Public Health Nurses' Experiences during the H1N1/09 Response

By:

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Abstract

The H1N1/09 (sub-type A) virus was declared to be a pandemic influenza on June 11th, 2009. In response, Canadian public health agencies planned mass vaccination clinics to protect the public. However, little information existed to aid in the planning of mass vaccination clinics, as they had not been used in previous pandemic flu outbreaks. This was further complicated by fear of a limited vaccine supply and nurse shortages. Public health nurses (PHNs), as the largest group of public health professionals were pivotal in implementing the mass vaccination clinics. Yet, the available evidence indicated that PHNs involvement in H1N1/09 response planning was limited and their experiences on the frontline in the mass vaccination clinics were not well understood. The purpose of this study was to give PHNs' a voice to describe their experiences in the H1N1/09 mass vaccination clinics.

A framework based on Foucault's concepts of knowledge, power, and resistance was developed as the theoretical lens to guide the research. Using an interpretive descriptive methodology, a purposeful sample of 23 PHNs (16 front-line immunizers, seven clinic supervisors) participated in semi-structured interviews. Four pandemic planning documents containing policies in place during the pandemic outbreak were also reviewed to provide context to participants' experiences. Interpretive descriptive analysis was used to analyze the interviews and pandemic documents. Guba and Lincoln's (1994) trustworthiness framework was implemented to evaluate the rigour of the study's findings.

Two overall core themes emerged to describe participants' experiences. The core theme 'the necessity of knowledge', illustrated participants' feelings of unpreparedness entering into the H1N1/09 clinics. Limited notice of the pandemic response, uncertainties regarding the clinics' anticipated timeframe, and a lack of knowledge on vaccination and clinic management,

contributed to a loss of power in the participants' role. In the second core theme 'essential supports in protecting the population', many perceived a lack of agency support when they tried to exercise power in their clinical practice. Although participants did not refuse to immunize in, or supervise, the mass vaccination clinics, participants at times did display subtle resistance. Insights gained from participants' experiences have implications in terms of public health nursing administration, practice, research, and education. A key recommendation is to involve PHNs in future pandemic planning to optimize mass vaccination clinics' operations. If this cannot happen, PHNs should at least be informed of the disciplinary discourse utilized to guide clinical decisions. This will help nurses be supported in their own pandemic roles and contribute to the provision of quality population care.

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*For Rita, my beautiful mother- an amazing woman who personified endurance, love, persistence,
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Glossary

Active Immunity: The production of antibodies against a specific disease by the immune system. It can be acquired through actually having the disease, or through vaccination, and is usually permanent (Centers for Disease Control and Prevention [CDC], 2015a).

Adverse Event: Any undesirable experiences occurring after immunization that may or may not be related to the administered vaccine (CDC, 2015a).

Antibody: A protein found in the blood that is produced in response to foreign substances (i.e. bacteria or viruses) invading the body. They protect the body from disease by binding to these organisms and destroying them (CDC, 2015a).

Anti-virals: Prescription medications that are taken orally, or via an inhaler, that reduce influenza symptoms, shorten the illness duration, and decrease the risk of serious complications. It does this by destroying, or weakening the virus (CDC, 2015a; Public Health Agency of Canada [PHAC], 2012).

Epidemic: A disease occurrence within a specific geographical area, or population, that is in excess of what is normally expected (CDC, 2015a).

Herd Immunity or 'community immunity': A situation in which a sufficient proportion of a population is immune to an infectious disease (through vaccination and/or prior illness) to make its spread from person to person unlikely. Even individuals not vaccinated (such as newborns and those with chronic illnesses) are offered some protection because the disease has little opportunity to spread within the community (CDC, 2015a).

Immunity: An individual's protection against a disease that is indicated by the presence of antibodies in the blood. There are two types: active and passive immunity (CDC, 2015a).

Immunization: The process by which a person becomes protected against a disease.

Immunizations are most commonly administered by needle injection however they can be given by mouth or aerosol. This term is often interchanged with vaccination (CDC, 2015a).

Incidence: The number of disease cases in a population over a defined period of time (European Centre for Disease Prevention and Control [ECDC], 2015).

Incident Management System (IMS): An international emergency protocol adopted as the operational framework for emergency management for the Ontario government. It provides basic command structure and functions required to manage an emergency situation effectively. It is the structure implemented in Ontario during pandemic influenza (Ministry of Health and Long Term Care [MOHLTC], 2010).

Influenza or 'the flu': A highly contagious viral infection of the nose, throat, and lungs. It is characterized by sudden onset of fever, severe aches and pains, and inflammation of the mucous membrane. It is normally caused by Influenza 'A' or Influenza 'B' sub-type viruses. It is diagnosed by a nasopharyngeal/nasal swab, or blood test, such as a viral culture or rapid antigen testing (CDC, 2015a; Government of Canada, 2015).

