

Ready, aye ready? Support mechanisms for healthcare workers in emergency planning: A critical gap analysis of three hospital emergency plans

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Abstract

Background: In response to the 2003 global outbreak of severe acute respiratory syndrome (SARS), and the threat of pandemic influenza, Canadian hospitals have been actively developing and revising their emergency plans. Healthcare workers are a particularly vulnerable group at risk of occupational exposure during infectious disease outbreaks, as seen during SARS and as documented/reported in the recent National Survey of the Work and Health of Nurses (Statistics Canada, 2006). Approximately one third of Canadian nurses identified job strain and poor health, related to their work environment. Three years after SARS, this article presents a critical analysis of the gaps of three hospital pandemic influenza plans in the context of established organizational supports for healthcare workers.

Methods: Hospital pandemic influenza plans were obtained from institutional representatives in three Ontario cities. Qualitative gap analysis of these plans was conducted using a checklist of 11 support categories, developed from a review of existing literature and findings from a previous study of focus groups with emergency and critical care nurses.

Results: Support mechanisms were identified in the plans; however, gaps were evident in preparation for personal protective equipment, education and informational support, and support during quarantine. Hospital emergency planning could be more robust by including additional organizational supports such as emotional/psychological support services, delineating management responsibilities, human resources, vaccine/anti-viral planning, recognition/compensation, media strategies, and professional development.

Conclusions: Since the 2003 SARS outbreak, hospitals have invested in pandemic planning, as evidenced by the comprehensive plans examined here. Organizational support mechanisms for healthcare workers were included in these hospital plans; however, the gaps identified here may have serious implications for employee health and safety, and overall response during a large scale infectious disease outbreak. The authors provide a number of recommendations for consideration in infectious disease pandemic plan development to better support the healthcare workers in their roles as first responders.

Key words: healthcare workers, occupational health and safety, infectious diseases, bioterrorism, organizational support, disaster management, hospital, pandemic

Introduction

As the 2003 global outbreak of severe acute respiratory syndrome (SARS) demonstrated, Canada's public health capacity is limited and potentially vulnerable to respond to large-scale infectious disease outbreaks. In Canada, the toll of SARS included 251 confirmed cases and 44 deaths; three of which were healthcare workers.¹ As important members of the response community, healthcare workers will be called upon to respond in hospitals, care centers, and communities during infectious disease outbreaks even as healthcare resources are stretched to their limits.² During the SARS outbreak, many healthcare workers were quarantined, required to work long hours to manage patient loads, and/or were faced with little support regarding ethical dilemmas, work-family

conflict, and personal loss and trauma.³ It is evident that support mechanisms for healthcare workers are necessary to ensure their health and safety to enable them to perform their roles as first responders during disaster situations.^{1,2}

In response to the 2003 outbreak of SARS and the threat of pandemic influenza, Canadian health policy makers have been working with healthcare providers to develop comprehensive pandemic influenza plans at all jurisdictional levels. Six provinces and three territories have required municipalities to develop official emergency plans.⁴ Furthermore, many hospitals are in the midst of preparing detailed planning documents for pandemic response. These institutional-level plans describe strategies for response for emergency and critical care units, stockpiling supplies, and redeploying staff, along with other

operational procedures and supports for employees. These plans represent a major resource on supports available at the institutional level for healthcare workers.

This article presents the results of a critical gap analysis of three hospital pandemic influenza emergency plans, and highlights gaps in various levels of staff supports. It also provides recommendations based on our proposed list of 11 support categories representing good practices in emergency planning focused specifically on providing improved supports for healthcare workers.

Methods

Three hospital pandemic plans were obtained from institutional representatives in three Ontario cities (Table 1). All three pandemic plans represent

Table 1. Pandemic plan demographics	
Plan 1	
Hospital types: Teaching hospitals	
Pandemic plan size: 171 pages	
Publication date: May 2006	
Target audience: Hospital management and frontline workers	
Dissemination plan: Internet	
Plan 2	
Hospital types: General hospital, mental health services, rehabilitation, long-term care, and ambulatory care	
Pandemic plan size: 171 pages	
Publication date: June 2006	
Target audience: All staff (including physicians, volunteers, and students)	
Dissemination plan: Hospital intranet	
Plan 3	
Hospital types: General hospitals, rehabilitation, mental health services, long-term care, community health centers	
Pandemic plan size: 177 pages	
Publication date: Not yet available (Accessed October 2006)	
Target audience: All staff	
Dissemination plan: Hospital intranet	

aggregate plans for a number of hospitals within their geographic region. Plans will be referred to numerically (Plan 1, 2, and 3) to maintain anonymity of the institutions. The plans were available electronically and were subsequently converted into Microsoft Word files and imported into NVIVO 7 software for analysis. To ensure accurate representation of each plan, designated representatives from each city hospital committee were contacted to (a) confirm we had the most current version of each plan, (b) identify the target audiences the plans were developed for, and (c) confirm whether there were additional support materials to the pandemic plan.

