



uOttawa
L'Université canadienne
Canada's university



Caring for Nurses in Public Health Emergencies

Enhancing Capacity for Gender-Based Support Mechanisms in Emergency Preparedness Planning

Carol Amaratunga
Michelle Carter
Tracey O'Sullivan
Patricia Thille
Karen Phillips
Ron Saunders

CPRN Research Report | February 2008



Canadian Policy Research Networks is a not-for-profit organization. Our mission is to help make Canada a more just, prosperous and caring society. We seek to do this through excellent and timely research, effective networking and dissemination, and by providing a valued neutral space within which an open dialogue among all interested parties can take place. You can obtain further information about CPRN and its work in public involvement and other policy areas at www.cprn.org.

The research team would like to recognize the support and efforts of following contributors:

Carol Amaratunga, PhD (Principal Investigator); Madeline Boscoe, PhD Honorary; Michelle Carter, MSc Candidate; Robert Clarke, PhD (Project Champion); Wayne Corneil, PhD; Darcie Dow, MSc; Eileen O'Connor, PhD; Daniel Krewski, PhD; Jenninifer Lee, BA Student; Louise Lemyre, PhD; Lynn McCrann, BComm; Tracey O'Sullivan, PhD; Karen Phillips, PhD; Patricia Thille, MA, BSc(PT)

Canadian Policy Research Networks: Ron Saunders PhD; Louise Jauvin

Federal Partners

Bureau of Women's Health & Gender Analysis (Health Canada); CBRNE Research Technology Initiative: Defence Research Development Centre (Department of National Defence)

Industry Partners

British Columbia Centre of Excellence in Women's Health; Canadian Federation of Nurses' Unions; Canadian Women's Health Network; University of Ottawa School of Nursing; University of Toronto School of Nursing; Victorian Order of Nurses

Copyright © Carol Amaratunga 2008

Copyright © Canadian Policy Research Networks Inc. 2008

Contents

- Executive Summary i**

- Introduction 1**
- Project Overview 2**
- Background 3**
 - Resiliency 3**
 - Instrumental, Informational and Emotional Supports 4**
- Findings: What Keeps Us Awake at Night 5**
 - Managing Threats to Surge Capacity 5**
 - The Health Human Resources Pool..... 5*
 - Preparing the Nursing Workforce 10*
 - Achieving Optimal Infection Control..... 14**
 - Addressing Job Insecurity..... 14*
 - Laundering Contaminated Uniforms 14*
 - Supporting Quarantined Workers..... 14*
 - Improving Risk Communication 15*
 - Accessing Trustworthy Information..... 16*
 - Improving Credibility of Leadership 16*
 - Minimizing Social Exclusion..... 18*
- Moving Forward: Promising Practices and Opportunities for Change..... 19**
 - Promising Practices 19**
 - Federal and National Initiatives..... 19*
 - Provincial/Territorial Initiatives 20*
 - Institution and Community-Based Initiatives..... 20*
 - Opportunities for Change 21**
 - Federal and National..... 21*
 - Provincial/Territorial 22*
 - Institutional and Community..... 23*
- Conclusion 24**

- References..... 26**

- Appendix A. Checklist for Institutional Emergency Plan Gap Analysis 29**

Executive Summary

Background

Recent public health disasters in Canada such as SARS, the Walkerton water contamination event and extreme weather, as well as acts of terrorism worldwide have brought to the forefront the need to invest in crisis mitigation infrastructure and services and to construct comprehensive preparedness plans. SARS in particular served as a sobering wake-up call for health care institutions, governmental bodies and health care workers, highlighting many inadequacies in Canada's ability to respond quickly and effectively to public health threats. Since 2003, Canada has recognized the central role of health care services in disaster mitigation efforts and has made significant progress in emergency preparedness, especially with regard to biohazard events such as pandemic flu and other infectious disease outbreaks. For example, the Canadian government has invested in stockpiles of antiviral medications and personal protective equipment and has established mobile hospital emergency response teams. Most hospitals and health care institutions have drafted and begun to implement organizational disaster plans. However, to date, little attention has been given to the human resources dimension of health services delivery, and the critical role of health care workers as first responders and first receivers¹. Efforts have focused primarily on protecting the physiological health of workers with strategies such as masks and antivirals. While these efforts are admirable, the health human resources that determine surge capacity and infection control are also influenced by psychosocial determinants of health and resiliency.

Purpose

The goal of this policy forum report is to highlight opportunities to mitigate the impact of future public health crises by identifying how we can better support health care workers during public health threats and emergencies. This paper provides a synthesis of the key findings and recommendations of a research project² that has examined gaps and weaknesses in support systems for nurses who are first responders and first receivers.

Project Overview

The 3.5-year project (2004 to 2008) consisted of following phases:

1. Comprehensive review and synthesis of existing literature on support mechanisms for health care workers as first responders.
2. A series of five focus groups conducted in Ottawa, Toronto, Vancouver and Halifax between November 2005 and February 2006 with registered nurses, registered practical nurses and

¹ "First receivers" is a recently coined term that is gaining favour among professionals working in the emergency preparedness and response fields. It serves to differentiate health care professionals who "receive" and treat casualties in emergency care facilities from traditional first responders such as police and paramedics, who work in the field.

² Funded by the CBRNE Research and Technology Initiative (of the Defence Research and Development Centre, Department of National Defence).

nurse managers working in emergency and critical care, infection control, hospital-based education and unions (n=100).

3. A national web-based survey of primarily emergency and critical care nurses about psychosocial, family and health impacts of emergencies and disasters, conducted between April and August of 2006 (n=1543).
4. A qualitative content analysis of emergency plans for pandemic influenza preparedness and response representing nine jurisdictions at federal, provincial, municipal and institutional levels.
5. A sex and gender-based analysis of personnel policy and decision-making capacity in support mechanisms for public health care workers.
6. Synthesis and dissemination of study results and findings to policy audiences following facilitated discussion on the dominant issues. A national policy forum held December 12, 2007 brought together experts from multiple sectors, including federal, provincial and municipal governments, non-governmental organizations and health care workers.

Findings

This research project has identified numerous gaps in existing support mechanisms for first responders and first receivers that influence their abilities to work. Our data, collected three years after the SARS outbreak, demonstrate that nurses do not feel adequately prepared to respond to large-scale disasters and lack confidence in the ability of the health care system to react quickly and appropriately to national public health emergencies.

Nurses described numerous challenges for surge capacity:

- adequate levels of skilled staff
- redeployment training
- gross disparities in financial compensation and benefits between casual and permanent employees and between publicly and privately employed workers
- risk communication problems
- concerns regarding increased risks of infection to nurses' families during infectious disease outbreaks
- skill development and practice

Threats to infection control described by nurses included:

- heavy reliance on part-time and casual staff in some health care institutions
- lack of ability for decontamination at work
- challenges to meeting basic household needs during quarantine.

Risk communication during SARS was described as problematic due to:

- a lack of trustworthy information
- concerns with credibility of leadership.

As a result of poor risk communication, many front-line SARS nurses described experiences of social exclusion. In addition, the data suggest a lack of understanding of the limited right to refuse dangerous work as it applies to those working within health care institutions.

Over 90% of nurses are female and traditional gender roles emerged as important but often overlooked determinant of their resiliency and wellbeing. Conflicts between professional and family responsibilities are often reported by women health care workers, and public health emergencies can greatly exacerbate the stress of these conflicts. This is especially true when occupational responsibilities jeopardize the health and safety of vulnerable dependent family members, a valid concern during an infectious disease outbreak or other biohazard event. Many respondents reported that family concerns may prevent them from reporting for work if another highly contagious disease outbreak occurs in the future.

Moving Forward

These human resource, communication and leadership issues stand to influence the Canadian health care system's surge capacity and infection control for future infectious disease outbreaks. The findings of this study indicate the need for urgent action to construct programs and policies that address the needs of nurses. Such an approach will need to anticipate and circumvent problems rather than simply responding to events as they occur. Policy forum participants concurred that we can do more to prepare for the next emergency and highlighted several opportunities to improve surge capacity, infection control and risk communication, such as including emergency preparedness indicators in hospital accreditation, developing an evidence-informed toolbox to assist emergency preparedness planners for hospital management make comprehensive plans responsive to health human resource challenges and using existing communication networks (such as professional licensure colleges, undergraduate education programs and unions) to increase understanding of the limited right to refuse dangerous work. Additionally, surge capacity and infection control will be enhanced through improvements in risk communication, disaster response skill development and supports to reduce work/life conflicts for nurses, the majority of whom are women.

Caring for Nurses in Public Health Emergencies: Enhancing Capacity for Gender-Based Support Mechanisms in Emergency Preparedness Planning

Introduction

Over the last decade, the global proliferation of new infectious diseases and the possible threat of chemical, biological, radiological, nuclear and explosive (CBRNE) terrorism events have forced countries to seriously examine their capacity to respond in the event of a large scale public health crisis. Events such as 9/11, the SARS epidemic, the emergence of avian influenza and the anticipation of future terrorist attacks or outbreaks of pandemic flu have spurred unprecedented efforts by governments and health care organizations to put in place plans and support mechanisms to respond to the next major public health crisis. The Canadian government has created stockpiles of emergency supplies such as antiviral medications and personal protective equipment and has created mobile hospital emergency response teams. It has funded research and development, security and intelligence measures, public awareness campaigns and other emergency preparedness and risk management plans and activities. However, to date, very little attention has been given to the human resources dimension of public health risk mitigation.

Health care workers, including nurses, physicians, allied health professionals and personal care workers form the foundation of health disaster response efforts, and without them, investment in physical resources is of limited use. Large-scale public health emergencies can strain health care systems beyond capacity, to the point that response capabilities diminish. When this occurs, the physical and psychosocial impacts ripple outward through the community, hitting vulnerable subgroups (such as children and the elderly) earliest and hardest. Protecting the health of the Canadian public necessitates first protecting the health and resilience of our health care workers.