Outbreak: A disease outbreak is the occurrence of cases of disease in excess of what would normally be expected in a defined community, geographical area or season. An outbreak may occur in a restricted geographical area, or may extend over several countries. It may last for a few days or weeks, or for several years (World Health Organization [WHO], 2016).

Pandemic: An epidemic that crosses international boundaries and impacts a large number of people (ECDC, 2015).

Pandemic Influenza: A flu virus that has sustained human-to-human transmission in at least three countries in two separate World Health Organization (WHO) regions. It spreads quickly, and can have devastating consequences as humans have limited to no natural immunity toward the virus (PHAC, 2008; WHO, 2010).

Passive Immunity: A person becomes protected against a disease by receiving the antibodies produced by another human or animal. It provides limited protection and usually diminishes over time; i.e. antibodies produced in a mother's breast milk that are passed on to the baby for the first four to six weeks of its life (CDC, 2015a).

Seasonal Influenza: A vaccine preventable disease that has limited spread to a specific community, city or country. It is genetically related to the influenza virus that has caused illness in the preceding years (CDC, 2015a; Potter & Jennings, 2011).

Susceptible: When an individual is unprotected against disease (CDC, 2015a).

Vaccination: The injection of a killed or weakened infectious organism in order to prevent disease. They are most commonly administered by needle injection, but can be given by mouth or aerosol. This term is often interchanged with immunization (CDC, 2015a).

Vaccine: A product that produces immunity, therefore, protecting the body from disease. They are administered through needle injections, by mouth and by aerosol (CDC, 2015a).

Virulence: The relative capacity of a pathogen/virus to overcome the body's defenses and cause infection (CDC, 2015a; Cox & Subbarao, 2000).

Chapter One- Introduction

This dissertation explores Canadian public health nurses' (PHNs) experiences working in the Pandemic H1N1/09 (sub-type A) influenza virus mass vaccination clinics as front-line immunizers and clinic supervisors. In this introductory chapter, a background is provided in the context of Pandemic H1N1/09 influenza. Specifically, the characteristics of pandemic influenzas, immunization and mass vaccination, pandemic influenza planning and the H1N1/09 response, and the roles of PHNs during the H1N1/09 response are discussed. The research problem is then identified, followed by a description of the research purpose, questions, and objectives. Lastly, I articulate my position and epistemic stance as the researcher.

Characteristics of Pandemic Influenzas

Pandemic H1N1/09 (sub-type A) virus was declared to be a pandemic influenza on June 11th, 2009 (World Health Organization [WHO], 2010a). Influenza, or the 'flu', is classified as pandemic when there is sustained human-to-human transmission of a new flu virus in at least three countries in two separate WHO regions (WHO, 2010a). Pandemic influenza is different from regular seasonal influenza because it has a brand new viral structure and has yet to be encountered by the population (Potter & Jennings, 2011). As such, pandemic influenza spreads quickly as humans have no immunity, or protection, against the virus (Public Health Agency of Canada [PHAC], 2008; Viboud et al., 2006; WHO, 2010a).

It is this lack of immunity to new pandemic influenza viruses that increases human-to-human transmission in otherwise healthy populations. This is different from those groups that are typically identified as "at risk" for seasonal flu such as the young (< 2 years), old ($\geq$ 65 years), and immune-compromised (Doshi, 2009; PHAC, 2009). Further, the development of multiple international travel routes allows for the ease of pandemic flu transmission amongst countries (Hargan, 2008; Tam, Sciberras, Mullington, & King, 2005). As such, pandemic influenza has a

greater societal impact than the seasonal flu, and can result in devastating consequences such as millions of deaths globally (Nordqvist, 2009; Potter & Jennings, 2011; Wu & Cowling, 2011).

Prior to H1N1/09, there had been only three pandemic influenzas of the 20th and 21st centuries: the Spanish flu of 1918, the Asian flu of 1957, and the Hong Kong flu of 1968 (Pascoe, 2006). While many years had passed since the last pandemic flu, scholars had predicted that another pandemic virus would infect the global population at a random time (Bishop, 2007; Larson, 2007; O'Connor, 2009; Pratt, 2009). The timing of a suspected fourth pandemic was difficult to determine because of the unpredictable nature of pandemic influenzas.

Also, it was difficult for scholars to estimate the impact of the 21st century's first pandemic flu (H1N1/09) (Devereaux, 2015). This is because the Spanish flu, the Asian flu, and the Hong Kong flu had varying morbidity and mortality rates (Pascoe, 2006; Trossman, 2009). At least 40 to 50 million people died as a result of the Spanish flu, while approximately two million and one million people died of the Asian flu and the Hong Kong flu, respectively (Ghendon, 1994).