To perform the gap analysis, two members of our research team independently reviewed each hospital plan and highlighted the identified supports by cross-referencing with the 11 established support categories (Table 2), developed and refined by the research team. The support categories were informed by existing literature on emergency preparedness and hospital accreditation, as well as focus group⁵ and survey data,⁶ and previous analyses examining existing supports for healthcare workers in provincial emergency plans.⁴

Results and Discussion

Critical gaps in personal protective equipment

The provision of appropriate personal protective equipment (PPE) is a fundamental requirement in pandemic influenza planning to ensure the health and safety of healthcare workers. Not only do adequate supplies need to be obtained and managed, but healthcare workers must be informed and trained in their use to support infection control in the event of a pandemic influenza outbreak.⁷ In this study, all reviewed plans included recognition of the importance of the provision of PPE, clothing, and supplies. However, several gaps were identified that may have serious implications for infection control, putting healthcare workers and their patients at risk.

Institutional-level plans should provide clear action strategies to ensure that adequate quantities of PPE supplies are stockpiled and shortages due to supply-chain disruptions are anticipated in advance of a pandemic.⁸ A four- to six-week supply of masks, goggles, and gloves is planned at designated sites within the hospitals covered by Plans 1 and 3. The inclusion of a projected inventory list of PPE, based on usage

Table 2. Good practices in emergency planning: Supports checklist

1. Personal protective equipment (PPE) and uniforms;
2. Education for all staff regarding emergency plan;
3. Informational support;
4. Quarantine conditions;
5. Emotional/psychological support;
6. Management responsibilities;
7. Human resource policies focused on worker fatigue/stress;
8. Instrumental supports;
9. Vaccination/anti-viral therapy;
10. Recognition/compensation; and
11. Media strategies.

predictions, is a beneficial addition for pandemic influenza plans. Obviously, stockpiled PPE may not be relevant in all infectious disease outbreaks. PPE to protect employees against airborne infectious disease agents (ie, N95 masks) and physical barrier protection (gloves, gowns, shields) represent items that may be suitably used against a variety of infectious organisms.⁷ Not only must stockpiled PPE correspond to the specific infectious agent, but it must be fit-tested for the personnel who use this equipment.^{2,9} None of the plans reviewed address fit-testing requirements.

Fit-testing is only one step to ensuring PPE is appropriate and suitable to the worker. Healthcare workers must be provided with regular training, including practice drills to familiarize themselves with proper donning and doffing techniques for PPE, as well as performing routine duties, such as starting an IV while wearing the protective equipment. Provision for this training was not mentioned in two of the plans; however, there is an implicit mention in Plan 2 for the designation of a person to ensure that appropriate PPE is provided, and that workers are educated in its use. Plans should not only require training but should also explicitly mention guidelines regarding when and how workers will be educated on the limitations of PPE and any other measures that should be taken to adequately assess and minimize risk. For example, Plan 1 states that "during the very early phase it may be feasible to wear masks when face to face with coughing individuals, but not practical or helpful when transmission has entered the community." This type of information regarding PPE limitations is a very useful element to preserve PPE stockpiles as well as educate healthcare workers and should be included in hospital pandemic plans.

Finally, guidelines regarding stockpiling of PPE must be coupled with arrangements for warehousing and inventory management as well as clearly defined standards for PPE storage and maintenance to ensure that optimal protection is available for healthcare workers (Plan 1). This point is particularly salient for circumstances in a large-scale outbreak, when regular off-site storage facilities may be inaccessible. Plan 1 recognized the need for adapted warehousing strategies and inventory management as well as the importance of proper maintenance of equipment, with

emphasis on the need to inspect equipment for damage or deterioration, and the importance of proper storage. There was no mention of strategies to warehouse or store PPE and other equipment in Plans 2 and 3.

Critical gaps in training and professional development

The education of staff on the procedures and protocols within the plans is necessary to facilitate an effective response in the event of a pandemic.^{10,11} Each plan recognized the importance of annually reviewing the hospital pandemic plan and infection control guidelines. Similarly, all three plans were very thorough in explaining the roles and responsibilities of each staff member.

The necessity of training and education for all regular staff, new staff, volunteers, and redeployed staff was mentioned in all three plans and has been emphasized in the literature. Healthcare providers, including nurses, require time to learn to perform unfamiliar tasks competently, so training and education should not occur "just in time."¹⁰ As succinctly stated by a Toronto nurse: "You cannot educate in a crisis."¹²

The use of mock drills and pandemic scenarios as training tools is widely recognized as particularly useful for preparing individuals facing high risk and high stress tasks.¹³ Plan 1 described the use of tabletop exercises, such as a hospital "fan out," to test processes during the pre-pandemic period. A useful annex for this plan would be the provision of a summary of previous tabletop exercises, or "lessons learned." Mock drills and scenarios enable nurses to develop a scope of experience for disaster situations such as working in PPE, experiencing quarantine, and accessing and informing the appropriate chain of command.

