidelines. These plans must also include recognition that front-line healthcare workers and first responders may feel the need to embrace the “precautionary principle”, to do everything they can to protect themselves if faced with a new and potentially deadly communicable disease – and that they should not be penalized for this.

Roundtable participants noted that the fear of contagion among human beings is primal and strong, adding we should not be surprised that organizations feel the need to protect their people when confronted with a potentially serious outbreak of infectious illness. This includes wanting to have and use the best personalized protective equipment and technology that science can offer.

In addition, guidelines on protective equipment must be based on the best scientific evidence and must factor in their limitations. In other words, blend the science with the practicality. For example, not everyone can be immediately trained and fit-tested for N95 masks. That is why other forms of protection need to be integrated into guidelines (even beyond personal protective equipment), prior to the availability of a vaccine.

Finally, Roundtable participants said that while there is a place for clearly articulated national or provincial guidelines aimed at standardizing the use of protective equipment, “triggers” which would activate the deployment of personal protective equipment (and antivirals to provide protection where equipment leaves off) also need to be included. In addition, organizations need to act locally to protect their people and should not be chastised for going beyond the guidelines.

Deployment strategy

“Two provinces had serious problems when unions said their members wouldn’t work without N95 masks. They hadn’t stockpiled these because masks were not recommended by the Infection Committee of the Public Health Agency of Canada.”

An issue that flared up during the pandemic in some areas was a lack of clarity about who should be given protective equipment, what kind, and under what circumstances. There also was a lack of reasonableness about what was possible. For example, the current PHAC Plan suggests that providers should stand “six feet away from a potentially infectious person” and there should be a “clean room” separating influenza patients. Roundtable participants said that such guidelines could simply not be followed in many hospitals and in most primary care settings.

In addition, Roundtable participants indicated that there was a huge demand for N95 masks, but availability became a problem because most manufacturers are located outside of North America. Planners must be ready to confront supply chain problems. Also, whoever requires N95 masks will require training and fit-testing, which in a real-world situation would be very difficult to accomplish because of the number of people requiring masks, and the speed in which the infection is spreading. However, planners must be ready to confront varying regional legislation that mandates specific protective equipment for front-line workers; labour contracts that may contain stipulations; and the ramifications of using personal protective equipment for a long period of time (i.e., the H1N1 vaccine was not available until six months after identification of the virus strain, which points to protective equipment being needed during this time – but six months is a long time to use masks, gloves and gowns, and to ensure proper use).

Another problem identified by Roundtable participants was the lack of a severity index which would have helped healthcare facilities better rationalize their use of masks and other protective equipment. One participant reported that his healthcare facility starting running out of protective masks early in the pandemic, raising fears that staff dealing with other patients hospitalized for infectious illnesses such as measles would not be able to protect themselves.

A lack of clarity regarding real-world use of personal protective equipment, and the absence of clear triggers to indicate a protective equipment response, may have led to some organizations running out of equipment, particularly protective masks. Roundtable participants said that planners must pay more attention to providing guidelines on stockpiling necessary items, and when to deploy them, to ensure that existing supply can meet a sudden demand.

RECOMMENDATIONS:

Fear of contagion

- Government and organizational leaders must be sensitive to the anxieties caused by a new and/or potentially dangerous viral disease such as influenza and work to proactively counteract this fear with clear and consistent messaging about the safe, rational use of protective equipment.
- Recognize that while national guidelines on the use of personal protective equipment may be helpful, organizations will naturally adopt a “precautionary principle” and do everything they can to protect their people. They should not be chastised for this.

Deployment strategy

- Any overarching federal or provincial plan for the use of personal protective equipment must be based on a blend of the science with the practicality of real-world use.
- Guidelines should be reviewed for reasonableness – that is, they must be useful and applicable in most real-world settings, including primary care settings.
- To ensure that existing supplies of vital items like protective masks will not run out, more attention must be paid to the stockpiling of these items, and when to deploy them, plus attention should be paid to other forms of protection such as antivirals to compensate for the real-world limitations of protective equipment.