Immunization and Mass Vaccination

Immunizations (or vaccinations), most often in the form of an injectable vaccine, offer biological protection against potentially deadly illnesses where individuals would otherwise have no defense (Kotalik, 2005; Pascoe, 2006). They protect individuals from contracting pandemic influenza and from developing its associated complications (Bonaccorsi et al., 2015; Malm et al., 2008; Pascoe, 2006). They also prevent virus transmission and consequently protect unvaccinated individuals. Vaccinations are the primary preventative health intervention in pandemic flu outbreaks. Unfortunately, the Spanish flu, the Asian flu, and the Hong Kong flu occurred at times when vaccinations were unavailable, or widespread administration of vaccines

were not implemented; leading to devastating consequences (Ghendon, 1994; Larson, 2007). The use of vaccines, albeit limited, for the Asian flu and Hong Kong flu, is believed to be the reason why these pandemic viruses had significantly lower mortality rates compared to the Spanish flu (Kotalik, 2005; Larson, 2007; Malm et al., 2008; Pascoe, 2006).

In times of infectious disease outbreaks, immunizations are often delivered through 'mass vaccinations'; that is the delivery of immunizations to large populations over a short period of time, usually outside traditional healthcare settings (Herman, McIntyre, & Pielak, 2006; WHO, 2016). Immunizations were available to protect citizens from the H1N1/09 virus, and mass vaccinations were conducted (Malm et al., 2008). In Canada, the nation's largest-ever mass vaccination effort was implemented and public health units immunized approximately 40 to 45% of the population against the pandemic flu (Beate et al., 2010; Scott, 2010). As a result, H1N1/09 had an estimated mortality rate of 428 deaths in Canada and 579 000 worldwide (Dawood et al., 2012; Scott, 2010). Indeed, these figures were less than the previous three pandemic influenzas and are mainly attributed to the accessibility of mass vaccinations (WHO, 2010b).

Pandemic Influenza Planning and the H1N1/09 Response

The importance of pandemic preparedness was emphasized by scholars after the Severe Acute Respiratory Syndrome (SARS) outbreak of 2003 (Larson, 2007; Liu & Liehr, 2009). Although SARS was neither a pandemic influenza nor was it responded to with vaccinations, it was a rapidly spreading virus that could lead to severe complications upon infection, including death (Holroyd & McNaught, 2008; Liu & Liehr, 2009). Many public health professionals believed that this infection outbreak provided a glimpse into how the population, and the health care system overall, could be affected by pandemic influenza (Holroyd & McNaught, 2008; Johnstone & Turale, 2014; Liu & Liehr, 2009; Rosella et al., 2013).

Because it had been over 40 years since the last pandemic flu, many citizens, including health care professionals and planners, were not familiar with the nature of pandemic influenzas, especially their impact on younger populations (Bourgeois et al., 2011). Further, an unprecedented amount of media coverage on H1N1/09 flu-related deaths, amplified the public's fear and their demand for vaccinations against the virus (Bourgeois et al., 2011; Kendal & MacDonald, 2010; Klaiman, O'Connell, & Stoto, 2013; Ministry of Health and Long Term Care [MOHLTC], 2010; Registered Nurses' Association of Ontario [RNAO], 2010; Rosella et al., 2013). As a result, public health agencies were pressured to rapidly implement clinics to immunize the population (Klaiman et al., 2013; RNAO, 2010; Rosella et al., 2013).

In Ontario, in response to emergencies such as a pandemic influenza, public health agencies use an Incident Management System (IMS) to coordinate emergency responses. The IMS provides a basic command structure to manage an emergency situation effectively (MOHLTC, 2010). Managers and other selected employees are assigned to authoritative positions to plan for an emergency response by taking into consideration a community's resources, hazards, and political climate (Hick et al., 2004). During H1N1/09, public health managers and human resources personnel were responsible for planning and implementing the H1N1/09 mass vaccination clinics (Rebmann & Wagner, 2009). Their tasks included securing adequate clinic locations, coordinating the delivery of vaccines and other supplies to these sites, and ensuring sufficient numbers of staff to vaccinate the population (MOHLTC, 2010; PHAC, 2010).

As mass vaccination clinics had not been used against pandemic influenzas before, planners had no precedent 'set' strategies to help them prepare for the H1N1/09 clinics (Ellingson, 2005; Klaiman, O'Connell, & Stoto, 2013; Larson, 2007; Patel et al., 2008). Public health planners within the IMS encountered challenges during pandemic planning as clinics were implemented on

a much larger community scale than seasonal flu clinics (Ellingson, 2005). In particular, the H1N1/09 clinics required more human and material resources, as a higher number of individuals needed to be vaccinated, than with the seasonal flu, to decrease the virus' spread (Hodge, 2014; PHAC, 2009).

Public health leaders within military-like IMS structures 'deploy' front-line staff to deal with emergencies using a top-down communicative approach (Hick et al., 2004). Indeed, the H1N1/09 response in Ontario was referred to as a 'deployment' as staff members were temporarily reassigned to different roles, at the same level, to assist with the pandemic mass vaccination clinics (MOHLTC, 2010). Management and planners communicated to front-line staff members, who were predominantly PHNs that they would be 'deployed' into the H1N1/09 mass vaccination clinics as immunizers or supervisors (MOHLTC, 2010; RNAO, 2010).