The inclusion of a clearly outlined chain of command was a highlight of Plan 2. On the basis of findings from a previous study with focus groups, healthcare workers reported frequent confusion regarding procedures for reporting accidents/spills and noncompliance with infection control procedures and clinical-treatment decisions.⁵

Compliance with infection control procedures was identified as a contentious issue during the SARS outbreak.^{5,9,12} Discussion and protocols outlined to assist staff in reporting instances of noncompliance with

infection control procedures would be useful resources.¹² During a pandemic, when workers may be redeployed to other facilities and required to work in unfamiliar settings with individuals who they do not know, the issue of noncompliance becomes even more contentious if workers do not have clear response protocols. While the issue of noncompliance was not explicitly described in the hospital plans analyzed for this study, it is nevertheless important that mechanisms are in place in advance of pandemic to ensure monitoring and regular compliance with PPE procedures. Noncompliance with infection control protocols may have serious implications for containment of the outbreak. It is essential that staff be aware of the appropriate protocols to follow, ensuring swift action. Additional impacts of noncompliance may also include stress, frustration, and interpersonal conflict, both during and after the outbreak,⁵ which may further extend to the physical well-being of workers and their patients.

Finally, each plan recognized the importance of a redeployment strategy to compensate for staff shortages during a pandemic. The plans recommended identifying the skill sets of employees to determine redeployment eligibility. Internal redeployment for positions requiring medical knowledge at nontraditional sites is recommended along with a detailed and accessible plan for staff redeployment. A plan for redeployment will enable nurses to participate in education and cross-training that will foster confidence in unfamiliar tasks.¹⁴

Hospitals should encourage healthcare professionals to engage in professional development that will ultimately improve the efficiency and safety of their hospital units.^{10,15} Providing financial subsidies for continuing education, and paid time to attend these courses, is one way to facilitate the professional development of healthcare workers. Furthermore, these supports would communicate recognition to healthcare workers of the importance of these activities for preparedness.

Critical gaps in informational support

Improved coordination of communication activities was an important factor in the healthcare system's response during the SARS outbreak, and is enabled

most efficiently by a single trusted source of information.¹ Each hospital plan in this study emphasized the appointment of a designated spokesperson to deliver messages to staff, stakeholders, and the public via media relations. Also, each plan addressed the need for these messages to be current, accurate, and frequent and relayed by a respected and knowledgeable leader.¹⁶

Healthcare workers require these messages to be accessible regardless of the time of day. Some nurses have identified night shifts as an excellent time to review infection control and emergency procedures.⁵ Each hospital has a plan for regular communication with healthcare workers via local intranet, 24-hour pandemic hotlines, and/or closed circuit television. According to Reissman et al.,¹⁵ information availability and accessibility should encompass accessing appropriate assistance if outside help is needed, measures being taken to stop the spread of the infection, daily updates on personal protection actions, and reassurances of equitable and adequate resource distribution.

Each hospital plan mentioned the provision and distribution of communication materials including pamphlets, brochures, newsletters, and posters. Information in hard copy format is ideal in the event of power failures or other technical difficulties that render internet and other media communication impossible for a period of time. Communication material also needs to be targeted and tailored for a variety of audiences including stakeholders, the public, patients, and healthcare workers.^{16,17}

Recognizing that clear channels for communication are necessary to keep healthcare workers updated, Plan 3 included a detailed strategy to redeploy equipment to departments caring for influenza patients. Equipments such as computers, telephones, blackberries, walkie-talkies, and fax equipment to establish and/or support sites dealing with influenza patients were considered. These information mechanisms will help ensure a two-way dialogue, which is important in ensuring that ideas and concerns from the front lines are heard.

Critical gaps in quarantine knowledge and skill sets

Considering the important role of quarantine measures during the SARS outbreak,¹⁸ the need to

address the logistics of imposing quarantine on staff, patients, and/or their families in hospital pandemic influenza plans is evident.¹⁹ Plan 1 recommends hospitals "institute measures and processes to guarantee provisions and support services to individuals and/or communities" in the event of quarantine. Without providing specific guidelines, this plan encourages hospitals to specify the supports that will or will not be available for quarantined individuals.

During SARS, quarantine was used as an infection control tool, and it is likely to be a contentious issue during a pandemic influenza outbreak. The effectiveness of this measure is greatly dependent on the provision of support to quarantined individuals and their families, including food, water, transportation, child/elder/pet-care, medication, and equipment. These supports should be flexible to accommodate the particular needs (religious, dietary, mental health) of quarantined individuals, particularly as quarantine tends to have more negative impacts for disadvantaged populations.¹⁹

Plan 1 also recognizes ethical questions that may be relevant if there is a need to impose quarantine, and recognizes the potentially conflicting goals of individual liberty and protecting the public from harm. Although quarantine orders are received from the Minister of Health¹⁸ and not the hospital administration, the pandemic plans suggest that hospitals include in their plans measures "to protect against stigmatization and to safeguard the privacy of individuals and/or communities affected by quarantine." Support, through guidelines for decision makers, that include religious, cultural, and mental health considerations is necessary, and viable strategies can be adopted by hospital emergency planners to ensure appropriate responses to quarantine-related issues.

Since quarantine restrictions may be necessary during a pandemic influenza outbreak, planning requires clearly defined guidelines regarding this issue, including protocols for levels of quarantine, length of quarantine, restrictions on activity, and consequences of breaching quarantine. Plan 1, for example, suggests that "hospitals should ensure that their internal and external communities are aware of (1) the rationale for restrictive measures, (2) the benefits of compliance, and (3) the consequences of noncompliance."