The Naylor Report, *Learning From SARS: Renewal of Public Health in Canada* and the Kirby report *Reforming Health Protection and Promotion in Canada: Time to Act* articulated the need for urgent enhancement of Canada's public health infrastructure and for better training, integration and improved emergency responsiveness, particularly in quarantine situations (Naylor et al., 2003; Kirby, 2003). As noted in the Naylor Report (2003), the SARS virus was contained, not by genomics or advanced pharmaceuticals, but by "old-fashioned" infection control measures, including handwashing, isolation and tracing of cases, and quarantine. The SARS epidemic in particular demonstrated the need to bolster instrumental and informational support mechanisms such as collaborative and coordinated communications from authorities, core infection control curriculum for front-line responders and better training guidelines and public education for managing and containing infectious diseases in quarantine conditions in both institutional and residential settings. However, the needs of health care first responders and first receivers extend beyond enhanced training, risk communication and stockpiles of personal protective equipment. To promote resiliency among health care workers during a crisis, it is crucial to also consider the psychosocial determinants of health.

This paper provides a synthesis of the key findings and recommendations of a 3.5-year research project that has examined gaps in supports for nurses who work as first responders and first receivers during public health crises. The goal of this paper is to synthesis the findings of this multi-method study and highlight opportunities to mitigate the impact of future public health crises by identifying how we can better support health care workers during public health threats and emergencies. The paper contains sections that describe the project (Project Overview), orient the reader to the topics of resiliency and occupational support (Background), present the synthesis of findings (Findings), and identify promising practices and opportunities for improvement (Moving Forward). The paper concludes with a summary of the findings and discussion of the implications for emergency preparedness policy and practices.

Project Overview

The objective of this project is to mitigate the impact of future infectious disease outbreaks and CBRNE threats on the health care system by identifying support mechanisms that will enable health care members of the response community to fulfill their roles. The 2003 SARS outbreak and other public health emergencies were examined to identify psychosocial effects on health care workers and their families and to recommend support mechanisms to offset these effects. The project consists of the following phases:

1. Comprehensive review and synthesis of existing literature on support mechanisms for health care workers as first responders.
2. A series of five focus groups conducted in Ottawa, Toronto, Vancouver and Halifax between November 2005 and February 2006. Participants included Canadian registered nurses, registered practical nurses, nursing managers working in emergency or critical care, infection control workers, hospital-based nurse educators and representatives of nursing unions. Using an interview matrix format, participants discussed their experiences of SARS or other emergencies, identified gaps in supports and explored preparedness for future infectious disease outbreaks.
3. A national web-based survey of emergency and critical care nurses (n=1,543) conducted three years after the SARS outbreak.³ The survey asked about psychosocial, family and health impacts resulting from the nurses' potential or actual involvement as front-line workers responding to outbreaks of infectious biological agents. The survey, conducted from April to August 2006, provides a demographic portrait of Canada's nursing first responder community and identifies essential supports for nurses that would enhance response capacity.

³ Based on power calculations, we sought to survey 1,500 nurses who worked in emergency and critical care during the past three years. As 12% of the Canadian nursing population work in these specialties, we invited 15,000 nurses through national and provincial/territorial associations, online posting and advertising. Invitations to participate were sent in proportion to the size of each provincial nursing population. In comparison with the 2005 Registered Nurses Database, the resulting sample is similar to province-of-residence (CIHI, n.d.) and rural/urban distributions (CIHI, 2006) of the registered nursing profession in general. Specific to critical and emergency nursing, the sex breakdown is similar, while our sample tends to have a higher proportion of RNs with bachelor or more advanced degrees and slightly fewer practitioners employed by hospitals (Department of Public Policy, Canadian Nurses Association, 2006). Age-related demographic characteristics are not comparable due to differences in survey categories, though the trend is similar to the aforementioned sources.

4. A qualitative content analysis of emergency plans for pandemic influenza preparedness and response representing nine jurisdictions at federal, provincial, municipal and institutional levels. The plans were analyzed for evidence of policies and procedures designed to support health human resources (see Appendix A). Support mechanisms were categorized as informational (communications, resources, education), instrumental (personal protective equipment, training, infection control measures) and emotional supports (focused on reduction of anxiety, stress, work/family role conflict), based on a social support network framework developed by House (1981, as cited in Heaney and Israel, 2002).
5. A sex- and gender-based analysis of personnel policy and support mechanisms for public health care workers. Biological sex and the social construct of gender were integrated into an existing population health risk management framework following discussion by a panel of interdisciplinary scientists with expertise in risk assessment and risk management, psychosocial stress, occupational health and safety, gender and women's health. Consensus was reached about the components of the framework and their interactions.
6. The dissemination of synthesis of study findings to policy audiences. This facilitated discussion on the issues and on a preliminary set of proposals for change. A national policy forum took place on December 12, 2007, co-hosted by the Women's Health Research Unit (of the Institute of Population Health, University of Ottawa), Canadian Policy Research Networks and the Canadian Federation of Nurses Unions. Participants included representatives from federal, provincial and municipal health and labour departments, nursing and health care non-governmental organizations and front-line nurses who worked during the SARS outbreak in 2003.

Background

Resiliency

The concept of resiliency, which emerged from ecology, is useful in examining the strength of the public health care system and its workers when exposed to the stress of a large-scale outbreak or other health emergency. A resilient system, when acted upon by a stressor, is able to continue to fulfill essential functions (Resilience Alliance, 2007). In this context, a resilient health care system is one that can adapt rapidly to increased demand for essential medical treatment and services. Within psychology and sociology, resilience refers to the capacity of individuals to withstand and cope with stressors (Earvolino-Ramirez, 2007).

Clearly, during times of crisis, the capacity and resiliency of the health care system are inextricably tied to the wellbeing and resiliency of its workers. Thus, in the context of this paper, we have defined resiliency as the capacity of health care workers to fulfill their emergency response functions. Health care worker resiliency, in turn, is dependent on the cumulative effects of biological, environmental and social health determinants and the interactions among them.

Although individual health and resiliency are variable, health care workers as a population share several significant health determinants that must be taken into consideration to optimize crisis mitigation efforts. Since the vast majority of Canada's health care workers are women (CIHI,

2007), perhaps most notable among these shared determinants are sex and gender, which have long been recognized as exerting a strong influence on physical and psychological health. Despite their important role as determinants of health and resiliency, sex and gender have historically been overlooked in emergency preparedness and planning. However, recent research indicates that biological sex and the social construct of gender have a considerable influence on many aspects of health disasters, including differences in physiological susceptibility to health threats, risk perception and reaction to disasters (Krewski et al., 2006; World Health Organization, 2002). In addition, conflicts between professional and family responsibilities reported by women health care workers in downsized/restructured health care organizations have the potential to be greatly exacerbated during public health emergencies (Burke and Greenglass, 1999).

The occupational environment is another shared health determinant that affects health care worker resiliency. Under crisis or disaster conditions, the physical work environment may be more hazardous, with heightened risk of exposure to infectious disease or other toxic agents, requirement to wear uncomfortable and restrictive personal protective equipment, increased workload, longer shifts and mandatory quarantine protocols.

Numerous interactions also exist between the physical work environment and social and behavioural determinants of health. Crisis situations are challenging to manage and may involve changes to the usual chain of command. Difficult working conditions and rapidly evolving situational factors can affect interpersonal relationships, increasing conflicts among individual coworkers and between groups such as public health officials and hospital staff, or nurses and physicians. The influence of occupation on the resilience and wellbeing of health care workers may also extend outside the physical location of work to home, family and community settings, especially during infectious disease events.

Instrumental, Informational and Emotional Supports

Support mechanisms for health care workers can be divided conceptually into three broad categories: informational, emotional and instrumental (House, 1981, as cited in Heaney and Israel, 2002; O'Sullivan et al., 2007). Informational support refers to all forms of communication, including occupational training, skill development and exchanges between front-line health care workers and public health, supervisors, management, occupational health and safety, unions, etc. Emotional support relates to any type of intervention intended to alleviate the negative emotional impacts of the work environment on health care workers, such as debriefing sessions and access to counselling services. Instrumental supports refer to all other organizational programs, protocols and interventions that assist health care workers in performing their occupational roles, including material supports such as personal protective equipment and vaccines, and less tangible but necessary supports such as creative human resource mobilization strategies and visible leadership during crisis events. While not completely mutually exclusive, such categorization is helpful conceptually.

In general, risk management frameworks highlight the need to anticipate, analyze and prepare for expected challenges in disasters, to minimize the impact and encourage a quick recovery (Krewski et al, 2007). Support mechanisms for front-line health care workers result from

policies institutionalized at all levels of government and through hospital regulations, processes and procedures. Optimization of instrumental, informational and emotional supports through careful and informed program and policy change at both governmental and institutional levels will increase the resiliency of the health care work force, which in turn will increase the resiliency and capacity of the health care system to respond to the next disaster. Our findings highlight existing issues and opportunities for improvement.

Findings: What Keeps Us Awake at Night

This multi-method study highlighted three issues as threats to the ability of our health care system to respond to the needs of the population during a crisis or disaster. *Surge capacity* depends upon having a healthy, willing, supported and prepared health care workforce; many issues limit the response capacity of nurses and other members of the health care community. *Infection control* is critical to the containment of infectious disease outbreaks; some current management practices and discrepancies in benefits threaten our system's ability to realize infection control. *Risk communication* provides needed information through credible sources at the right time; nurses' experiences with SARS highlight weaknesses in the existing risk communication strategies. These three issues are interconnected and influence each other, but are presented here individually for clarity.