The Roles of the Public Health Nurse and the H1N1/09 Response

According to the Canadian Public Health Association (CPHA), public health is the "organized efforts of society to keep people healthy and prevent injury, illness and premature death. It is a combination of programs, services, and policies that protect and promote the health of all Canadians" (2010, p. 7). In 2007, it was estimated that approximately 53 404 (16%) of Canadian nurses worked in public health as registered nurses (RNs), licensed (or registered) practical nurses (LPNs), or nurse practitioners (NPs) (Underwood et al., 2009).

Despite the sizeable proportion of nurses who work in public health, there is no single unifying definition of a PHN. This is because the description and the roles of PHNs vary from one regional health authority to another, with similar programs often being identified differently (Curtis & Glacken, 2014; Underwood et al., 2009). Seemingly, the only consistent characteristic associated with being a PHN is an understanding that the title identifies a nurse who is employed

in a community setting, and who focuses on primary care for a population (Curtis & Glacken, 2014).

To practice in public health, Canadian PHNs are required to maintain competency in health promotion, disease and injury prevention, health protection, health surveillance, population health assessment, and emergency preparedness and response (CPHA, 2010). However, there are a multitude of programs within public health units where nurses can work to meet the goals of public health. As such, nurses often have the option to practice in an area that most appropriately corresponds to their own values, interests, and knowledge (SmithBattle, Drake, & Diekemper, 1997). This is of particular importance as some PHNs, while agreeing with the overall mandate of public health, may not be personally comfortable working in certain sub-specialties. For example, while some nurses thrive in performing well-baby check-ups, they may find it challenging to provide care in a sexual health centre. The presence of different public health workplaces allows for individual PHNs to have varying proficiencies and expertise (Kulbok, Thatcher, Park, & Meszaros, 2012).

Many nurses perceive that a career in public health has both professional and personal benefits. For example, it has been found that PHNs feel they have increased autonomy, control over practice, and a more manageable workload (Curtis & Glacken, 2014; Graham, Davies, Woodend, Simpson, & Mantha, 2011; Thurtle, 2005). Also, the regular daytime work hours that frequently accompany public health nursing positions has been shown to contribute to a nurse's desire to practice in public health (Thurtle, 2005). In some instances, experienced nurses may leave positions in acute care to work in public health, as they want to move away from providing direct patient care and shift work (National Advisory Committee on SARS and Public Health, 2005).

PHNs comprised the majority of healthcare providers responsible for running the H1N1/09 mass clinics and administering immunizations (Canadian Institute for Health Information [CIHI], 2013; RNAO, 2010). PHNs' roles included administering vaccines, monitoring clients for adverse reactions, mentoring inexperienced colleagues with vaccinations, communicating with the public, and supervising the overall clinics' operations (Charania & Tsuji, 2011; Long, 2013; RNAO, 2010). For PHNs to competently practice in their H1N1/09 deployment roles and for mass vaccination clinics to be effective, it was essential that front-line nurses were prepared (Long, 2013; Low & McGeer, 2010; RNAO, 2010). For this to happen anticipated pandemic response timeframes needed to be communicated to staff as soon as possible. This is to ensure that front-line nurses had time to access the knowledge they need to competently practice (Ives et al., 2009; Pearce et al., 2011).

Despite PHNs being the largest group of public health professionals working for public health agencies, and their essential role in the coordination of public health emergency responses (Gebbie, Merrill, & Tilson, 2002), existing evidence supports that front-line PHNs' were not involved in the planning of the H1N1/09 mass vaccination clinics (Long, 2013; RNAO, 2010). This is unfortunate as many PHNs have extensive experience from seasonal flu clinics, and some have experience with other types of public health emergencies (Johnstone & Turale, 2014; Trossman, 2009). Instead, those responsible for planning and implementing public health emergency responses traditionally tend to be non-nursing professionals with medical, health administrative, or infection control backgrounds (Rebmann & Wagner, 2009).

Statement of the Problem

Nurses, the single largest body of health care professionals, are directly impacted by the declaration of pandemic influenza, as they are required to implement front-line responses planned

by their workplaces (Braunack-Mayer et al., 2010; Ives et al., 2009). While general strategies appear consistent among pandemic planning documents, plans will vary across agencies, organizations, cities, and countries. This is because outbreak responses are determined by the context in which they are implemented and the overall goals of the specific organization (Hall, Moore, & Shiehl, 2012).

In public health, due to the varying types of organizational programs, PHNs, like nurses in other specialties, have specific expertise that corresponds to their regular roles. As a result of their placement within a specific program, PHNs may have little time to perform clinical skills associated with pandemic responses such as vaccination (Johnstone & Turale, 2014; Kulbok et al., 2012). Because pandemic influenzas are such rare occurrences, it provides nurses with limited opportunity to practice for mass vaccination response roles. However, in the case of a public health emergency, new and experienced nurses alike are aware that they will be expected to perform certain skills (SmithBattle, Diekemper, & Leander, 2004). Most nurses, however, expect to be provided with appropriate training to perform their assigned emergency roles safely and effectively (Ives et al., 2009; Johnstone & Turale, 2014; Meagher-Stewart et al., 2009).