3. ANTIVIRAL MEDICATIONS

ISSUES:

Antiviral medications for prophylaxis: While the existing PHAC Plan makes clear that antiviral drugs are an important part of Canada's public health response as a treatment for influenza, it offers little practical direction on the use of the Federal government antiviral stockpile, no matter how severe the influenza pandemic, in preventing infection prior to exposure (e.g., pre-exposure prophylaxis) and before an effective vaccine becomes available. However during the recent H1N1 outbreak, some provinces used their own provincial antiviral stockpiles for pre-exposure protection. There is a need to acknowledge this inconsistency across the country, clarify the usage of federal, provincial and territorial antiviral stockpiles, and consider circumstances when antivirals should be used for pre-exposure protection among all healthcare workers and first responders.

Guidelines for optimal antiviral use: Despite what government directs, healthcare workers and first responders are going to expect antivirals for protection (pre- and post-exposure) before a vaccine becomes available because of a primal fear of contagion. They require clear guidelines for the pre- and post-exposure use of antivirals – including the identification of “triggers” which would activate the deployment of antiviral stockpiles for protective use in both circumstances.

BACKGROUND:

Antiviral medications for prophylaxis

“If we had needed to use antivirals as a preventative measure this time across the country, I’m not sure we would have had enough or been prepared to distribute and use them safely. There seemed to be no strategy, no logistics planning. Giving antivirals to 500 people is do-able. Giving it to 10,000 people is much harder.”

Antiviral medications work by reducing the ability of many viruses to reproduce in the body. If they are taken within 48 hours of first symptoms, they can limit the severity of illness. The drugs also can prevent infection during a pandemic if the prevention course begins before or promptly after close contact with an infected person. Two specific drugs – oseltamivir phosphate (Tamiflu) and zanamivir (Relenza) are currently approved for use in Canada.

These drugs have not been widely available during previous pandemics but have been proven effective, both in treating and preventing seasonal influenza. In recent years, the federal government has purchased and distributed stockpiles of these drugs to the provinces and territories.

Nearly all major pandemic plans outside Canada consider the prophylactic use of antivirals (in the context of a moderate or severe influenza pandemic) to protect healthcare workers and first responders. The goal is to contain outbreaks by reducing the early transmission of a new and virulent strain. This means the drugs may be prescribed to people already exposed but not yet infected (post-exposure prophylaxis), or to those at high risk for exposure or at high risk for complications (pre-exposure prophylaxis). But the existing PHAC Plan does not address pre-exposure prophylaxis for healthcare workers and first responders, no matter how severe the influenza pandemic, and prior to a vaccine being made available. The PHAC plan only addresses the preventative use of antivirals in post-exposure conditions, and only for healthcare workers in “closed facilities” such as long-term care facilities and hospitals.

During the recent H1N1, some provinces used their own provincial antiviral stockpiles for pre-exposure protection. Roundtable participants felt there is a need to acknowledge this inconsistency across the country, clarify the usage of federal, provincial and territorial antiviral stockpiles, and consider circumstances when antivirals should be used for pre-exposure protection among all healthcare workers and first responders, and whether antivirals should be used preventatively among healthcare workers and first responders in a post-exposure circumstance beyond “closed facilities”.

One reason cited for limiting the prophylactic use of antivirals is that widespread use will create resistance. This has the potential to limit the drugs’ effectiveness as an influenza treatment. But Roundtable participants said that evidence from prophylaxis trials does not confirm that drug resistance poses a serious problem, and should not get in the way of antiviral planning – even though the WHO tightened their recommendations about the use of antivirals during the H1N1. The guidance was based on the then current H1N1 pandemic, which was mild, and could change depending on the severity of the pandemic. It is up to the individual health authorities to determine what is the best course of treatment and preventative action for them at the time, and a prudent use of antivirals may be required. In fact, some participants said that had the 2009 H1N1 pandemic been more severe, it is almost certain that the stockpiled antivirals should have been put into use in some local jurisdictions – both for treatment and to prevent infection.

Roundtable participants believe that the existing supplies of the two antiviral drugs currently approved for use in Canada would have been insufficient to meet this urgent need had it arisen. They said that prior to the H1N1 pandemic, most of the debate among governments focused on which drug to stockpile for treatment purposes only. Participants felt effort also should be spent looking at antivirals for prevention, and to creating a realistic stockpiling and distribution system for this purpose in the event of a more moderate or severe influenza pandemic. In addition, a revised antiviral strategy is needed on how to quickly deploy and replenish the antiviral stockpile, and these deployment mechanisms need to be tested – from acquiring and stockpiling, to prescription and distribution of antivirals at the correct time into the hands of those who need them.