Plan 1 includes guidelines regarding work restrictions, and states that "ideally, staff with [influenza-like illnesses] should be considered 'unfit to work' and should not work; nonetheless, due to limited resources, these healthcare workers may be asked to work if they are well enough to do so." It would be valuable to outline protocols to evaluate the fitness of healthcare workers to work and provide them with the criteria and circumstances in which they will be asked to work. As described by Cava et al.,²⁰ during SARS, quarantined individuals were confused about why they were being quarantined and which protocols they should follow.

It is essential that planning for pandemic influenza address mechanisms to respond to the emotional and mental health needs of individuals in quarantine, as well as their family members.⁵ Measures to ensure that both quarantined individuals and their families are kept up-to-date on outbreak status should be included in pandemic plans. Furthermore, stigmatization against healthcare workers was prevalent during the SARS outbreak,¹⁹ and planning should include strategies to respond to this issue (eg, the provision of information and education for workers, and the general public).

Critical gaps in emotional/psychological support

Emotional and psychological supports were addressed to varying degrees in the hospital pandemic plans reviewed for this study. Existing and augmented Employee Assistance Programs/Providers were mentioned frequently as systems that are available to support healthcare workers both during and after the pandemic event. Plans incorporated references to employee access to grief counseling, pastoral/spiritual services, psychological services, programs for reintegration into daily life postpandemic, and counseling for posttraumatic stress disorder (PTSD). Heightened levels of PTSD were observed among rescue workers after the 2004 tsunami in Asia.²¹

Plan 2 was particularly attentive to these concerns having retained the services of an external human resources company to ensure that employees feel supported throughout and following a pandemic. Particular services being offered that could be considered by

other planners were Web and telephone counseling for both affected individuals *and their families*; grief counseling and support for affected individuals; group or individual counseling sessions; and postevent recovery workshops designed to assist workers and the workplace to resume optimal productivity quickly (Plan 2). These workshops may be designed to target PTSD, depending on the circumstances of the pandemic event. According to Armagan,²¹ rescue workers are known to suffer from PTSD, and he suggests that this disorder may be more severe in women, nurses, and participants with fewer than three disaster duty experiences.

The dual-role conflict that healthcare workers face between their professional obligations and commitment to their families will be heightened during a pandemic when the risk of exposing family to infection is increased.²² Nurses from a focus group in Toronto expressed feelings of guilt for choosing a profession that may put their families at risk.^{5,23} Nurses also reported feeling stressed and conflicted because choosing not to work, to protect their families, would inadvertently affect their coworkers and patients.²³ In the current study, while recognition was given to emotional or psychological strain that may result from work-family conflict in all plans, only Plan 2 addressed support or counseling for this purpose. This plan noted that "hospitals should acknowledge that staff experience conflict between their duties to their families and dependants and their work" and to the extent that resources allow, the hospital should facilitate support for these workers.

Other issues that may trigger emotional and/or psychological strain are ethical dilemmas related to patient care. While this might fall under "psychological services" more generally, recognition of this professional dilemma should be considered a "good practice" in pandemic planning to ensure that workers feel supported throughout a pandemic event both emotionally and psychologically. This issue was not specifically addressed in any of the plans.

An approach to the emotional and psychological support of healthcare workers is exemplified by Plan 1 that places counseling in a larger frame of healthcare worker resiliency that is built on information, training, and support. In this framework, healthcare worker anx-

ety and distress is minimized when workers have the information and the training they need to do the jobs they will be asked to do in a pandemic event. This comprehensive approach to mental health planning views counseling as an important part of a larger strategy to address worker preparedness and resiliency.

Critical gaps in due diligence and management responsibilities

The role of management and leadership in handling any crisis is of paramount importance.²⁴ Each of the pandemic plans reviewed for this study identified management responsibilities and due diligence as critical issue; however, strategies for managing this concern varied from plan to plan. In the SARS outbreak some healthcare workers were upset by the lack of management visibility and accessibility.⁵ According to Wilen,²⁵ "effective leadership needs to be in place when a crisis ensues, but as importantly, it must be prepared to bring about subsequent resolution and recovery with the minimum amount of disruption."²⁵ He goes on to say that "leadership should ensure the existence of a clear and open thinking process that must be applied throughout all phases of the planning, decision-making, and action-taking processes."

Some nurses who had worked during the SARS crisis in Toronto felt angry and abandoned when managers went on leave during SARS.⁵ Since SARS, the importance of management presence has evidently been recognized, and was addressed in each of the reviewed pandemic plans. At some hospitals, senior managers will be required to remain in a "command centre" to increase the degree to which they can be seen and accessed by healthcare workers (Plan 1). At other hospitals, managers and staff persons with key positions will be required to wear "identification vests" for this same purpose (Plan 2). These practices are intended to ensure that leadership is not only present, but *seen* to be present.