During the H1N1/09 pandemic, not all of the PHNs who were deployed as immunizers and clinic supervisors necessarily had recent clinical or supervisory experience (RNAO, 2010). In some cases, it had been years since these nurses had administered a needle, reviewed clinic procedures and patient anaphylaxis, or had any direct contact with individual clients (Long 2013; RNAO, 2010). Increasing the demands on these nurses, mass vaccination clinics, the locations chosen to administer vaccinations to the population, were often in environments that were not optimal for ideal practice (Corley, Hammond, & Fraser, 2010; RNAO, 2010). For example, in order to serve the numbers of individuals to be immunized, mass vaccination clinics were often

sited in large recreational complexes and shopping malls (RNAO, 2010). These buildings provided a large enough space to accommodate citizens, but were not optimal for the delivery of health care services (RNAO, 2010).

Due to H1N1/09's decreased severity, the urgent need for pandemic preparedness seems to have dissipated (Thomas & Young, 2011). This is unfortunate, as it is difficult to predict the severity of any future pandemic (Kotalik, 2005). Prospective outbreaks could be very serious and continue to pose a substantial threat to individuals worldwide (Bennett & Carney, 2010; Kipnis, 2013; Michaelis, Doerr, & Cinatl, 2009; Wu & Cowling, 2011). Governments and public health agencies cannot assume that the next pandemic will be similar in virulence to H1N1/09. Instead, they must prepare and update pandemic emergency plans for worst-case scenarios (Wu & Cowling, 2011). Indeed, public health scholars stressed that when the first pandemic influenza of the 21st century did occur, implemented responses would need to be studied to help better inform future pandemic planning (Bishop, 2007; Coady et al., 2008; Summers, 2009; Trossman, 2009; Vessey & Turner-Henson, 2010). Therefore, it is essential for the H1N1/09 mass vaccination clinics to be investigated.

Specifically, research needs to be conducted on PHNs' experiences working in these H1N1/09 mass vaccination clinics as front-line immunizers and supervisors. By allowing these individuals the opportunity to discuss their H1N1/09 experiences, we can learn from a nursing perspective what PHNs need to function effectively in future pandemic mass vaccination clinics (Derpmann, 2011; Hall et al., 2012). In particular, by identifying PHNs' professional concerns, strategies can be developed to improve future mass vaccination environments and that support nurses in their roles and responsibilities (Bourgeois et al., 2011; Hodge, 2014; Trossman, 2009). Subsequently, future pandemics' mass vaccination clinics can be improved to potentially

contribute to increased population immunity, and reduced pandemic morbidity and mortality (Hodge, 2014; Michaelis et al., 2009).

It is particularly important to examine these PHNs' experiences as nurses' job dissatisfaction resulting from perceived negative professional experiences has been linked to organizational absenteeism, retention concerns, increased health care spending, and decreased client outcomes (Tullai-McGuinness, 2008). However, it has been found that nurses who are satisfied, and who have positive professional experiences, are able to practice more efficiently in their competency area (Meagher-Stewart et al., 2009). In addition, healthy work environments that support nurses, and that contribute to nurses' perceived positive experiences, are also correlated with improved population outcomes (Leiter & Spence-Laschinger, 2006).

Study Purpose, Research Question, and Objectives

The purpose of this research is to give PHNs a voice to describe their experiences working as clinic supervisors and front-line immunizers in the H1N1/09 mass vaccination clinics. The research question is: *What were public health nurses' experiences during the H1N1/09 response?* The objectives are: 1) To describe nurses' professional and personal experiences working during the H1N1/09 mass vaccination response; 2) To examine if nurses were affected by the communication of knowledge (or lack thereof) regarding the mass vaccination effort; and lastly, 3) To establish the organizational and socio-political context of PHNs' professional and personal environments while working during H1N1/09.

Situating the Researcher

As a first year Masters' of Science in Nursing (M.Sc.) student, I was assigned a clinical placement at a local public health agency. The objectives of the practicum were: 1) to develop a project plan in collaboration with a clinical preceptor and course professor; and 2) to participate

in a primary health care project that involved the assessment and synthesis of data, with the goal of developing policy recommendations for change. This clinical placement coincided with the declaration of H1N1/09 (sub-type A) influenza virus as a pandemic (WHO, 2010a). In order to protect the public effectively against this emerging virus, an immunization was developed and mass vaccination clinics were planned.

Once clinics were implemented, the agency's goal was to examine how the public was affected by the pandemic response and to develop knowledge that could assist in future pandemic planning of mass vaccinations clinics. In particular, the agency wanted to assess the clinics in terms of outcomes such as the speed at which immunizers were vaccinating, and the number of immunizations administered to the public. As a student with the agency's quality assurance team, I was assigned to collect this data by visiting each of the city's clinic sites.