Managing Threats to Surge Capacity

During an infectious disease outbreak or other medical crisis, the health and well-being of front-line health care workers is a crucial resource that must be protected if communities are to meet surge capacity needs. Not only will there be an increase in demand for treatment, but also a significant and simultaneous decrease in the size of the health care workforce due to illness, quarantine and potential refusal to work. Heavy workload, overtime hours and high stress levels can make health care providers vulnerable to chronic fatigue and burnout, which in turn can lead to illness, refusal to work and eventually, withdrawal from the profession. The study data indicate that surge capacity will be influenced by the depth of the health human resources (HHR) pool and the preparedness of the individual nurses.

The Health Human Resources Pool

Ensuring Adequate Staffing

Nurses involved in the study and expert participants at the policy forum agreed that the health care system is already working at its maximum capacity to meet population needs. One policy forum participant eloquently summarized this: "The terrible secret is that there is no surge [capacity]." ⁴ As stated by one nurse in a focus group, "Hospitals are already understaffed; a crisis would compromise patient care." Policy forum participants from multiple sectors emphasized that a system that is stretched to its limit in regular operation cannot be resilient.

⁴ Unless otherwise noted, all quotations throughout this paper are taken directly from comments made by health care professionals, primarily nurses, during focus group interviews.

Both nurses and policy forum participants stressed the need to be forward thinking about staffing.

Anticipate that not all of your health care workers are going to work – you need to know who’s going to stay on board, and need to figure this out at the beginning.

Lots of unemployed nurses – use them in crisis.

Can’t ban students (as in SARS), we will need those students.

Redeployment of staff and students has been identified as one potential solution to help handle the surge resulting from a disease outbreak or other emergency, and it was noted in several emergency plans. However, nurse and policy forum participants agreed that it is not enough to simply divert human resources from one department to another.

A warm body isn’t much use if they don’t know what needs to happen.

Within hospital there are situations when staff are floated ... but puts float staff and team in difficult position as float staff are outside of their comfort zone, not trained to be in a particular department...

Sending workers into high-risk situations without adequate training may facilitate the spread of infection, jeopardizing coworkers as well as patients. Additionally, nurses noted that unfamiliar environments and procedures, lack of confidence in one’s training and high pressure working conditions will be highly stressful for redeployed health care providers and may result in refusal to work.

Policy forum participants emphasized the need for proactive identification of tasks that can be delegated to less specialized or skilled HHR (including students and those with transferable skills) to reduce workload for those with expertise in emergency and critical care. Policy forum participants stressed that those redeployed to answer surge capacity demands should be kept out of harm’s way as much as possible and need training, supervision and material supports to fulfill their roles. To realize this goal, policy forum participants suggested the need for institutional, community and regional level supports.

Addressing Willingness and Ability to Work

Even if people were identified to fill HHR needs, nurse participants in the study were wary that all would attend work. Multiple factors were described as influential on the willingness and ability to work.

There is a lack of consistency in the remuneration and benefits available to nurses who put themselves at risk during public health disasters. The use of privately contracted, casual and part-time nursing staff results in many having reduced guarantees of compensation for lost time due to illness compared with those working full-time.

Benefits - I am part time. I have NO benefits. Should I put myself at risk? What if I get sick for a long time? I have no benefits to help me financially.

Policy forum participants clarified that those nurses who are self-employed, work for an agency or have “casual status” can always refuse work, and most have access to Workplace Safety and Insurance Board (WSIB) coverage for occupational illness. Thus, variations in employment status result in different rights to refuse work within the occupation and influence the benefits available to those who do fall ill or need to care for ill family members.

Even at the best of times, nurses encounter difficulty balancing family responsibilities with the unique demands of a career in health care. The vast majority of health care professionals are women (CIHI, 2007), and many of them are responsible for the care of dependent children and/or aging parents at home. Of the nurses surveyed, 53.1% had dependent children living with them. During focus group discussions, health care workers described being caught in an ethical dilemma between duty to care and personal/family safety.

We aren't just health care workers – we can come to work as nurses, but how are we going to cope when the crisis affects our families?

Lots of guilt – should I have chosen a profession that would have protected me better? The guilt stays – if I bring it home and they get sick, it's because of me.

In terms of going to work – I don't have the right to make these decisions on behalf of my children and my husband.

Making the choice between family and work – where do you draw the line?

We need to look at risks and benefits. If the risks outweigh the benefits, chances are people aren't going to come in.

In the event of a national crisis, nurses will have the same fears and concerns for the well-being of their families as all family caregivers. Depending on the nature and severity of the disaster, they will be worried about infection, financial difficulties, loss of property, utility outages or scarcity of food and other basic supplies. However, nurses and their families will face additional challenges directly related to the caregivers' work. If the nurse is also the main caregiver in the home, extended working hours and quarantine restrictions may disrupt the usual caregiving roles in the home.

During focus group discussions and later in survey results, nurses emphasized the need for support systems that help to offset the stresses of caring for both family and patients during a public health crisis.

Change in family roles – if husband has to leave work for child care because health care worker must stay at work, the whole family dynamics are going to change because of this.

There needs to be a support system emotionally that should include your family because what we're coming into contact with affects them and it needs to be long-term.

Emergency measures in the community may necessitate school and daycare closures. Without the systems in place to ensure family needs are met in these circumstances, some nurses with dependent children will be unable to work.

Antivirals, vaccination and prophylactic treatment, when effective, are strategies that participants identified as supporting them in remaining at work during an infectious disease crisis. The Canadian Pandemic Influenza Plan (Public Health Agency of Canada, 2006) outlines a set of guidelines that identifies subgroups within the population and assigns each a vaccination priority level, acknowledging that these priority populations and levels will need to be reassessed when epidemiological data from an influenza outbreak become available. Under the current plan, front-line health care workers, public health responders, and key health decision-makers are acknowledged as having a critical role in disaster response efforts and thus, are granted first priority status for vaccination.

The existing guidelines mention vaccination for the children, spouses or dependent parents of health care workers, but conclude that "...singling out these individuals would not be logistically feasible or ethically justifiable" (Public Health Agency of Canada, 2006: Annex D, p. 4). In the focus groups conducted with nurses, and in other studies (Sibbald, 2003), the issue of prioritizing health care workers' families for distribution of vaccines and antivirals was raised.

We might bring it home (carry it) even if we don't get sick – since we get vaccinated, but our family doesn't -, do we risk bringing it home?

We need preventative medication and vaccines for the whole family, not just the health care workers.

You're probably going to get me coming to work if I know my kids are vaccinated.

Nurses stressed that the additional worry of infecting a member of one's own family may be enough to tip the delicate balance between their commitment to the profession and the responsibility they have to their partners and children.

Managing Point of Care Issues

Nurses indicated that when dealing with infectious or communicable diseases, tasks are made more difficult by the need to wear hot and restrictive personal protective equipment (PPE) such as double gloves, double gowns, respirators, goggles and face shields.

PPE wear is exhaustive and you can't do what you need to do.

Having adequate breaks and nourishment – you can't work at the same pace and you have to have breaks.

Need to monitor burnout with teams and team leaders, recognizing fatigue – if you let them, they will not stop working.

Additionally, caring for seriously ill and terminal patients and their families can be emotionally draining. An outbreak of pandemic disease, a terrorist attack or natural disaster may flood hospitals with hundreds or thousands of these patients, and health care providers' capacity to cope will be challenged. As we learned during SARS, infectious disease outbreaks are likely to claim a disproportionate number of health care providers, and the psychological impact of having to care for coworkers infected on the job will be, for many, emotionally devastating. Caring for a patient who is also a friend and colleague will make it difficult to maintain the usual self-protective emotional distance from the situation and is also very likely to increase fear and concerns over becoming infected.

In pandemic, these people coming into our hospitals are going to be dying. How are you going to cope with all the death and dying? Right now we have two to three people dying on our floors. This is going to be 30-, 40-year olds dying and children. How are we going to cope with that grief?

Emotional support [is] needed among coworkers in dealing with the death of a colleague and caring for them in emergency. We were afar and we were affected by the nurses in Toronto. I can't imagine what it would have been like for it to have been a colleague.

Preparing the Nursing Workforce

Most of the critical and emergency care nurses who responded to the survey perceived that they were a little, somewhat or very much prepared (professionally) for another infectious disease outbreak or natural disaster (Figures 1 and 2). In contrast, few perceive being prepared at any level for CBRNE-type emergencies (Figures 3 to 6).