Guidelines for optimal antiviral use

“It was hard to find information about the triggers for starting antivirals. We were strongly encouraged NOT to move forward with antiviral prophylaxis, maybe because we knew a vaccine was coming. But concern over this decision was palpable during the pandemic.”

Roundtable participants felt that Canadian health authorities may have dismissed antivirals because of unwarranted fears that adding antiviral prophylaxis messaging into their communications would “confuse” the public during an influenza pandemic because antivirals are not a vaccine.

They said the current guidelines regarding the use of antivirals to contain early spread of disease must be reviewed. In fact, some healthcare facilities in Canada purchased antivirals for prophylaxis. Participants noted that pandemic preparedness plans must contain rational, concise, evidence-based guidelines about how these drugs can and should be used to maximum advantage.

This should include outlining priority lists for antiviral treatment and prophylaxis, and guidance on “triggers” – events in the natural course of a pandemic which can be used to activate the system for deployment and replenishment of stockpiles. For example, some Roundtable participants stated that a high rate of absenteeism in schools should be recognized as a reliable trigger, both for deploying antivirals and providing them for prophylactic (prevention) purposes.

Although they are recognized as generally safe drugs, antivirals are mostly prescribed by a physician. If and when a potentially serious influenza pandemic occurs that triggers the widespread use of antivirals, there should be a mechanism to permit non-MDs – such as pharmacists, nurse practitioners and nurses – to prescribe these drugs according to accepted practice guidelines. This should be looked at nationally and should be applied consistently across the country.

RECOMMENDATIONS:

Antiviral medications for prophylaxis

- The federal government should acknowledge that some provincial government antiviral stockpiles were utilized for pre-exposure prophylaxis use during the 2009 H1N1 influenza pandemic, and should clarify the protective usage of federal/provincial/territorial antiviral stockpiles for first responders and all healthcare workers, (not just those in “closed facilities”), to ensure consistency across the nation depending on the severity of the circulating pandemic strain.
- There is currently no compelling evidence that if correctly implemented, the pre- or post-exposure prophylactic use of antivirals leads to drug resistance. Until and unless this changes, approved antivirals should be seen as an effective protective intervention during an influenza pandemic.

Guidelines for antiviral use

- Recognize that healthcare workers and first responders will be sensitive to the anxieties caused by a new and/or potentially dangerous pandemic strain and require clear guidelines for pre- and post-exposure prophylaxis use of antivirals – including the identification of “triggers” which would activate the deployment of antiviral stockpiles for protective use in both circumstances.
- Develop and fund mock exercises to clarify best practices to deploy and replenish antiviral drugs.
- Currently in Canada antiviral drugs are prescribed mostly by a physician. During an influenza pandemic, there should be a mechanism that allows non-MD healthcare practitioners to prescribe them according to practice guidelines.

4. VACCINE DEVELOPMENT AND DELIVERY

ISSUES:

Priority groups for vaccination: While it was understood that those most vulnerable to complications from the H1N1 strain should be at the front of the vaccination queue, other groups at high risk for illness and for spreading the virus – such as emergency first responders – were told they had to wait.

Multi-faceted approach for protection: From the start, the new vaccine against the H1N1 influenza strain under development was seen as a “magic bullet.” But it takes time for a vaccine to be developed; it takes time for full deployment; it takes times for individuals to reach their full immunization levels; and even with the availability of a vaccine, certain individuals may decide not to be vaccinated. Therefore, a multi-faceted approach for protection is needed with recognition that vaccination plays a key role, but not the only role.

BACKGROUND:

Priority groups for vaccination

“Priority lists must be established early on, and we need to clearly establish that protecting the health of first responders is as dramatically important during an influenza pandemic as protecting front-line healthcare workers.”

When a new vaccine becomes available, it’s likely there will not be enough to vaccinate the entire population immediately. A key element of any mass vaccination program such as the one which rolled out across Canada in 2009, is to decide who should get the vaccine first.

While the PHAC Plan did not contain specific guidance in this regard, it did provide a “prioritization framework” to help guide federal, provincial, territorial and local decision-makers. Roundtable participants said that while specific variables may affect choices in a real-world pandemic, certain decisions about who should be on the priority list for vaccination must be made now and included in any future preparedness plans.