When I arrived, I spent one to two hours documenting observations on clinic elements that impacted the client's experience of getting vaccinated. These observations included notes on clinic accessibility, parking availability and its cost to clients, presence of nearby public transportation, the existence of signs indicating the placement of a H1N1 clinic, waiting area arrangements for clients, and the number of staff present vaccinating. I also recorded details from informal conversations with clinic supervisors and immunizers on the clinic's overall operations. For example, we discussed how many clients attended the clinic, and how long these people waited for their vaccination. It was during these conversations that staff commented on how working in the mass vaccination clinics was affecting them professionally and personally.

I realized how important it was to understand PHNs' experiences beyond the number and speed at which mass vaccinations were given to the public, especially given the vital role PHNs played in implementing the clinics. As such, this prompted my interest in exploring PHNs'

experiences working during the pandemic response. Based on this experience, and my knowledge of public health nursing, my assumptions for this study were: 1) My personal experience impacted how I viewed PHNs' H1N1/09 experiences and contributed to my desire to give these nurses a voice; 2) PHNs work to promote and maintain the health of communities; 3) PHNs work in a variety of settings; 4) PHNs have different knowledge, experience, and skill-sets; 5) PHNs may have not felt prepared (and/or may not have had the knowledge) to assume their roles as immunizers and supervisors in the H1N1/09 clinics; and lastly, 6) Managers and planners (individuals in the IMS) had easier access to the information, or knowledge, that provided the basis for the mass vaccination clinics.

Epistemic Stance

I valued the evaluation that the public health agency was conducting as important. However, I realized that further investigations into this pandemic response would be required to develop nursing knowledge. In particular, this was because I felt that PHNs were verbalizing issues that the organization did not seem to have accounted for within its original evaluation. I appreciated that, as a discipline, nursing cannot limit research to only client outcomes resulting from instituted procedures, potentially based on the reality of only one pre-determined group within the organization. Multiple perspectives, including those of the front-line workers, must be examined to determine the effectiveness of implemented mass vaccination plans, especially, as this was the first ever pandemic influenza responded to with mass vaccinations. As a result of how I see the world, and specifically my view of the H1N1/09 response, I am situated within the critical theory paradigm (Guba & Lincoln, 2005). This paradigmatic placement influenced how I conducted my research study, and how I approached my project's research question and overall objectives.

Critical Theory, developed in 1923, was initiated as a critical response to the works of Kant, Marx, Hegel, and Weber (Nielson, 1992; Welch, 1999). It aims to recognize, and explore, the subjective forms of realities that could not be adequately examined by pre-existing empirical methods that measure one absolute 'truth' (Nielson, 1992; Welch, 1999). Ontologically, critical theory asserts that there is more than one unfixed reality (Guba & Lincoln, 2005). These realities are determined by individuals, situated historically, and shaped by different cultural, economic, and political factors (Guba & Lincoln, 2005; Kincheloe & McLaren, 1998). If such elements were different in one form or another, so would the resulting societal realities. Thus, critical theory rejects the notion of any one reality as universal 'truth' and its crystallized structures to be 'real' (Guba & Lincoln, 2005; Morrow, 1994).

Existing realities, and the factors that affect them, are often proposed to be heavily influenced by powerful individuals who have special interests, and who have the means necessary to propagate these interests' existence (Alvesson & Skoldberg, 2000; Lupton, 1995). As such, critical theory approaches attempt to challenge any assumptions that potentially persist in perpetuating the status quo of any elitist 'real' structure (Dallmayr, 1976; Sumner, 2003). It necessitates that individuals, particularly researchers, accomplish this by questioning whose interest the current dominant reality serves (Sumner, 2003). This can be done by examining structures that may be oppressive to certain individuals, or groups, within society (Guba & Lincoln, 2005). Upon discovery of key concerns, critical theorists attempt to use their work as a form of social criticism, with the aims to be emancipatory, transformative, and provide restitution for these specific individuals when necessary (Guba & Lincoln, 2005; Kincheloe & McLaren, 1998; Nielson, 1992; Sumner, 2003).

As a result of their ontological positioning, critical theorists epistemologically conceptualize knowledge, like reality, to be dynamic and changing. Knowledge is thought to be a series of structural thoughts, or insights that are historically based and that evolve over time (Guba & Lincoln, 2005). To be “critical” in the creation of knowledge, it is necessary for investigators to permeate the historical and cultural background of the individual whose experience is being examined (Welch, 1999). This is important as the individual’s perceived meaning and significance of the experience will subsequently impact the knowledge that is developed (Campbell & Bunting, 1991).

Critical theorists engage in knowledge development by interacting with another individual, and exploring the experience, or phenomena, under study through transactional and subjective processes (Guba & Lincoln, 2005). However, they are careful to recognize that although individuals may experience a similar situation, they may not perceive this experience in the same way, as reality is subjectively and individually created (Guba & Lincoln, 2005). The values and the perceptions of the investigator, and those of the individual being examined, influence any dialogue and overall investigation findings (Dallmayr, 1976; Guba & Lincoln, 2005). There is no production of an overall ‘true’ account about an experience because if the investigator or subject, were another person with different values, this would impact the overall knowledge developed (Sumner, 2003).