In addition to management within emergency units, all plans reviewed for this study made provisions for the integration of infectious disease specialists into the management team. Plan 2 called for the inclusion of a "technical advisory group" with reference to an infectious disease specialist, while Plan 1 made

provisions for integrating provincial bodies with expertise in infectious diseases into the decision-making process. This integration with provincial and expert infectious disease groups will help ensure that decision-making is informed by the best available evidence. Furthermore, these experts should be incorporated into the response plan communications strategies since they may be accepted as reliable sources of information by healthcare workers.²⁶

Management also plays a crucial role in supporting healthcare workers and encouraging them to devise family emergency plans. Of the three hospital pandemic plans reviewed for this study, all identified "the needs of dependents" and family emergency plans as an issue and included provisions for "informing staff about self care, child care and elder care." All plans also recommended that a list of resources such as child care, elder care, and pet care providers might be available to the healthcare worker and family in the event of pandemic be prepared. Plan 2 encourages the public, including the families of healthcare workers, to prepare a personal emergency kit and provides a phone number that would provide assistance in this. By developing mechanisms to facilitate self-care for the families of healthcare workers, this may lessen the impact of the stress from dual-role conflict.²³

Management support for difficult clinical decision-making is also recognized in the pandemic plans. Plan 1 provides an "ethical framework to guide difficult decision-making" including triage protocols "to assist staff in prioritizing and making ethical decisions." Guidelines for the allocation of scarce resources are provided by this plan, along with the "development of a system to prioritize admissions when beds are limited."

Critical gaps in human resource policies focused on managing worker fatigue/stress

All three hospital plans recognize that healthcare workers will be stretched to their physical and emotional limits during a pandemic. They also recognize that hospitals will be faced with a shortage of staff members who are both willing and able to do the jobs required. Faced with this tension between limited human resources and increased demands for services, human resource policies are required to help manage

healthcare worker fatigue and stress.¹⁵ Making provisions for shorter shifts for healthcare workers, and enforced breaks, especially when required to wear full (PPE) will assist workers in better managing fatigue.¹⁵

The plans acknowledge the need to redistribute workloads across shifts and to provide staff rest areas as well as rest periods to relieve staff. Plan 2 highlights the need to pay particular attention to employee fatigue. It specifically designates the task of monitoring staff and volunteers for signs of stress and inappropriate behavior; to reinforce support from the Employee Assistance Program; and to provide rest periods and relief to staff in all key positions, including management. This creates a culture of expectation that healthcare workers will be supported in managing their stress and fatigue.

The aspect of human resource policy most adequately addressed in each of the hospital pandemic plans was the issue of human resource surge capacity. Two of the plans detailed strategies for meeting increased demands of human resources in the event of a pandemic. These plans included comprehensive redeployment strategies including appropriate training, prioritization of health services to free up personnel, triaging in pre-pandemic period to free up resources, and recruitment strategies designed to meet the increased demands of a pandemic event. This critical issue has extensive literature to draw on.^{10,27,28}

A second issue is the importance of clear policies on work refusal. While complex, issues surrounding employee rights to refuse work or certain duties require more attention in hospital pandemic plans, two of the reviewed plans recognize a need to develop an appeals process for work complaints, especially with regards to "work exemptions, or the vaccination/prophylaxis of staff" (Plan 1). Plan 2 makes reference to the obligation of nurses to be willing to work extra hours and mentions the right to refuse work, which does not apply to essential services. Plan 3 states that while all staff are essential during a pandemic, all tasks are not. There is provision in these plans for the risk management officer to "authorize halting of work when appropriate safety procedures or infection control procedures are not utilized." For clarity and transparency, it would be beneficial to inform hospital

employees about their rights and obligations surrounding work refusal and the appropriate people to contact for questions, appeals, and requests for redeployment.

Critical gaps in resource management

The issue of stockpiling PPE equipment was previously discussed; however, a large-scale influenza outbreak will also require additional medical resources. This was identified in all of the plans reviewed. Plan 3 includes an appendix that details pandemic management team response, specifying resource management by pandemic phase, requiring an economic impact assessment on stockpiling equipment and supplies, as well as ensuring adequate resources. The logistics phase is similarly organized by phase, clearly outlining the roles and responsibilities regarding the procurement and management of equipment and supplies (Plan 3). Organizing pandemic planning by phase not only coincides with planning in other jurisdictions^{8,29} but it also provides planners and frontline staff with a clearly defined guide, which may lessen confusion surrounding responsibilities.

Plan 1 touts the benefits of assessing capacity during the prepandemic period, including the number of beds, ventilators, and staff to “coordinate the allocation of resources to ensure equitable delivery of care in a pandemic situation.” Plan 3 also requires that during the pandemic, current information regarding supply levels is obtained to monitor capacity.

A checklist of recommended supplies, such as the one included in Plan 1, is provided to assist hospitals during a pandemic and ensure that appropriate supplies will be stockpiled in the prepandemic period. Plan 2 requires the commitment of funds to purchase stockpiles for 8 weeks of regular operation, and 4 weeks of pandemic surplus supplies, while the other plans specify the need to prepare stockpiles for 4 to 6 weeks. During a pandemic, the situation may change rapidly, so procedures are needed to ensure that assessments and updates are conducted as the situation progresses, and supplies are available accordingly.