Figure 1. Sense of Preparedness for Infectious Disease Outbreak

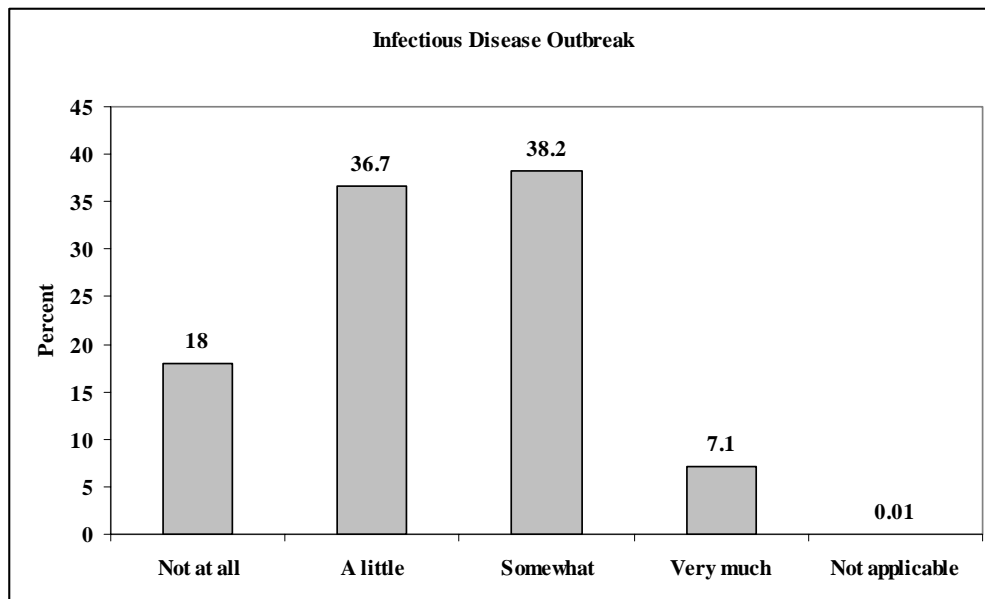


Figure 2. Sense of Preparedness for Natural Disaster

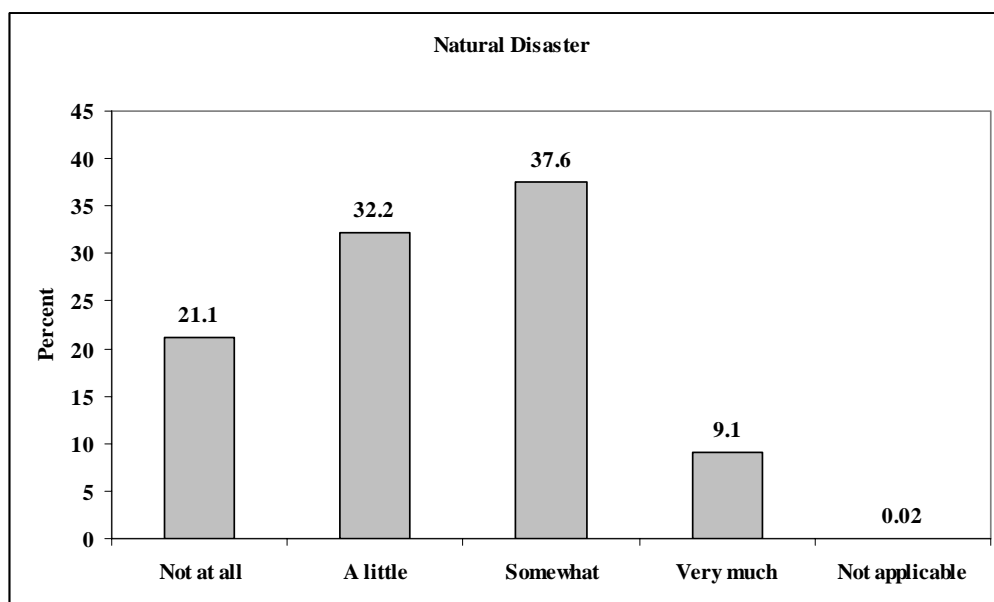


Figure 3. Sense of Preparedness for Chemical Weapons Attack

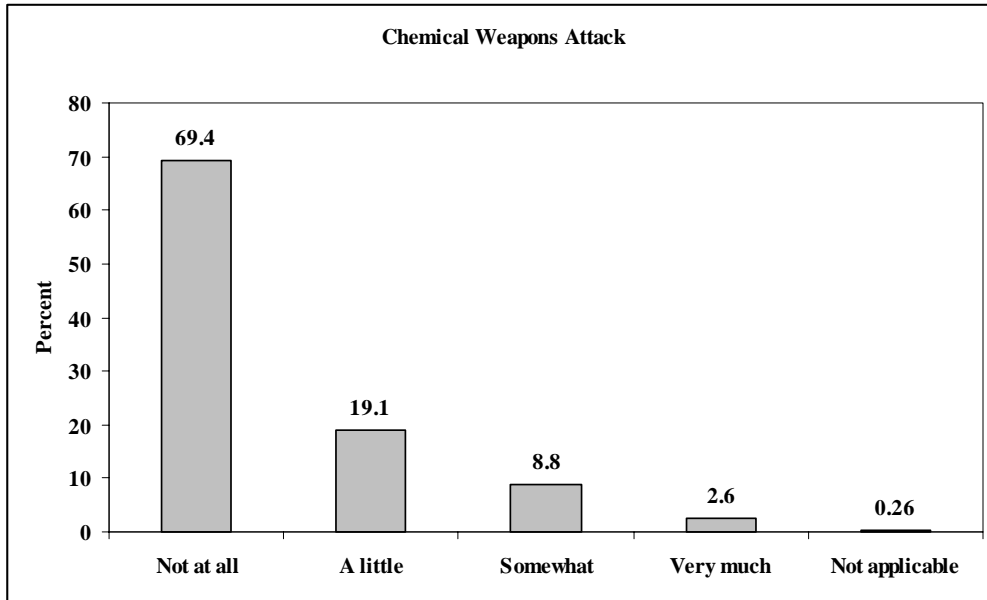


Figure 4. Sense of Preparedness for Biological Weapons Attack

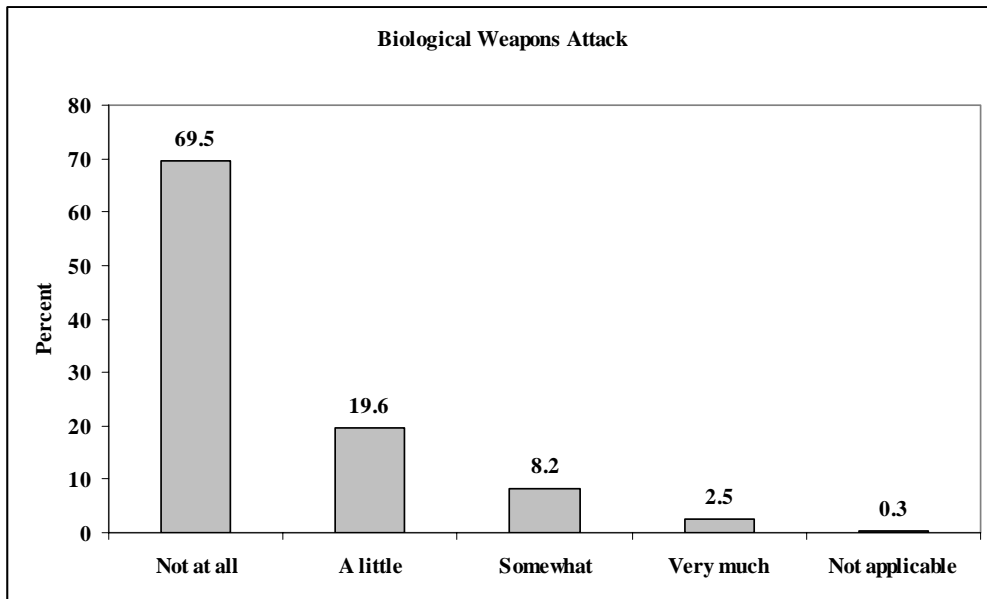


Figure 5. Sense of Preparedness for Nuclear Attack/Accident

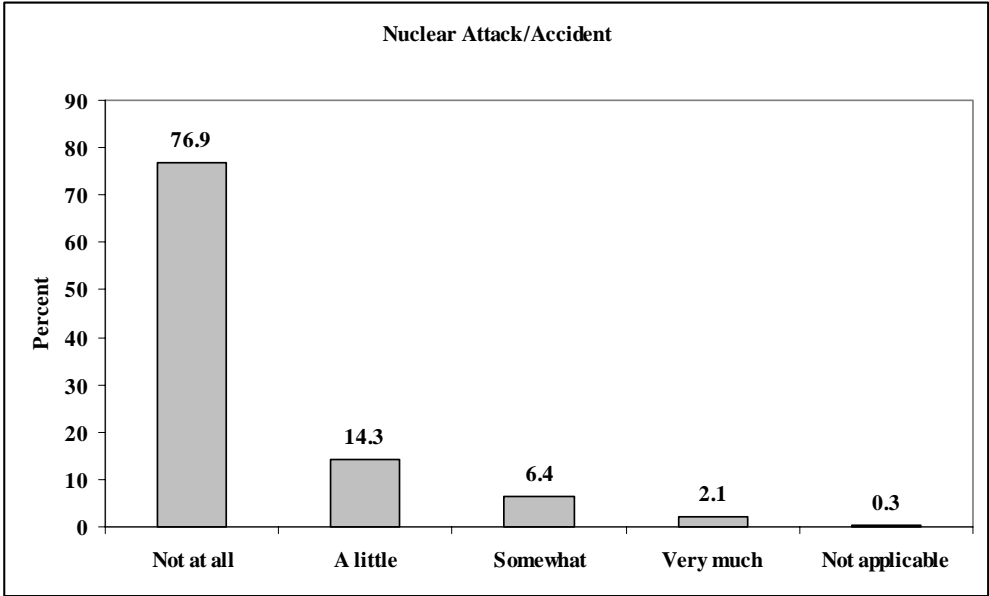
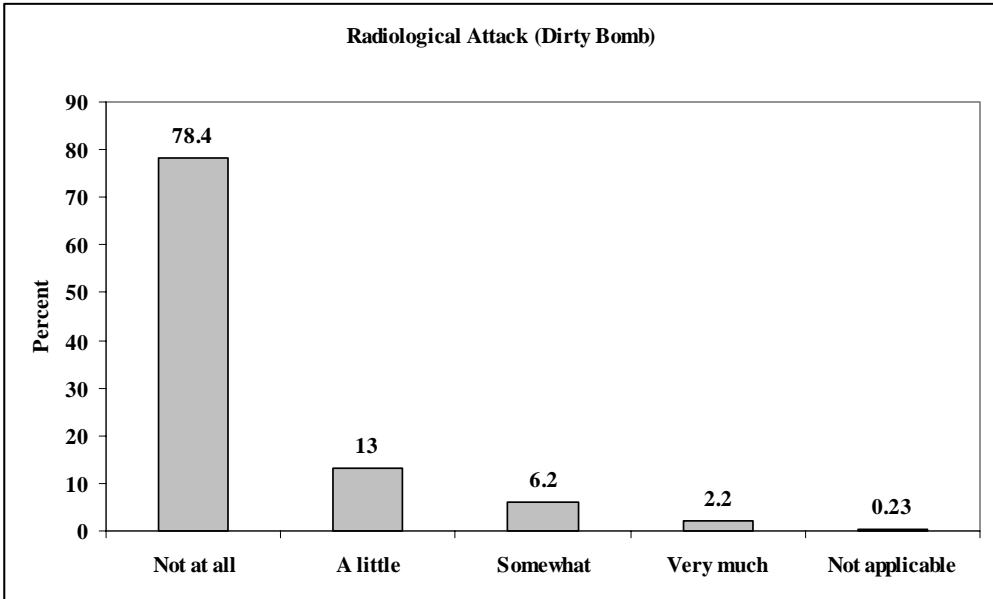


Figure 6. Sense of Preparedness for Radiological Attack



Training and education could help alleviate the perceived and/or actual lack of preparedness, but issues around inadequate access to training and personal protective equipment were common concerns reported by nurse participants.