Because healthcare workers and first responders are expected to be on the front lines during an outbreak of influenza – including a new and potentially dangerous strain – they are in a unique position. Not only do their jobs place them at higher risk for getting sick, but the nature of their jobs means they are efficient “spreaders” of disease in the community should they fall ill. For this reason, any rational preparedness plan must include both front-line healthcare workers *and* first responders for priority vaccination. The vaccine deployment strategy also should contain certain assumptions – there will be pent-up demand, people will feel left off the priority list, people will be scared of the vaccine, etc.

Multi-faceted approach for protection

“People saw the H1N1 vaccine as the ultimate solution, a magic bullet. But if there had been one high-profile case of a serious complication linked to vaccination, things would have been different. The vaccine is one important part of an effective approach to dealing with pandemic influenza, but not the only part.”

Roundtable participants said there was a perception among Canadians that the new H1N1 vaccine would be the “magic bullet” in controlling the 2009 pandemic, but in the early months of the pandemic there was some confusion about just how much vaccine would be available, who would get it, who would get it first, and whether there would be full uptake by the eligible Canadian population.

Some Roundtable participants felt that governments and others involved in dealing with the pandemic “over-promised” in the early days. For example, government spokespeople pledged there would be enough vaccine to immunize all Canadians, but it soon became clear that the challenge of producing and delivering large amounts of H1N1 vaccine was going to slow things down.

Once the vaccine began arriving, problems emerged around dealing with the sudden and overwhelming public demand for vaccination, some of it triggered by media reports of otherwise healthy young people suddenly succumbing to H1N1 infection. In some parts of the country large line-ups occurred, creating confusion, dissatisfaction, and criticism regarding preparedness efforts. Roundtable participants questioned whether it was the best decision to rely on just one manufacturer.

Roundtable participants also said there is a need to consult fresh expertise, from outside the healthcare sector to develop better ways of managing large crowds with the intent of delivering vaccines to large populations. They believe this is a technical skill that can be bought, taught and used within a specific planning framework.

RECOMMENDATIONS:

Priority groups for vaccination

- Decisions about who should be on the priority list for vaccination against a potentially dangerous new strain of influenza must be established as soon as possible.
- The nature of their jobs places healthcare workers and first responders in a unique position. If they are not immediately protected via vaccination, they are at high risk for catching and spreading influenza to others. High rates of absenteeism will make it difficult to provide service and care to the public. For this reason, both of these types of front-line workers must be routinely included on priority lists for vaccination.

Multi-faceted approach for protection

- A vaccine should play a key role in pandemic preparedness, but it should be promoted realistically and not as a “magic bullet.” Decision-makers must understand the risks of over-promising when they are not fully in control of delivering on those promises.
- A useful plan should incorporate “triggers” which activate those parts of the plan related to vaccination (i.e., when to start vaccinating) and which groups should be given priority.
- Better vaccine distribution systems must be designed and implemented for future outbreaks of viral illness. We should seek advice from experts in managing crowd control, including those outside the healthcare system.

5. COMMUNICATIONS

ISSUES:

Coordinated communications strategy: A more coordinated federal/provincial/local effort would better ensure effective communications during an influenza pandemic. At times, messages appeared to be contradictory or confusing between the federal and local levels. As part of the overall governance structure, an integrated federal/provincial/territorial communications body comprised of medical officers and disaster management experts should be created to enable the various jurisdictions to interpret what is unfolding in real-time, to ensure communications is relevant to their region, and to provide “bottom-up” feedback. In addition, it will allow all jurisdictions to speak with one voice.

Reaching all healthcare workers: Much of the messaging focused on healthcare providers working in hospital settings. While this made sense in the early days, once the virus took hold in the broader community, the messaging directed at non-hospital workers needed to be more relevant for those working in primary care, walk-in clinics, long-term care facilities and in home care. This messaging too for non-hospital workers often came from too many sources all at once.

BACKGROUND:

Coordinated communications strategy

“Rapid, accurate communication is vital in a crisis, but this seemed to be the first casualty in the 2009 H1N1 pandemic. We saw the same problem with SARS in 2003. Clearly this is a common problem in a rapidly-changing infectious disease situation, which means we have to find a way to operate within this ‘new normal’ – which should include an integrated communications structure amongst federal/provincial/territorial levels.”

Often the messages coming from federal government spokespersons and other leaders seemed contradictory, and the media and others jumped on these perceived “short-comings”.