Within professions, critical theorists make every effort to investigate the *individual* experiences of front-line staff to highlight potential issues of concern that need to be addressed in future similar professional scenarios (Kincheloe & McLaren, 1998). Researchers are encouraged to be within the discipline that they are exploring, as this will help in their investigation of workplace issues that are relevant to other employees (Kincheloe & McLaren, 1998). In fact, this

location of researcher within the profession has been discussed as a key strategy for critical nursing knowledge development (Mill, Allen, & Morrow, 2001; Ray, 1992; Wells, 1995). Also, being in the discipline allows the researcher awareness on how to investigate the social, cultural, and political conditions that shape the dominant discourses of the profession (Holmes & Gastaldo, 2002; Ray, 1992). As the disciplinary-based critical theory investigator is thought to be closer to the concerns and nature of the work, findings will be produced that more appropriately fit the profession (Mill et al., 2001). By cooperatively engaging with other practitioners, knowledge is then created that can help transform nursing practice to better meet the needs of the discipline and the population (Guba & Lincoln, 2005; Kincheloe & McLaren, 1998; Ray, 1992; Wells, 1995).

I used an interpretive descriptive approach to explore and describe PHNs' H1N1/09 experiences, with a critical Foucaudian Power-Knowledge-Resistance conceptual framework. This framework guided the interpretive descriptive analysis by providing a theoretical lens to illustrate PHNs' experiences working in the H1N1/09 mass vaccination clinics. For example, I examined to see if the concepts of knowledge, power, and resistance were evident in these individuals' deployment experiences. With this, my intention was to increase awareness of the PHNs' experiences and the issues they had while working front-line in the Pandemic H1N1/09 mass vaccination clinics. My critical theory epistemic stance, along with the chosen research methodology and conceptual framework, informed the developed interview guide. This allowed PHNs to be active participants and share their unique realities that may otherwise not be heard.

Thesis Outline

In this chapter, the background to the study and the statement of the problem are outlined. The rationale for exploring PHNs' experiences working in the H1N1/09 mass vaccination clinics

is also described. Chapter Two includes a review of the literature on the nature of pandemic influenza (in Section One). In Section Two of this chapter, a critical analysis of the literature on nurses' experiences working front-line during pandemic influenzas is discussed. The Foucauldian Knowledge-Power-Resistance conceptual framework that provided the theoretical underpinnings for the study is presented in Chapter Three. This is followed by Chapter Four where the interpretive descriptive methodology that was used to conduct the research is explained. In Chapter Five, the themes from the participant interviews are presented in a thematic summary, while Chapter Six illustrates the overall findings from the interviews and pandemic documents in a thematic description. In Chapter Seven, these findings are discussed in relation to the literature, and the Foucauldian Knowledge-Power-Resistance framework. Lastly, Chapter Eight presents the public health nursing implications for practice, administration, education, and research. It also discusses the study's strengths and limitations and provides a conclusion for this study.

Chapter Two- Literature Review

The following comprehensive literature review was conducted because it is essential to have a solid understanding of pandemic influenza. The first section describes the nature of pandemic influenza viruses and their characteristics, composition, development, and transmission. In the second section of the chapter, the current literature exploring PHNs' experiences working during pandemic influenzas is critically synthesized. It highlights the nursing issues that were anticipated for a pandemic flu outbreak prior to the declaration of H1N1/09. Additionally, this second section presents findings from studies that have since been conducted on healthcare professionals' H1N1/09 experiences. This chapter concludes by identifying that there is a research gap in explorations on PHNs' experiences working in H1N1/09 mass vaccination clinics, thus illustrating the need for this study to develop future nursing knowledge.

Section One- The Nature of Pandemic Influenza

The literature was reviewed to find a definition of 'pandemic influenza', and its implications for the nursing profession. When exploring the literature, four databases were searched: PubMed, Google Scholar, CINAHL (Cumulative Index to Nursing and Allied Health Literature), and The Cochrane Library. Database limits were set to include only English language articles (all publication types, both research, and non-research), keywords evident in title/abstract, and all peer-reviewed journal articles. Major keywords included 'pandemics', 'influenza', 'pandemic influenza', 'public health', 'epidemics', and 'disease outbreaks'. As the first pandemic influenza occurred in 1918, no time limits were imposed on the database searches. This was to ensure that all possible literature discussing pandemic flu published before, and including 2015, would be obtained.

Following this, a hand search of journals relevant to pandemic influenza was conducted. These journals, searched from years 1968 to 2015, included *American Journal of Public Health*, *Canadian Journal of Public Health*, *Disaster Medicine and Public Health Preparedness*, *Emerging Infectious Diseases*, and *Journal of Public Health Management and Practice*. A reference list search of articles that discussed nurses' roles in pandemics was also performed. Lastly, the websites of pertinent public health agencies were searched including the Public Health Agency of Canada, Centers for Disease Control and Prevention, and the World Health Organization.