Gaining Access to Training

In the focus groups, many participants noted the lack of financial and other supports available for health care workers to gain additional training in infection control and other disaster preparedness activities. Many expressed an interest in augmenting their skills, but they were not able to afford the tuition or to take the necessary time off without pay.

Later when I asked for subsidy to go to an infection control course, and my tuition was going to be \$1,500, they said no, because it hadn't been two years yet.

Casual staff shouldn't be considered "back up team" but part of [the] team, so should be informed of plans... [They] don't always attend educational opportunities as they don't receive payment for this.

In addition to education-oriented training, emergency drills and mock disaster scenarios are widely recognized as particularly useful ways to prepare individuals to function effectively in high-risk, high-stress and unpredictable situations (Bartley, Stella and Walsh, 2006). However, over 90% of survey respondents reported they had not participated in a mock emergency scenario in their place of employment.

Ensuring Fit of Personal Protective Equipment

The importance of readily accessible stockpiles of personal protective equipment such as masks, face shields, gloves and gowns emerged as an important lesson in SARS outbreak. In the aftermath, most institutions responded by creating a stockpile of sufficient supplies for at least six weeks under high demand, at the recommendation and with the support of federal and provincial governments. However, masks, gloves and other personal protective equipment are of no use if they expire or do not fit correctly. This is of particular importance with articles such as masks and respirators that rely on a close fit to prevent air leaks that could allow exposure to infectious droplets or aerosols. In addition to fit testing, it is recommended that health care workers perform a quick fit-check each time they put on a new mask (Yassi, Bryce and Moore, 2004). Of the three hospital emergency plans examined by researchers, not one outlined a plan or requirement for regular fit testing of masks and physical barrier-type equipment such as gloves, gowns and face shields (Amaratunga et al., 2007b). During focus group discussions, one nurse commented "Most people [...] have been fit tested for N95 mask – but testing certificate expired six months ago."

Achieving Optimal Infection Control

Infection control emerged as a second set of major concerns articulated by nurses and policy forum participants. Influences on infection control included the job insecurity of much of the nursing workforce, laundering of contaminated uniforms and quarantine-related issues.

Addressing Job Insecurity

Participants in focus groups noted that casual and part-time health care workers often work at several different institutions within a single week to earn a full-time salary. In the survey, 27.3% reported multiple current positions; in general, this practice is more common among nurses than in the general population (Shields and Wilkins, 2006). During infectious disease outbreaks, this practice can facilitate the spread of disease from one hospital to another.

Laundering Contaminated Uniforms

In most hospitals and health care facilities, physicians are provided with “scrubs” but nurses and other staff are expected to provide and maintain their own uniforms. However, during infectious disease outbreaks, wearing uniforms out of the hospital and bringing them home to be laundered poses a significant risk to the public and particularly to the workers’ families.

I want to be able to change and decontaminate before I go home.

Supporting Quarantined Workers

Depending on the circumstances, quarantine restrictions for health care workers can take several forms. Under work quarantine, employees continue to work but are restricted to their homes during off-hours. Fully quarantined workers are restricted either to the home or to the hospital, depending on the level of exposure and whether or not they are displaying signs of illness. In both cases, there are significant disruptions to the lives of health care workers as well as their families. The SARS outbreak in 2003 necessitated the quarantine of hundreds of hospital employees, and the lack of a support system was quickly apparent.

Most of the hospital pandemic plans examined by the research team recognized the need for support systems during widespread quarantine conditions however, they were often vague and did not specify what supports would be available or assign responsibility for implementing them. Nurse participants provided specific suggestions for supports that address basic household and transportation needs.

Meeting Basic Household Needs

For quarantined workers who are single or without the support of another adult family member, the delivery of food, medications and masks or other personal protective equipment is a clear necessity. During focus group discussions, nurses repeatedly commented on the difficulties that were encountered meeting the most basic needs of daily life during quarantine.

One person was quarantined and had no groceries, no one to walk the dog.

For a single mother – how is she going to get the groceries in if she is the only adult in the household?

If you're going to be at home and you needed supplies to deal with children or the elderly, who's going to make sure you have those supplies?

Ensuring Access to Transportation

Nurses under work quarantine were ordered not to take public transportation, but they were not provided with free parking, a considerable expense at many hospitals. In many cases, workers without access to a car were not provided with any alternatives, nor were they offered reimbursement for taxi service (which itself might break quarantine restrictions).

Improving Risk Communication

In the early stages of a biological or infectious event, there are a great many unknowns: What is causing the illness? How is it transmitted? How do we treat it? Can we contain it, and if so, how? Uncertainty regarding the nature and magnitude of health threats has been shown to increase the perceived danger, and increases stress levels correspondingly (Krewski et al., 2006).

The SARS outbreak was the first case since the emergence of HIV/AIDS in the 1980s in which the public faced a major outbreak of infectious disease of unknown origin. However, unlike AIDS, SARS was known to be quickly and easily transmissible by close contact with infected individuals, most likely through respiratory secretions (Shaw, 2006).

How individuals perceive health risk is dependent on a number of factors, including the likelihood of occurrence, the seriousness of the outcome, the ability to control one's own exposure to the hazard and the degree of uncertainty about the particular hazard (Krewski et al., 2006). According to these criteria, SARS was a "perfect storm" to induce panic among the public. It was a very serious disease with a high fatality rate (approximately 10% in Canada); it was believed to be difficult to control one's exposure in public places and much of the information about SARS was, at the time, uncertain. Understandably, this knowledge caused a lot of concern among the Canadian public, especially in Toronto and Vancouver, which were known to have active cases.

Nurses described high levels of uncertainty, contradictory orders and risk communication messages, continually changing infection control protocols and inconsistent compliance with those protocols. The situation fostered conflict and infighting between nurses and administrators, as well as social exclusion.

Accessing Trustworthy Information

In the survey, almost 32% of nurses who had worked during an infectious disease outbreak within the last three years reported that they had been given conflicting orders by two or more staff members. Specific to SARS, many of the quarantined nurses reported that they were sent home but were not given specific instructions regarding quarantine restrictions or how long they should stay home.

I was on quarantine, called Friday afternoon on three-way phone conversation. Under no circumstances should I come in. Someone would contact me from Public Health. Didn't happen. Said they would send food. Didn't happen. Next day called and asked me to come in. So poorly managed.

In the focus groups, nurses who had been quarantined reported feeling cut off from reliable information sources and having to watch the evening news for updates. Already fearful about becoming infected or infecting their families, conflicting media reports and sensationalist reporting exacerbated the anxiety and sense of isolation experienced by these workers. Others who had been trapped in the hospital during natural disasters such as Hurricane Juan expressed similar experiences of isolation.

Improving Credibility of Leadership

Strong, competent and visible leadership is critical to the successful management and resolution of any crisis situation, and this is especially true in the health care environment. Our data highlight a number of problematic leadership practices during the SARS epidemic.

During SARS, people were making decisions up high and you were sort of there in the trenches.

We need to return to team work – the managers can't stay in the board room, we need to work together vs us and them – we need to know that we can trust our managers and not feel abandoned.

If there's a relationship between the employees and employers that is bad, then it's too late in a crisis to build trust.

Policy forum participants added that existing weaknesses in the relationships between front-line workers and management can become magnified during a crisis and seriously undermine morale and the ability to respond effectively.

Management was not always visible during the SARS outbreak. In some cases, managers worked from home or offices off-site.

In our hospital, we were told that our hospital would be a SARS hospital, and within two weeks all the management offices were moved to another location – another hospital. We were told it was all because of amalgamation and it was going to happen anyways, but it sent a strong message.

A policy forum participant with knowledge of the amalgamation issue clarified that the relocation was a coincidence.

Of the managers who remained on-site, many were careful to keep their distance from infected patients, suspected cases and the health care workers who treated them, according to nurse participants. Nurses perceived a fundamental disparity between the message that administrators and public health officials were sending with their orders and the one being sent by their actions. Nurses were expected to treat SARS patients and were told that with the proper personal protective equipment, it was safe to do so. Several described the anger, demoralization and sense of abandonment they experienced by the relocation or refusal to enter the patient wards of many managers. The situation fostered worries that management was withholding important information about the seriousness of the situation. To participating nurses, strong leadership during a crisis involves not just being present but being visible, accessible and willing to work face to face with staff.

Several policy forum participants noted that the longstanding lack of leadership on the wards fostered suspicion and frustration during the SARS crisis, and they stressed that these institutional leadership issues persist. Policy forum participants added that not all those in positions of leadership have extensive crisis management or risk communication skills.