One of many examples the Roundtable participants pointed to was whether there would be enough H1N1 vaccine to meet the needs and demands of Canadians. Confusion reigned in other key areas too including:

- How fast the H1N1 influenza virus was spreading in Canada, where it was spreading most quickly, and the severity of the illness
- Who was at greatest risk for infection, serious complications and death
- Were there sufficient antiviral medications available for treatment and prevention of illness, if needed
- The real benefits and risks of antiviral medications, both for treatment and prophylaxis (prevention)
- Whether the new vaccine was safe for use, especially among children and pregnant women, and the role of the adjuvanted vaccine
- Who should be given priority for vaccination
- The role of family doctors in providing antiviral drugs and vaccines

While there was no shortage of media conferences and advisories, mixed messaging was challenging during the 2009 H1N1 influenza pandemic.

To be fair, some of these problems must be viewed as part of the natural course of pandemics and other crisis events. The PHAC Plan indeed references a “national communications strategy that encourages information providers to work together so that the messages given to the public are clear, consistent, and delivered as soon as they are needed”. It also outlines practices related to internal communications and defined communications responsibilities for each phase of the pandemic outbreak, but Roundtable participants felt there is room for improvement in the coordination and delivery of the communications plan.

This includes the creation of an integrated, joint federal/provincial/territorial communications body comprised of medical officers and disaster management experts which would enable the various jurisdictions to interpret what is unfolding as a team, to ensure communications is relevant to their regions, and to speak with one voice.

While the federal government has an important role to play – for example, in surveillance and in keeping abreast of the science related to new or potentially dangerous influenza strains – working hand-in-hand with provincial and territorial governments on the communications front is critical in order to ensure proper and real-time local interpretation of events, the development of communications relevant to each region, and “bottom-up” feedback on how to fine-tune communications efforts and messaging.

Roundtable participants also suggested clearly articulating to the healthcare and first response communities, key government and professional stakeholders, the public and the media at the onset of an influenza pandemic (and throughout), key guiding principles for communications that include:

- Open, honest and timely communications;
- Those who communicate must be permitted to change their messaging as events and new information unfolds;
- There should be recognition and public acknowledgement that what happened “a few days or even hours ago” may not still be the case;
- Messaging will not always be consistent across the country or across countries (i.e., Canada vs. USA) because of the variance of the pandemic’s impact;
- Saying, “I don’t know” and that answers will be forthcoming as soon as the latest information or intelligence unfolds should be acceptable due to the huge amount of uncertainty.

Reaching all healthcare workers

” Instead of churning out complex and lengthy guidelines that are directed mostly at institutions, we should think about how we can best translate and deliver this information at the primary care level. Some of us in non-hospital settings feel we were too often getting communications that was not really relevant to us, and others feel we were getting information from too many different sources.”

Roundtable participants suggested that one proactive way to improve communications during any future event would be to develop and establish a communications network that addresses the fact that not all healthcare workers function within the structured setting of hospitals. These workers include family physicians, those working in walk-in clinics, and those employed in home care and long-term care settings.

Participants also said it is vital that first responders be fully recognized as a key target audience for communications during a pandemic or other crisis.

In addition, Roundtable participants said one recognized source / body for information would be best. Plus, a “bottom-up” feedback loop is needed so federal and provincial/local spokespeople can get input from all healthcare and first responder communities on what is working and what is not, in order for swift and effective messaging and communications adjustments to be made.

Participants also saw the media and social media as valuable allies in effective communications and saw a need to set the foundation for a non-adversarial relationship by educating key producers, editors, reporters and bloggers about the need for informed and responsible reporting during a potentially serious pandemic. Such a dialogue is also a good way to find out what the media need to carry out their duties and feed this back into the overall communications plan. Such efforts should be made during calm times and reinforced at the start of a pandemic or other crisis. Using social media outlets like Twitter and Facebook would also be an effective way for the integrated communications body to get their messages out as the pandemic is unfolding.

RECOMMENDATIONS:

Coordinated communications strategy

- Create a federal/provincial/territorial body of medical officers and disaster management experts to spearhead a coordinated communications effort.
- Develop some over-arching principles for effective communication with the healthcare and first response communities, key government and professional stakeholders, the public and the media.
- Let the public and the media know that during the course of a rapidly-changing situation, stories may change and inconsistency should be expected.