Plan 2 includes bed capacity data for the hospitals within its jurisdiction, including the number of beds with and without oxygen, and ventilated beds, which is useful in assessing the current capacity, and determin-

ing pandemic preparedness. This plan also includes brief priority instructions for the allocation of ventilators. Inclusion of these guidelines aids decision makers in resource allocation during a pandemic situation. With regards to determining capacity limitations, plans should consider infection control protocols. For example, Plan 3 specifies that for nontraditional sites, beds must be at least 1 m apart. The provision of such detail is useful, so planners are aware of the requirements and can respond accordingly.

During an influenza pandemic, hospital emergency rooms will experience an influx of patients. Plan 3 includes guidelines for the use of alternate resources when there is excess demand, outlining in detail the process for acquiring and utilizing outsourced ventilators in the event that ventilator need surpasses availability during a pandemic. Recognizing that resources are limited, and there may be difficulties in acquiring necessary equipment or supplies during a pandemic, the inclusion of guidelines regarding alternate resource use may support an effective emergency response.

As mentioned, nontraditional sites may be used to assess and treat patients and to lessen strain on emergency rooms and other hospital facilities. Plan 3 includes a list of potential locations, and specifies that the list should be updated annually. Furthermore, the list includes basic equipment and supplies that will be necessary for the operation of these nontraditional sites according to potential use. This same plan includes a description of how operational procedures will be needed for “acute outbreak units,” including overflow guidelines, to manage infected patients. Given the projected need for increased facilities including isolation rooms, and negative pressure rooms, it would be useful for hospital pandemic plans to include an evaluation of current capacities, and how priority use for these limited resources will be determined in a pandemic context so healthcare professionals can be informed.

Critical gaps in vaccination/anti-viral therapy plan

To ensure effective management and distribution of anti-viral and vaccine supplies in the event of an influenza pandemic, all Ontario hospital plans included in this analysis require the development of priority grouping based on the guidelines established

in the Canadian Pandemic Influenza Plan and the Ontario Pandemic Influenza Plan. With the acknowledgement that healthcare workers are integral to pandemic response, frontline healthcare providers and key health decision makers have been prioritized as Group 1.²⁹

Plan 1 includes detailed information on anti-virals and vaccines, including methods for mass prophylaxis. This plan recommends the development of information regarding immunization priority groups, and a strategy for delivering anti-viral medications and vaccines to staff. In addition, Plan 1 acknowledges the need to provide a clear internal rationale for priority vaccination of particular groups, including frontline healthcare workers in the discussions surrounding this delicate issue is a necessary approach, since the allocation of scarce resources will inevitably be relevant. Addressing the issue of vaccination for the families of healthcare workers is evidently an important issue that may have significant implications on willingness to work.⁵

Critical gaps in recognition/compensation for frontline healthcare providers

Recognition of the efforts of frontline healthcare workers is an indispensable support for nurses,³⁰ particularly those working in outbreak conditions. Plans 1 and 3 cite provisions for explicitly recognizing the contributions of healthcare workers during and after a pandemic event. Plan 1 specifies a communications and media strategy that "recognizes efforts of staff and volunteers," while Plan 3 refers more generally to a "recovery strategy that includes the need to support and acknowledge staff for their contributions." The need for these strategies is evident in the literature where it has been identified that stigma is a particular risk for healthcare workers.^{19,22} As described by Maunder,^{22(p1121)} "in one highly publicized case, a nurse who rode a passenger train before being diagnosed and hospitalized with suspected SARS was vilified in the press."

The possibility that a healthcare worker may fall ill and be unable to work is heightened in a pandemic event; therefore, compensation for sick days to these workers and/or benefits will help to maintain nurses'

willingness to work. Plan 3 makes provisions for healthcare workers if they agree to work full-time hours. The perceived inequity regarding compensation and other supports between full-time, part-time, and temporary workers has been identified previously.⁵ Plans should provide clear guidelines, and internal justification for decisions regarding danger-pay and other compensation or supports should be communicated to workers.

Plans 1 and 2 recommend that families make accommodations so that the healthcare worker can continue to report for work. These plans provide lists of resources for challenges such as daycare, eldercare, and pet care, which aligns with recommendations from Reissman et al.,¹⁵ suggesting that institutions can provide lists of these types of resources for their employees. To augment this support, providing subsidies for these services would help alleviate the financial burden on healthcare workers. All the plans included in this analysis suggest that in the event of a sick dependent, the spouse of the healthcare worker or another adult in the home should stay home from work so that the healthcare worker can continue to meet his or her obligations. Financial assistance for these situations would also prove beneficial for healthcare workers and their families.

Critical gaps in media strategies

A critical element of emergency preparation is media involvement in communicating information and directives for the public.¹⁷ Each plan recognized the need for a single, designated spokesperson for media relations, which in each plan was the same person, to facilitate consistency in messaging. As outlined in Plan 1, this person should represent the leaders. This will raise awareness of the leadership/team/individual, so staff will know whom they can turn to for information and to share their concerns and perspectives. An additional objective of this strategy is to build credibility with the staff (Plan 1).