Credibility issues were further exacerbated by the fact that many of the hospital administrative teams lacked an infection control specialist.

We see value in having a leader where there is some trust, confidence – there is lack of belief and trust in leaders who do not have expertise in pathophysiology or infection control.

I called up infection control and asked someone to come watch activity response and was asked “Can we do it in September?”

All the hospital pandemic plans reviewed by the research team specified the inclusion of an infectious disease expert in the disaster management team. One recommended the creation of a technical advisory group including an infectious disease specialist, while the others planned to work in conjunction with provincial agencies and include them in decision-making processes. However, only one of the hospital pandemic plans provided a detailed account of the emergency chain of command. Over 50% of the nurses surveyed during Phase 3 of this project were unsure or unaware of the existence of a formal organizational emergency plan, suggesting a disjuncture between planning activities and organizational communication. Policy forum participants emphasized that in the future, nurses and other health care first responders would be a valuable source of information to guide decision-making, particularly when epidemiologic data were

limited. In sum, they noted that communications need to be bidirectional between management and front-line first responders and receivers.

Minimizing Social Exclusion

An unfortunate side effect of the SARS crisis was the stigmatization of nurses. The stigma reported by some nurses in focus groups and the survey included those living in regions without active cases.

Isolation, abandonment – friends, family, bus passengers, coworkers, community, management – it’s like the plague, like a mark on your door, because everyone in the neighbourhood knows you work at the hospital.

It can strain relationships. People have different ways of dealing with stress... and your significant other may not want you around or be fearful of catching something from you, and that can include your children.

There is stigma from educated professionals – how can you expect compassion from general public if educated professionals don’t give you the respect?

Emerg nurses walked in and no one else would want to talk to them – co-workers stigmatized each other – moved to next table.

The participants of focus group discussions felt very strongly that sensationalism and media hype fuelled the fire of public panic and intensified the stigmatization of health care workers, a common perception in other communities experiencing SARS-related stigma (Lee et al, 2005).

During SARS, myths and untruths were felt to be feeding the stigma. [It is the] media’s responsibility to report good information and they could only report what they were getting, and we knew that information was coming from everywhere and they were just like us, trying to catch up everywhere.

Moving Forward: Promising Practices and Opportunities for Change

Nurses participating in the study voiced and highlighted concerns about surge capacity, infection control and risk communication practices in relation to their experiences of the SARS outbreak. After reviewing an earlier version of this research synthesis paper, policy forum participants emphasized that the resilience of our health care system to handle another infectious disease outbreak is challenged by two fundamental issues: lack of trust and the “leanness” of the system.⁵ The described lack of trust between front-line nurses and institutional management manifests itself in suspicion of communications from management. Policy forum participants emphasized that the leanness of the health care system has multiple manifestations, but important to this study are the resultant challenges for surge capacity and infection control.

Some policy forum participants emphasized that one cannot expect that the health care system will be able to provide all of the supports that may be desired. However, there was general consensus that there is both room and need for improvement within the current system.

Promising Practices

Several promising practices and opportunities for improvement were identified by the policy forum participants with respect to surge capacity, infection control and risk communication issues.

Federal and National Initiatives

Federal and national non-governmental initiatives and practices include these:

- In response to the informed expert opinion that the world is overdue for a pandemic influenza outbreak, the Public Health Agency of Canada, in conjunction with other federal and provincial governmental departments, is actively developing a national pandemic response plan, including surveillance and early detection networks, scientific research and public awareness campaigns.
- The national Health Emergency Response Teams (HERT) have been developed. These four teams are dispersed across the country with the capacity to respond to any type of emergency or disaster within 24 hours of a request. HERT will draw on a cadre of trained staff with a range of skill sets needed for establishing a mobile response (e.g. from electricians to health care workers to decontamination specialists). As part of this capability development, provincial licensure issues have been addressed to ensure health care workers in regulated professions are able to work outside of their province of licensure.
- The Public Health Agency of Canada has developed an online course for front-line health care workers to learn more about infectious disease control and the role of public health professionals in an outbreak. This course, expected to be launched in spring 2008, will be available to a range of health care professionals for continuing education credits.

⁵ The “leanness” is a reference to the substantial organizational restructuring, downsizing and merging common in the Canadian health care system since 1992, described succinctly by Burke and Greenglass (1999). The system now relies upon fewer health care professionals to handle similar or increased patient volumes.

- The Public Health Agency of Canada is currently developing a personal family preparedness guide, with plans to launch when the intended audience is receptive to the information (e.g. if human-to-human transmission of bird flu is discovered in Asia).
- The Department of National Defence has systems in place and experience with multiple strategies to support its military and civilian staff and their families in a crisis or in advance of deployment. As noted by a policy forum participant, DND is well situated to offer “lessons learned” about how to support those who put themselves in high risk situations. For example, individual staff develop comprehensive preparedness plans using a template, which is reviewed annually and before deployment to ensure information remains comprehensive, current and appropriate. When needed, financial resources are available for transporting dependents to extended family. Additionally, the DND has expertise in prevention and treatment of post-traumatic stress disorder.
- The Canadian Federation of Nurses Unions is a lead partner in multiple pilot projects aimed to improve recruitment and retention of nurses across the nation through the development of healthy workplaces. The pilot projects are designed to build upon stakeholder collaboration at the provincial level to address profession and province/region-specific issues through strategies such as continuing education, mentorship programs and staffing plans. When the pilots are completed, the Union will assemble and disseminate successful initiatives.
- The Canadian Council on Health Services Accreditation documents exceptional practices observed during accreditation visits and posts information on its website.

Provincial/Territorial Initiatives

- In 2006, the Quebec government collaborated with provincial health care licensure bodies in a survey of health care professionals to proactively determine their skill sets and willingness to respond in a pandemic influenza. Policy forum participants noted that provincial regulatory bodies for various professions are also well positioned to access this type of information from their membership and could take the lead in competency development within occupational groups.
- In Ontario, the WSIB and six Ontario medical colleges collaborate to ensure occupational health curriculum is included.
- The Ontario Health Plan for Pandemic Influenza (Ontario Ministry of Health and Long-Term Care, 2007) makes explicit the expectations on employers to ensure that engineering controls, administrative and work practices, personal protective equipment and other infection prevention and control measures are implemented. Some of the expectations address issues raised here, such as the inconsistent benefits for employees of varying employment status.

Institution and Community-Based Initiatives

Health care institutions and local community settings are where most of the problems identified by nurses occurred. These problems, noted consistently across provinces and institutions, suggest that limits are heavily influenced by external factors, such as financial resources given to health care organizations, the availability of HHR and government priorities. However, some promising practices were identified:

- Every hospital has a joint occupational health and safety committee. With specific guidance and supports, this committee was thought to be a good vehicle for implementing improvements in emergency management within health care institutions.
- All three hospital emergency plans reviewed for this project made some provision for increased staffing demands during an emergency. Strategies to do so include re-prioritization of health services and diversion of staff from non-essential or elective services. The plans recommended identifying the skill sets of employees during the pre-pandemic period to determine redeployment eligibility and identifying gaps in critical skills such as infection control protocols.
- In SARS hospitals, employee assistance programs provided counselling and related services 24 hours a day, 7 days a week during the outbreak.
- In the 2003 heat wave, the City of Ottawa implemented cooling stations for elderly people. The program used “bottom up” communication mechanisms to hear directly from elderly persons about what supports or services would increase their usage of the cooling stations. As a result, the cooling stations offered comedy films and arranged transportation services. A policy forum participant knowledgeable about the program noted that it was very successful, offering the story as an example of ensuring that communication mechanisms exist to gather and respond to the perspectives of those who are at the centre of policies and programs.

Opportunities for Change

Federal and National

Policy forum participants, many of whom work for the federal government and health-related non-governmental organizations, articulated a clear need for a strong federal vision for emergency preparedness, to ensure that there is consistency of expectations and equitable, adequate distribution of resources allotted to health care system preparedness across provinces and territories.

- The federal government is well positioned to develop a more comprehensive toolbox for preparedness planning for multiple levels of decision-makers. Pilot projects to test various methods for implementation of system improvements in disaster management, funded by federal departments, would assist further development of the “toolbox”. The Expert Group on Emergency Preparedness and Response (of the Pan-Canadian Public Health Network) and the Council of Health Emergency Management Directors are both federal/provincial/territorial working groups that would be in a position to move this idea forward.
- The Public Health Agency of Canada’s online infectious disease education course currently excludes all nurses other than nurse practitioners. The adaptation of this course to meet the educational needs of front-line critical and emergency care nurses could ensure consistency of education.

Non-governmental agencies emerged as having an important role in improving the current system.

- The Canadian Council on Health Services Accreditation could expand their accreditation standards to include more about emergency and disaster management (such as evidence of periodic practice drills for disaster scenarios or development of risk communication skills in leadership).
- Pan-Canadian union organizations and occupational organizations (e.g. the Canadian Federation of Nurses Unions and the Canadian Nurses Association) are well positioned to communicate with professional members about the occupational health and safety legislation that limits their right to refuse dangerous work. As was highlighted by policy forum participants, it seems that some nurses and other professionals are unaware that their occupational rights are limited.

Provincial/Territorial

Policy forum participants noted the need and potential benefit for more collaborative discussion with partners from federal and other provincial and territorial governments.