Reaching all healthcare workers

- Develop and establish a communications network that addresses the information needs of hospital and non-hospital workers.
- First responders also should be a key target audience for communications.
- Establish one recognized source / body for information.
- Incorporate a “bottom-up” feedback loop in communications plans so those working on the ground have quick and consistent access to decision-makers and spokespersons, enabling those below to “feel listened to” and giving those higher up a reality check about how things are really working.
- Enlist the media and social media as valuable allies. Educate key producers, editors, reporters and bloggers about the need for informed and responsible reporting during a potentially serious pandemic. Find out what they need to carry out their duties and loop this back into the communications plan.

RECOMMENDATION SUMMARY

The *CSA Roundtable on Healthcare and Emergency Service Sector Pandemic Preparedness* has a number of points of advice for those entrusted with making healthcare decisions, as well as those who deliver care and services to the public, as they continue to prepare for future pandemics.

Roundtable participants took on the task of identifying ways to improve Canada's pandemic preparedness system very seriously, and in the process, they were not shy about identifying deeply-rooted structural problems that affect many aspects of healthcare delivery in Canada – including our response to serious events such as a national influenza pandemic. As a result, there are a range of Roundtable recommendations: some that can be addressed immediately, some that will require longer-term discussion and planning, and yet others that may even seem idealistic. But the over-arching goal in developing these recommendations is that addressing identified gaps will allow Canada to build on the successes of the 2009 influenza pandemic and will make the pandemic planning and implementation process more responsive and fluid in the future. This is vital.

The recommendations fall into six key areas:

I. PANDEMIC PREPAREDNESS PLANNING

Harmonization

- Develop one harmonized federal and provincial framework to create a pan-Canadian benchmark standard approach for pandemic preparedness planning, while preserving the flexibility for local level implementation.
- Ensure appropriate training and testing on the front lines, and review local planning preparedness readiness – including through standard accreditation processes.
- Create a feedback mechanism from the “bottom-up” to ensure that the implementation realities that are unfolding on the ground (in public health, hospital, non-hospital and first response settings) either through training and testing or in an actual influenza pandemic are fully considered – and to ensure that federal, provincial, local and institutional plans are fully integrated and work in the real world.
- Implement a mandatory bi-annual review of the new harmonized plan to ensure that the plan is sustainable and a mandatory post-pandemic review.

Scalability

- Incorporate a severity index into the harmonized plan to help guide front-line decisions about prevention and treatment.
- Incorporate implementation triggers (events or milestones in the epidemic or pandemic process that signal a qualitative change in the situation) into the harmonized plan.

2. PERSONAL PROTECTIVE EQUIPMENT

Fear of contagion

- Government and organizational leaders must be sensitive to the anxieties caused by a new and/or potentially dangerous viral disease such as influenza and work to proactively counteract this fear with clear and consistent messaging about the safe, rational use of protective equipment.
- Recognize that while national guidelines on the use of personal protective equipment may be helpful, organizations will naturally adopt a “precautionary principle” and do everything they can to protect their people. They should not be chastised for this.

Deployment strategy

- Any overarching federal or provincial plan for the use of personal protective equipment must be based on a blend of the science with the practicality of real-world use.
- Guidelines should be reviewed for reasonableness – that is, they must be useful and applicable in most real-world settings, including primary care settings.
- To ensure that existing supplies of vital items like protective masks will not run out, more attention must be paid to the stockpiling of these items, and when to deploy them, plus attention should be paid to other forms of protection such as antivirals to compensate for the real-world limitations of protective equipment.

3. ANTIVIRAL MEDICATIONS

Antiviral medications for prophylaxis

- The federal government should acknowledge that some provincial government antiviral stockpiles were utilized for pre-exposure prophylaxis use during the 2009 H1N1 influenza pandemic and should clarify the protective usage of federal/provincial/territorial antiviral stockpiles for first responders and all healthcare workers, (not just those in “closed facilities”), to ensure consistency across the nation depending on the severity of the circulating pandemic strain.
- There is currently no compelling evidence that if correctly implemented, the pre- or post-exposure prophylactic use of antivirals leads to drug resistance. Until and unless this changes, approved antivirals should be seen as an effective protective intervention during an influenza pandemic.

Guidelines for antiviral use

- Recognize that healthcare workers and first responders will be sensitive to the anxieties caused by a new and/or potentially dangerous pandemic strain and require clear guidelines for pre- and post-exposure prophylaxis use of antivirals – including the identification of “triggers” which would activate the deployment of antiviral stockpiles for protective use in both circumstances.
- Develop and fund mock exercises to clarify best practices to deploy and replenish antiviral drugs.
- Currently in Canada antiviral drugs are prescribed mostly by a physician. During an influenza pandemic, there should be a mechanism that allows non-MD health practitioners to prescribe them according to practice guidelines.