Canadian nurses participating in focus groups expressed discontent with how the media frightened the public about SARS, which then intensified the stigmatization of healthcare workers and the Asian population.⁵ The issues of sensationalism and

stigmatization were identified in Plan 2. To help reduce media drama, they recommend “modeling a calm approach designed to reduce fear, avoid panic and encourage vigilance” (Plan 2). Plans should take this into account and provide media strategies specifically aimed at dispelling misinformation through the communication of clear and accurate information.

Conclusion

This study presents a critical gap analysis using 11 identified support categories in hospital emergency preparedness during infectious disease outbreaks. Three years following the SARS outbreaks in Canada, this critical gap analysis provides a useful discussion piece for emergency planning and preparedness. These qualitative data present a “snap shot” portrait of hospital emergency plans for pandemic influenza. Our evaluation of the content of these plans and identification of gaps is supported by studies of emergency planning^{9,13,15,20,21,31} and the needs of 314,900 Canadian nurses who report on-the-job stress and physical demands which exceed the general population.³²

Twenty-seven percent of Canadian nurses interviewed in 2005 indicated that there had been a deterioration of patient care, which they associated with staff reductions and patient overload.³² Approximately one third of Canadian nurses reported “high job strain” along with physical health problems, which prevent them from carrying out normal daily activities.³² The psychosocial and stress factors of managing uncertainty during infectious disease outbreaks would be expected to exacerbate poor physical health and well-being.³³ When combined with gaps in instrumental, social, and communication supports, nurses and other frontline healthcare workers face enormous challenges in carrying out their professional duties and responsibilities. These external factors contribute to increased job strain, high stress levels, and poor physical health.

For their part, emergency planners have made significant strides in developing and updating plans since the 2003 SARS outbreak. In continuing to prepare the healthcare system under the threat of a future pandemic influenza outbreak, we hope that the good practice recommendations presented here will

help provide instrumental, social, and communication support to frontline healthcare workers in their roles as first responders. These findings provide compelling evidence, which we hope will engage frontline workers in the planning and preparedness process.

These recommendations are intended to also inform policy makers and to help shape institutional and public policy. To ensure an effective response in a large scale outbreak, it is imperative for hospitals to engage frontline staff in an internal social audit of “prerequisites” for preparedness and pandemic planning. A first step is to identify and plan to meet the support needs of frontline healthcare workers. Without a proactive intervention on the part of labor and management alike, patient care, job satisfaction, and confidence in healthcare services will be negatively impacted. Are Canadian hospitals and healthcare centers, including long-term care facilities, ready for the next infectious disease outbreak—whether man-made or natural? Hopefully the answer will be: Ready, Aye Ready!

Recommendations

A complete list of the recommendations from this study is provided in Table 3. In summary, however, careful planning should include the following:

- Stockpiling for anticipated PPE requirements, as well as fit testing and training for employees;
- Specific training and professional development that is accessible for all staff;
- Consideration and clarification of protocols and supports for different quarantine restrictions;
- Psychosocial services to reduce the negative emotional impact and acknowledgement of work-family conflict as a significant source of stress for employees;
- Visible leadership and support for ethical decision-making;

Table 3. Good practice recommendations

Personal protective equipment and uniforms
<ul style="list-style-type: none"> • Plan to ensure adequate quantity of supplies are stockpiled and correspond to staff needs;
<ul style="list-style-type: none"> • Make arrangements for adapted warehousing strategies and inventory management;
<ul style="list-style-type: none"> • Ensure healthcare workers are fit-tested and provided with appropriate PPE;
<ul style="list-style-type: none"> • Ensure healthcare workers are trained in proper donning and doffing techniques;
<ul style="list-style-type: none"> • Address the need for regular training, and practice drills, for PPE;
<ul style="list-style-type: none"> • Specify when and how PPE education will be conducted;
<ul style="list-style-type: none"> • Ensuring PPE maintenance and outline of standards for PPE storage is available;
<ul style="list-style-type: none"> • Information regarding PPE limitations should be included in all plans and communicated to workers;
<ul style="list-style-type: none"> • Outline protocols for reporting and responding to noncompliance with PPE regulations; and
<ul style="list-style-type: none"> • Hospitals should provide uniforms for nurses and launder these uniforms within the department.
Training and professional development
<ul style="list-style-type: none"> • Development of strategies to redeploy staff internally for positions requiring medical knowledge at nontraditional sites;
<ul style="list-style-type: none"> • Provision of cross-training in advance for nurses who are expected to be redeployed during an outbreak;
<ul style="list-style-type: none"> • Scheduling of mock drills and pandemic scenarios as training tools;
<ul style="list-style-type: none"> • Address the issue of noncompliance with infection control procedures and detail repercussions for nonadherence to these procedures;
<ul style="list-style-type: none"> • Provide workers with a clear chain-of-command for crisis situations;
<ul style="list-style-type: none"> • Address healthcare workers' right to refuse work or to refuse certain duties;
<ul style="list-style-type: none"> • Inform healthcare workers of their rights and obligations;
<ul style="list-style-type: none"> • Education days should be scheduled within regular work time, and be incorporated as part of the shift;
<ul style="list-style-type: none"> • Encourage employees to obtain infection control training or any other form of professional development;
<ul style="list-style-type: none"> • Provide financial compensation or time-off with pay for nurses who obtain additional training/education; and
<ul style="list-style-type: none"> • Alternative educational formats, such as webgames.
Informational support
<ul style="list-style-type: none"> • Provide workers with access to updates on outbreak situation and infection control procedures via Intranet or Internet;
<ul style="list-style-type: none"> • Ensure hard copies of current infection control procedures are available in the event of computer failure or power outage;
<ul style="list-style-type: none"> • Develop a plan for redeployment of equipment internally to support departments dealing with influenza patients as well as nontraditional sites; and
<ul style="list-style-type: none"> • Address the need for two-way dialogue to ensure that healthcare workers' voices are heard.