- Group mechanisms already in place, such as the Federal/Provincial/Territorial Expert Group on Emergency Preparedness and Response and the Council of Health Emergency Management Directors, are well positioned to take a leadership role in the HHR side of emergency preparedness. Such a discussion would ensure that the tough questions are answered regarding issues such as developing better real-time communication and information retrieval systems, access to antiviral and equipment stockpiles and cross-jurisdictional professional regulations and would allow cross-fertilization of emerging best practices.
- A policy forum participant suggested that some of the concerns regarding the limited right to refuse dangerous work, applicable to those employed by health care institutions, could be clarified through similar mechanisms used to address concerns about HIV in the past. With the emergence of HIV in the 1980s, many health care employers were accused of not providing safe work environments. Lack of information and misinformation were central to these accusations. Educational initiatives, rolled out through appropriate programs and specific to provincial legislation, successfully addressed these issues.
- Universities that educate the next generation of health care professionals have a great ability to influence the preparedness of these future workers. Education about infectious disease and chemical, biological, radiological and nuclear accidents and attacks needs to be emphasized in the curriculum of Canadian nursing, medical and health professional schools. The WSIB-Ontario medical colleges collaborative model could be expanded, modified or duplicated to ensure that occupational health and safety content about infectious disease, natural disasters and CBRNE events is delivered to medical and nursing students.

Institutional and Community

With appropriate federal and provincial supports and resources, it is institutions and communities that will need to address the informational, instrumental and emotional support needs of health care workers in the next infectious disease outbreak. Nurses, policy forum participants and the literature all support a proactive approach to putting such supports in place.

Appendix A provides the checklist this study used to assess existing emergency plans, based on a comprehensive literature review and focus group findings. However, practice with unfamiliar procedures and protocols is more valuable for enhancing health care worker knowledge of disaster protocols than the existence of emergency plans (Bartley, Stella and Walsh, 2006). Nurses do not perceive that they are prepared to manage many potential disasters, whether of accidental, natural or intentional origins. On a related note, the redeployment strategies of hospitals noted in their emergency plans are encouraging but fail to address the training needs of those being redeployed. A combination of specific training and institutional level practice would address these concerns.

Emergency drills allow practice and repetition of core skills and more importantly, create opportunities to identify strengths and gaps in competencies and planning. The possibility exists that nurses are underestimating their current knowledge, but that can only be known through training and evaluation, and the experience of a practice drill may improve their confidence in existing personal skills as well as leadership. Summary reports of prior drills can also inform hospital emergency plans and decisions regarding all aspects of preparedness, from staff redeployment to communication systems to stockpiling and storage requirements (Bartley, Stella and Walsh, 2006). By making periodic disaster drills a central component of emergency preparedness, hospital administrators can identify potential issues, develop contingency plans and ultimately improve disaster response competence and capacity. In the experience of DND, table top drills⁶ are a first step in testing plans and leadership; once leaders are ready, larger-scale disaster drills create opportunities to further assess the strengths and weaknesses of the existing plan and enhance confidence. Such drills may also provide an opportunity to introduce the concept of family care plans, stress the need for risk communication skill development among those in leadership and engage community sectors to explore resources for the support of health care workers responding to a disaster.

⁶ Tabletop drills are a facilitated group exercise where decision-makers and representatives from various departments within an organization, or across the spectrum of emergency response organizations, work through a hypothetical emergency situation. Such drills test existing operational plans, identify problems and start a problem-solving process.

Conclusion

Mitigation of public health disasters is an incredibly complex task that requires the cooperation and collaboration of multiple governments, jurisdictions, regulatory bodies and organizations. Not all situations are preventable and thus our systems need to be prepared to minimize the impacts and damage caused by both intentional and unintentional disasters. Stakeholders in emergency response include law enforcement, the armed forces, all levels of government, health care workers and their organizations, academic researchers and many others.

Within health care institutions, construction of a sound emergency response plan involves conducting a thorough assessment of existing physical, human and support resources, estimating the demand for resources in the event of a disaster and determining the most effective and efficient way to bridge the gap. Canada has made admirable progress in securing and stockpiling supplies of antiviral drugs and personal protective equipment. A significant investment has also been made to assemble fully equipped and strategically located mobile treatment units across the country. Canadian hospitals and regional health authorities are currently developing and/or enhancing institutional emergency plans, human resource recruitment strategies and policies for the efficient delivery of critical and emergency care services. However, the results of this research project indicate that most plans to date have overlooked the role of health care worker resilience and well-being as a key element of health services delivery. We argue that the provision of instrumental, emotional and informational supports to front-line workers is a fundamental prerequisite, one that is necessary to preserve public health and well being during a crisis.

Stress is a well-known determinant of physical and psychological health and resilience. Disaster events greatly increase occupational stress, often creating confusion with respect to treatment protocols. In turn, this uncertainty and lack of clarity can precipitate disruption of the usual chain of command. Many front-line nurses do not perceive being adequately trained or prepared to respond to public health disasters, particularly large-scale outbreaks. Training and practice help reduce some degree of uncertainty. Unfortunately, the inability to access appropriate training and practice was noted frequently by participating emergency and critical care nurses. In addition, a lack of access to trustworthy information, particularly in quarantine situations, added to their experiences of stress during the SARS crisis.

Traditional gender roles and work/life conflict emerged as significant and often overlooked determinants in health care worker resiliency. The vast majority of health care providers are women, and many are partly or wholly responsible for the care and needs of dependent children and aging parents. As our study demonstrates, the clash of work and family obligations is a significant source of stress for nurses, and the struggle to meet competing demands often leaves workers feeling ignored, exhausted and burned out.

Many nurses in the study questioned the readiness of the health care system to respond to the next disaster. The weaknesses and gaps in critical human resource support mechanisms identified during this study revealed the instability of the health care system during outbreaks and other crises. Some promising practices have emerged at federal, provincial/territorial and institutional levels, but gaps persist that will no doubt weaken our health care system's ability to

effectively and efficiently manage surge capacity, infection control and risk communication abilities. By preparing health care workers for a crisis or disaster through the provision of familial support, well-communicated risk information and adequate training/preparation, Canada's surge capacity and infection control will be vastly improved. We call upon governmental and non-governmental bodies to realize a shared vision in which Canada's health care workforce will have the array of instrumental, emotional and communication supports that they need to fulfill their jobs during an emergency.

We recognize that this project, like many short-term research projects, has several limitations:

1. While the majority of health care professionals are women, it is notable that there is great variation by occupation. For example, according to CIHI (2007), women make up over 90% of the nursing workforce but only 30% of the physician workforce. Hence, the findings of our study that highlight the need for supports that respond to women's traditional gender roles within families may not be transferable across all occupational groups.
2. Not all governmental departments (e.g. Public Safety Canada) or non-governmental organizations working in this field (e.g. Canadian Healthcare Association) participated in the policy forum. Representatives from these sectors were invited but declined to participate. Thus, our "promising practices" section is limited to initiatives known to the policy forum participants.
3. Although the survey included a small number of male nurses as well as nurses in the military, we believe that these are populations deserving of additional research.

In spite of these limitations, the survey and focus groups had notable triangulation in the findings, and policy forum participants noted that the issues reported by nurses in the study were consistent with those of other national data sets or studies inclusive of physicians, managers and auxiliary health care workers.

In summary, disaster planners have a challenging job ahead to incorporate the operational needs specified by the provincial and national preparedness plans and to address the personal and professional needs of individual health care workers. The authors acknowledge the complexity of this task when human and financial resources are already stretched paper-thin. However, despite the limitations on resources, the well-being of health care providers must be brought to the forefront and treated as a priority. Augmented instrumental, informational and emotional support mechanisms that acknowledge traditional gender roles and work/family conflict as determinants of health care worker resiliency are urgently needed to counterbalance the negative impact of occupational stressors. By addressing these gaps, health care and public health systems can demonstrably improve surge capacity and infection control during public health disasters. It is up to health care leaders and policy-makers to endorse and make possible the support mechanisms and systems that will promote good health and resilience among front-line health care workers. This is necessary so that, when called upon to respond to a crisis, our health care workers are ready, willing and able to support the health of the Canadian population in their roles of first receivers and first responders. If we fail to take care of our front-line workers, there may not be anyone to take care of us.

References

- Amaratunga, C.A., T.L.O'Sullivan, K.P.Phillips, L.Lemyre, E.O'Connor, D.Dow, et al. 2007b. "Ready, Aye Ready! Support Mechanisms for Health Care Workers in Emergency Planning: A Critical Gap Analysis of Three Hospital Emergency Plans." *Journal of Emergency Management* Vol.5, No.4: 23-38.
- Bartley, B.H., J.B.Stella, and L.D.Walsh. 2006. "What a Disaster?! Assessing Utility of Simulated Disaster Exercise and Educational Process for Improving Hospital Preparedness." *Prehosp Disaster Med* Vol.21, No.4: 249-255.
- Burke, R.J., and E.R.Greenglass. 1999. "Work-Family Conflict, Spouse Support, and Nursing Staff Well-Being During Organizational Restructuring." *Journal of Occupational Health Psychology* (Special Issue: Relationship Between Work and Family Life) Vol.4, No.4: 327-336.
- .CIHI [Canadian Institute for Health Information]. n.d. *Registered Nurses, 2005*. Ottawa: CIHI. Retrieved January 14, 2008, from http://secure.cihi.ca/cihiweb/disPage.jsp?cw_page=nursing_profiles_registered_2005_e
- CIHI [Canadian Institute for Health Information]. 2006. *RNDB Supply Statistics 2006: # Percentage Distribution of RN Workforce Employed in Nursing by Urban/Rural/Remote/Territories Location of Residence and Province/Territory of Registration, Canada, 2006*. Ottawa: CIHI. Retrieved January 14, 2008, from http://secure.cihi.ca/cihiweb/disPage.jsp?cw_page=statistics_results_topic_nurses_e&cw_topic=Health%20Human%20Resources&cw_subtopic=Nurses.
- .CIHI [Canadian Institute for Health Information]. 2007. *Canada's Health Care Providers, 2007*. Ottawa: CIHI. Retrieved December 10, 2007, from http://secure.cihi.ca/cihiweb/disPage.jsp?cw_page=AR_35_E.
- Department of Public Policy, Canadian Nurses Association. 2006. *RN Workforce Profiles by Area of Responsibility: Year 2005*. Ottawa: Canadian Nurses Association. Retrieved January 14, 2008, from www.cna-nurses.ca/CNA/documents/pdf/publications/RN-Specialty-Profiles-2005-e.pdf.
- Earvolino-Ramirez, M. 2007. "Resilience: A Concept Analysis." *Nursing Forum* Vol.42, No.2: 73-82.
- Heaney, C.A., and B.Israel. 2002. "Social Networks and Social Support." In K.Glanz, B.K.Rimer and F.M.Lewis (eds.). *Health Behavior and Health Education: Theory, Research, and Practice* (3rd ed.). San Francisco: Jossey-Bass, Inc.