4. VACCINE DEVELOPMENT AND DELIVERY

Priority groups for vaccination

- Decisions about who should be on the priority list for vaccination against a potentially dangerous new strain of influenza must be established as soon as possible.
- The nature of their jobs places healthcare workers and first responders in a unique position. If they are not immediately protected via vaccination, they are at high risk for catching and spreading influenza to others. High rates of absenteeism will make it difficult to provide service and care to the public. For this reason, both of these types of front-line workers must be routinely included on priority lists for vaccination.

Multi-faceted approach for protection

- A vaccine should play a key role in pandemic preparedness, but it should be promoted realistically and not as a “magic bullet.” Decision-makers must understand the risks of over-promising when they are not fully in control of delivering on those promises.
- A useful plan should incorporate “triggers” which activate those parts of the plan related to vaccination (i.e., when to start vaccinating) and which groups should be given priority.
- Better vaccine distribution systems must be designed and implemented for future outbreaks of viral illness. We should seek advice from experts in managing crowd control, including those outside the healthcare system.

5. COMMUNICATIONS

Coordinated communications strategy

- Create a federal/provincial/territorial body of medical officers and disaster management experts to spearhead a coordinated communications effort.
- Develop some over-arching principles for effective communication with the healthcare and first responder communities, key government and professional stakeholders, the public and the media.
- Let the public and the media know that during the course of a rapidly-changing situation, stories may change and inconsistency should be expected.

Reaching all healthcare workers

- Develop and establish a communications network that addresses the information needs of hospital and non-hospital workers.
- First responders also should be a key target audience for communications.
- Establish one recognized source / body for information.
- Incorporate a “bottom-up” feedback loop in communications plans so those working on the ground have quick and consistent access to decision-makers and spokespersons, enabling those below to “feel listened to” and giving those higher up a reality check about how things are really working.
- Enlist the media and social media as valuable allies. Educate key producers, editors, reporters and bloggers about the need for informed and responsible reporting during a potentially serious pandemic. Find out what they need to carry out their duties and loop this back into the communications plan.

APPENDICES

I. ABOUT CSA Standards

CSA Standards (CSA) is a not-for-profit membership-based association serving business, industry, government and consumers in Canada and the global marketplace. As a solutions-oriented organization, CSA works in Canada and around the world to develop standards that address real needs, such as enhancing public safety and health, advancing the quality of life, helping to preserve the environment, and facilitating trade.

CSA helps people understand standards through education and information products and services, including a variety of e-Learning and mobile tool applications and capabilities. Each year, thousands of people benefit from the training materials, workshops and seminars offered by the CSA Learning Centre.

Related to the topic of pandemic planning, CSA Standards offers standards, training and education programs on topics including Emergency Management & Business Continuity, Risk Management, Personal Protective Equipment, etc.

For more information, visit:

www.csa.ca

II. GLOSSARY OF TERMS

Acute

Short term, intense symptomatology or pathology, as distinct from chronic. Many diseases have an acute phase and a chronic phase. This distinction is sometimes used in treatments.

Acute care

Services provided by physicians and other health professionals and staff in the community and in hospitals. These include emergency, general medical and surgical, psychiatric, obstetric and diagnostic services.

Adjuvanted vaccine

Refers to a pharmacological agent added to a drug to increase or aid its effect (i.e., to increase the body's antigenic response). Adjuvants can include various forms of aluminum and are typically used with vaccines. In a flu vaccine, the adjuvant would be a water-oil mixture. By using them in various vaccines, doctors hope to reduce the amount of the vaccine that is needed.

Antiseptic hand rub

A waterless, antiseptic hand rub product that is applied to all surfaces of the hands to reduce the number of microorganisms present.

Antiviral medications

Medications that can be used to prevent illness and to treat those who do become sick with influenza. Antivirals work by reducing the ability of the virus to reproduce in the body. If they are taken shortly after influenza strikes (within 48 hours of first symptoms), antivirals can reduce symptoms, shorten the length of illness, and reduce serious complications. They also can prevent illness during a pandemic wave if treatment is started before or promptly after close contact with someone infected with the virus.

Epidemic

An outbreak of infection that spreads rapidly and affects many individuals in a given area or population at the same time.

Exposure

The condition of being subjected to a microorganism or an infectious disease in a manner that enables transmission to occur.