(continued)

Table 3. Good practice recommendations (continued)

Quarantine

- Develop a plan to provide quarantined individuals with food, water, transportation, child/elder/pet-care, medication, and equipment;
- Address need to protect against stigmatization and to safeguard the privacy of individuals and/or communities affected by quarantine;
- Clearly defined protocols for levels of quarantine, length of quarantine, restrictions on activity, and consequences of breaching quarantine;
- Clearly defined protocols to evaluate fitness of workers to work and convey these protocols to healthcare workers; and
- Mechanisms to respond to the emotional needs of individuals in quarantine, as well as their family members.

Emotional/psychological support

- Provide counseling for healthcare workers and their families through a variety of modes (telephone, Internet, etc);
- Provide grief counseling and support; group or individual counseling sessions; and postevent recovery workshops designed to return workers and the workplace to optimal productivity quickly; and
- Acknowledgement of work-family role conflict and mechanisms to mitigate this phenomena.

Management responsibilities

- Ensure that leadership is both present and *seen* to be present during and after normal working hours;
- Ensure that decision-making is based on the best available evidence and in conjunction with employees affected by decision;
- Encourage the public to prepare a personal emergency kit and provide a list of necessary items for the kit;
- Determine an ethical framework to guide difficult decision-making including triage protocols "to assist staff in prioritizing and making ethical decisions;" and
- Develop guidelines for the allocation of scarce resources as well as a system to prioritize admissions when beds are limited.

Human resource policies

- Monitor staff and volunteers for signs of stress and inappropriate behavior;
- Allow for shorter shifts and shorter intervals between breaks;
- Provide rest periods and relief to staff;
- Comprehensive redeployment strategies including appropriate training;
- Prioritize health services to free up personnel;
- Triage in pre-pandemic period to free up resources; and
- Develop recruitment strategies to meet the increased staffing demands.

(continued)

Table 3. Good practice recommendations (continued)

Resource management
<ul style="list-style-type: none"> • Organize hospital emergency plans according to pandemic phase; • Develop hospital emergency plans to ensure 4-6 week stockpile of supplies is obtained in advance; • Conduct an assessment of the number of beds, ventilators, and staff in pre-pandemic period; • Create a checklist of recommended supplies to ensure that appropriate supplies will be stockpiled in the pre-pandemic period; • Specify requirements for infection control (eg, beds must be 1 m apart); and • Provide guidelines for use of alternate resources in case of excess demand.
Vaccination and antiviral therapy
<ul style="list-style-type: none"> • Develop information package regarding immunization priority groupings; • Develop a strategy for delivering anti-viral therapy and vaccines to staff; • Discuss priority groupings and policies regarding vaccine compliance with staff; and • Provide a clear internal rationale for priority vaccination of particular groups.
Recognition/compensation
<ul style="list-style-type: none"> • Providing recognition and compensation (financial supports and incentives); • Use consistent compensation policies between nurses and doctors; • Provide benefits for all staff involved in the pandemic, regardless of healthcare worker employee status (full-time, part-time, agency, etc); • Devise plan to make financial provisions for the families of healthcare workers who may incur extra costs during a pandemic event; • Provide lists of resources such as daycare, eldercare, and pet care; and • Provide mechanism for financial assistance to compensate for lost income due to spouses staying home to watch children etc.
Media strategy
<ul style="list-style-type: none"> • Appoint single designated person to provide information to the healthcare workers and/or for media relations; and • Address issues of sensationalism and stigmatization through calming and confidence-inspiring public messages and accurate portrayals of nurses, and other health professionals.

- Creative human resource mobilization strategies, combined with proactive monitoring of staff for burnout and fatigue;

- Concise documentation of assessed resource needs, perhaps in the form of a checklist, to

assist supply coordinators and facility managers;

- Clearly defined strategies for dissemination of vaccine and anti-virals, combined with informational resources regarding priority groupings;

- Recognition and compensation for all staff involved in the response; and
- Strategies to reduce sensationalism and stigmatization through regular contact and planning with the media, and creation of calming and confidence-inspiring public messages which accurately portray health-care workers and their contribution as members of the response community.

Acknowledgments

This study was funded by the Chemical, Biological, Radiological and Nuclear Research Technology Initiative (CRTI), Defense Research and Development Canada. The authors thank Ms Jill Hardt for assistance with data analysis and earlier versions of this article, and Mss Lynn McCrann and Tracey Prentice for their assistance with data analysis.

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