- Kirby, M. 2003. *Reforming Health Protection and Promotion in Canada: Time to Act. Report of the Standing Senate Committee on Social Affairs, Science, and Technology*. Ottawa: Government of Canada. Retrieved August 8, 2007, from www.parl.gc.ca/37/2/parlbus/commbus/senate/com-e/soci-e/rep-e/repfinnov03-e.pdf.
- Krewski, D., V.Hogan, M.C.Turner, P.L.Zeman, I.McDowell, N.Edwards, et al. 2007. "An Integrated Framework for Risk Management and Population Health." *Human and Ecological Risk Assessment* Vol.13, No.6: 1288-1312.
- Krewski, D., L.Lemyre, M.C.Turner, J.E.C.Lee, C.Dallaire, L.Bouchard, et al. 2006. "Public Perception of Population Health Risks in Canada: Health Hazards and Sources of Information." *Human and Ecological Risk Assessment* Vol.12, No.4: 626-644.
- Lee, S., L.Y.Y.Chan, A.M.Y.Chau., K.P.S.Kwok, and A.Kleinman. 2005. "The Experience of SARS-Related Stigma at Amoy Gardens." *Social Science and Medicine* Vol.61, No.9: 2038-2046.
- Naylor, D., S.Sasrur, M.Bergeron, R.Brunham, D.Butler-Jones, G.Dafoe, et al. 2003. *Learning From SARS: Renewal of Public Health in Canada*. (No.344). Ottawa: Health Canada.
- Ontario Ministry of Health and Long-Term Care, Emergency Management Unit. 2007. *Ontario Health Plan for a Pandemic Influenza*. Toronto: Ontario Ministry of Health and Long-Term Care. Retrieved January 14, 2008, from www.health.gov.on.ca/english/providers/program/emu/pan_flu/ohpip2/plan_full.pdf.
- O'Sullivan, T.L., C.A.Amaratunga, J.Hardt, D.Dow, K.P.Phillips, and W.Corneil. 2007. "Are We Ready? Evidence of Support Mechanisms for Canadian Health Care Workers in Multi-Jurisdictional Emergency Planning." *Canadian Journal of Public Health* Vol.98, No.5: 358-363.
- Public Health Agency of Canada. 2006. *The Canadian Pandemic Influenza Plan for the Health Sector. Annex D: Recommendations for the Prioritized Use of Pandemic Vaccine*. Retrieved June 28, 2007, from www.phac-aspc.gc.ca/cpip-pclcpi/ann-d_e.html.
- Resilience Alliance. 2007. *Resilience*. Retrieved June 4, 2007, from www.resalliance.org/576.php.
- Shaw, K. 2006. "The 2003 SARS Outbreak and Its Impact on Infection Control Practices." *Public Health* Vol.120: 8-14.
- Shields, M. and K.Wilkins. 2006. *Findings From the 2005 National Survey of the Work and Health of Nurses*. Statistics Canada Catalogue No.83-003-XPE. Ottawa: Minister of Industry; Canadian Institute for Health Information; Health Canada. Retrieved February 2, 2007, from http://secure.cihi.ca/cihiweb/disPage.jsp?cw_page=AR_1588_E&cw_topic=1588.

Sibbald, B. 2003. "Right to Refuse Work Becomes Another SARS Issue." *CMAJ Canadian Medical Association Journal* Vol.169, No.2: 141.

World Health Organization. 2002. *Gender and Health in Disasters*. Geneva: World Health Organization. Retrieved March 3, 2005, from www.who.int/gender/other_health/en/genderdisasters.pdf.

Yassi, A., E.Bryce, and D.Moore. 2004. *Protecting the Face of Health Care Workers: Knowledge Gaps and Research Priorities for Effective Protection Against Occupationally-Acquired Respiratory Infectious Diseases*. Vancouver: Occupational Health and Safety Agency for Healthcare in BC. Retrieved April 17, 2007, from http://control.ohsah.bc.ca/media/Protecting_Faces_Final_Report.pdf.

Appendix A. Checklist for Institutional Emergency Plan Gap Analysis

The following points compose a checklist of essential supports for health care workers (HCWs) serving as first responders during an infectious disease outbreak. This checklist is based on a review of existing literature and empirical evidence from focus groups with emergency and critical care nurses, nursing managers and union representatives. These 12 items, along with their subcategories, are important elements for institutional pandemic influenza planning to ensure that HCWs are equipped with the supports necessary to enable them to report to work and perform their roles as first responders and caregivers during a large-scale infectious disease outbreak.

1. Personal Protective Equipment (PPE) and Uniforms
 - a. Provision of appropriate equipment and uniforms (scrubs)
 - b. Maintenance of equipment
 - c. Laundering of uniforms
 - d. Fit testing (no acceptable failures)
 - e. Enforcement of PPE procedure compliance
 - f. Information on PPE limitations
 - g. Training for proper donning and removal process
 - h. Regular practice of routine and special tasks while wearing PPE
2. Education Program for All Staff Regarding Emergency Plan
 - a. Clarification of roles and responsibilities
 - b. Scheduling of training and mock drills/scenarios
 - c. Plan for redeployment of eligible staff
 - d. Clarification of chain of command (military, managers, union, etc.)
 - e. Plan to update procedures annually
 - f. Clarification of rights (right to refuse work, certain duties, etc.)
 - g. Compliance policies for all staff (culture of reporting)
3. Informational Support
 - a. One designated source of information for procedures and infection control guidelines
 - b. Access to Internet and phones at work
 - c. Continual access to infection control guidelines via intra/internet
 - d. Hard-copy distribution of guidelines in absence of internet in advance of the outbreak
4. Quarantine
 - a. Physical needs (food, transportation, child/elder/pet care, medication, equipment)
 - b. Emotional needs (contact with family members, updates on outbreak status)
 - c. Protocol for levels of quarantine (can they work, do they have to stay home, not contact, some contact)
 - d. Information package on the length of quarantine, restrictions on activity, consequences of breaching quarantine (agency nurses included)
 - e. Financial compensation (programs) if HCWs or their spouses are unable to continue to work while they are quarantined

5. Emotional/Psychological Support
 - a. Access to grief counselling as needed
 - b. Pastoral services / spiritual services
 - c. Psychological services
 - d. Program for re-integration into daily life post-pandemic
 - e. Counselling for post-traumatic stress disorder (PTSD)
 - f. Counselling to help with depression, anxiety, burnout, ethical dilemmas for treatment of patients, family discord brought on from the effects of the outbreak
6. Management Responsibilities
 - a. Plan to make management visible and accessible (office hours)
 - b. Plan to integrate people into management who possess an expertise in infectious diseases
 - c. Implement strategies to manage workloads
 - d. Encourage and support workers to devise a family emergency plan
 - e. Support nurses in difficult clinical decision-making
7. Human Resource Policies Focused on Managing Worker Fatigue/Stress
 - a. Modifying scheduling (i.e. shorter shifts when HCWs must use full PPE)
 - b. Shorter intervals between breaks
 - c. Surveillance system to monitor coworkers for exhaustion, burnout, PTSD
8. Instrumental Supports
 - a. Adequate supplies, isolation rooms, negative pressure rooms
 - b. Security in ER – protocol for visitors, hours, number restrictions
 - c. Provision of food and water for HCWs who are unable to leave their workstations
 - d. Out-sourcing child/elder/pet care, housekeeping, transportation, shopping, meal delivery and preparation, etc.
 - e. Stricter screening procedures at patient intake
9. Vaccination plan / Antiviral Therapy Plan
 - a. Details of priority groups listed including rationale for prioritization
 - b. Issue of family vaccination adequately addressed
10. Recognition/Compensation
 - a. Mechanism for recognizing and rewarding efforts of nurses during outbreak
 - b. Fair and appropriate compensation for work with potentially exposed and infected patients (e.g. danger pay)
 - c. Provision of health benefits for all workers during pandemic (including casual, agency and part-time and temporary nurses)
 - d. Family assistance with finances, job security for spouse if he/she has had to take extended time off work due to increased workload or quarantine of HCW

11. Media Strategy
 - a. Single designated spokesperson who is knowledgeable, trustworthy
 - b. Strategies to reduce stigmatization of HCWs (e.g. informing public, emphasis on the important role of HCWs, recognizing principles of risk perception and perceived threat)
 - c. Avoiding sensationalism

12. Professional Development and Training
 - a. Encouraging professional development and providing support to facilitate participation
 - b. Financial compensation
 - c. Scheduling training and professional development opportunities at a variety of times; providing paid time off for HCWs to attend professional development sessions (e.g. so they do not have to attend only on their days off)
 - d. Planning to keep infection control procedures fresh and current



Canadian Policy Research Networks – Réseaux canadiens de recherche en politiques publiques

214 – 151 Slater, Ottawa, Ontario K1P 5H3

613-567-7500 www.cprn.org