H1N1

A strain of influenza type A virus that caused the pandemic infection of 1918-1919 and that continues to circulate in humans.

Hand-washing

The simplest process for the removal of soil and transient microorganisms from the hands, it involves washing hands with plain (i.e., non-antimicrobial) soap and water.

Healthcare worker

(HCW) with close patient contact

Persons who work in settings where essential healthcare is provided and who during the pandemic would be working within one meter of any patients/residents with or without personal protective equipment.

Healthcare worker

(HCW) without close patient contact

Persons who work in settings where essential healthcare is provided and who during the pandemic would not be expected to work within one meter of any patients/residents.

Immunity

Inherited, acquired, or induced resistance to infection by a specific pathogen.

Influenza

A highly contagious, febrile, acute respiratory infection of the nose, throat, bronchial tubes, and lungs caused by the influenza virus. It is responsible for severe and potentially fatal clinical illness of epidemic and pandemic proportions. (See also Seasonal influenza)

Mask

A barrier covering the nose and mouth to protect the mucous membranes from microorganisms contained in large droplet particles (> 5 µm in size) generated from a source person during coughing, sneezing, or talking and during the performance of certain procedures that generate droplets (e.g., suctioning) or are likely to generate splashes or sprays of blood, body fluids, secretions, or excretions.

Masks may also be used to contain large droplet particles generated by coughing or sneezing persons. The term mask in this document refers to surgical masks, not special masks, such as high efficiency dust/mist masks or respirators.

Mutation

A permanent, transmissible change in the genetic material of a cell.

Pandemic

Refers to an epidemic disease of widespread prevalence around the globe.

Pandemic influenza

A new strain of influenza virus that spreads quickly worldwide. It is carried and spread among people and humans have little or no immunity against it.

Personal protective equipment

Attire used by the worker to protect against airborne or droplet exposure and exposure to blood and bloody body fluids, i.e., masks, eye goggles, face shields, gloves and gowns.

Post-pandemic period

This begins when influenza disease activity has returned to levels normally seen for seasonal influenza.

Precautionary principle

It is common for people faced with a new and potentially deadly communicable disease to operate from a precautionary principle: that is, they are determined to do everything they can to protect themselves, their colleagues and family members from exposure and infection – regardless of stated guidelines and policies.

Precautions

Interventions implemented to reduce the risk of transmission of microorganisms from patient-to-patient, patient to healthcare worker, and healthcare worker to patient.

Public health

The art and science of protecting and improving community health by means of preventive medicine, health education, communicable disease control, and the application of social and sanitary sciences.

Public Health Agency of Canada (PHAC)

PHAC was created in 2004 in response to growing concerns about the capacity of Canada's public health system to anticipate and respond effectively to public health threats. PHAC's creation was the result of recommendations from leading public health experts for clear federal leadership on issues concerning public health and improved collaboration within and between jurisdictions.

Resistance

The development of strains of a pathogen that is able to withstand the effects of an antimicrobial agent.

SARS

Severe acute respiratory syndrome.

Seasonal influenza

A respiratory infection caused by the influenza virus. Strains circulate every year, making people sick. Most people will recover from influenza within a week or 10 days, but some – including those over 65 and adults and children with chronic conditions, such as diabetes and cancer – are at greater risk of more severe complications, such as pneumonia. Between 2,000 and 8,000 Canadians can die of influenza and its complications annually, depending on the severity of the season.

Social distancing

Measures to increase the space between people and decrease the frequency of contact among people.

Strain

A group of organisms within a species or type that share a common quality. For example, currently circulating strains of influenza include type A (H1N1), type A (H3N2), and type B (H3N2).

Triggers

Refers to events or milestones which typically signal that a particular point has been reached during a pandemic. For example, some experts suggest that a certain level of influenza activity and absenteeism among school children should be used to trigger the distribution of anti-viral drugs in the community.

Virus

One of a group of infectious agents characterized by their inability to reproduce outside of a living host cell. Viruses may subvert the host cells' normal functions causing the cells to behave in a manner determined by the virus.

Vaccine

A substance that contains antigenic components from an infectious organism. By stimulating an immune response (but not disease), it protects against subsequent infection by that organism.

WHO

The World Health Organization, a special agency of the United Nations generally concerned with health and healthcare. One of its roles is to monitor influenza activity around the world (surveillance) and to provide leadership during global pandemics.

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