Despite multiple search attempts, there was no literature found with a clear definition of 'pandemic influenza' and its implications for the nursing profession. Articles that were identified came from the disciplines of public health, medicine, law, bioethics, and health care policy. A potential explanation is that nurses who are working to address pandemics are practicing as public health professionals. This assumption was made as the public health articles often identified nursing roles in pandemics. However, implications for other public health professionals were also discussed. As a result, I conducted a concept analysis of 'pandemic influenza' specific for the nursing profession. This was published in the *Journal of Advanced Nursing* in March 2015. With permission from the journal's publisher, sections of this article are republished here as part of this study's literature review. Please see Appendix A for this article, along with the publisher's permission to reprint.

In the following section, the nature of influenza is presented. First, seasonal influenza's structure, creation, transmission, and impact are detailed. This is described to highlight the differences between seasonal influenza and pandemic flu. Following this, the composition, development, and transmission of pandemic flu are described. Lastly, the subsequent impact of

pandemic influenza on the population is highlighted.

Influenza

Influenzas are enveloped viruses of the orthomyxoviridae family that have a segmented ribonucleic acid, or RNA, genome (Cox & Subbarao, 2000; Ducatez, Webster, & Webby, 2008; Lagacé-Wiens, Rubinstein, & Gumel, 2010). They are contagious respiratory illnesses that infect the nose, throat, and lungs, causing mild to severe illness, and sometimes death (Centre for Disease Control and Prevention [CDC], 2015a; Kuiken & Taubenberger, 2008). There are three sub-types of influenza viruses, influenza 'A', 'B', and 'C' (Cox & Subbarao, 2000). Influenza 'B' and 'C' sub-types mostly infect humans and are principally associated with low-level disease and limited flu outbreak (Ducatez et al., 2008; Lagacé-Wiens et al., 2010). Influenza sub-type 'A' can infect both humans and animals, and is most often responsible for seasonal flu outbreaks, significant morbidity and mortality, and all known pandemic influenza (Cox & Subbarao, 2000; Ducatez et al., 2008; Kuiken & Taubenberger, 2008; LaForce, Nichol, & Cox, 1994; Lagacé-Wiens et al., 2010; Potter & Jennings, 2011). As this research is about PHNs' experiences working in Pandemic H1N1/09 mass vaccination clinics, influenza sub-type 'A' is the focus for this literature review.

Influenza 'A' virus structure. An influenza 'A' virus' genome consists of eight RNA segments encoding eleven genes (Lagacé-Wiens et al., 2010; Michaelis et al., 2009; Stephenson & Zambon, 2002). Of these viral genes, the two surface proteins hemagglutinin (H) and neuraminidase (N) are of particular importance to the influenza's epidemiology (Lagacé-Wiens et al., 2010; Huston, 2004). This is because hemagglutinin (H) is a surface glycoprotein that mediates the virus' entry into the host cell by targeting its sialic acid structures (Cox & Subbarao, 2000; Lagacé-Wiens et al., 2010; Stephenson & Zambon, 2002). The enzyme

neuraminidase (N) then catalyzes the cleavage of this sialic acid; thus facilitating the virus' spread from cell to cell (Cox & Subbarao, 2000; Huston, 2004; LaForce et al., 1994; Lagacé-Wiens et al., 2010).

Fifteen unique hemagglutinin (H) and nine neuraminidase (N) antigen proteins have been identified and are named sequentially as H1, H2, and N1, N2, N3, and so forth (LaForce et al., 1994; Lagacé-Wiens et al., 2010; Stephenson & Zambon, 2002). Despite the many possible protein pairings, only H1, H2, and H3, in combination with N1 and N2 cause illness in humans (Cox & Subbarao, 2000; Lagacé-Wiens et al., 2010). The viruses found to cause extensive disease outbreaks in humans are H1N1, H2N2, and H3N2 (all sub-type A) (Lagacé-Wiens et al., 2010).

Seasonal flu. Seasonal, or epidemic flu differs from pandemic flu as it occurs when a virus appears in more than one geographical location, but has limited spread to a community, city or country (CDC, 2015a; Cox & Subbarao, 2000; Potter & Jennings, 2011). Also, seasonal flu is genetically related to the circulating viruses that have caused influenza infections in the recent years (Lagacé-Wiens et al., 2010; Potter & Jennings, 2011). An influenza virus' survival, seasonal impact, and epidemic potential are dependent on its 'H' and 'N' glycoproteins genetic properties, and on the population's existing immunity (Cox & Subbarao, 2000; Lagacé-Wiens et al., 2010).

Immunity is an individual's protection against a disease that is indicated by the presence of antibodies in the blood (CDC, 2015a). Immunity can be either passive or active in nature. Passive immunity refers to an individual's protection against a virus after receiving antibodies produced by another human or animal (CDC, 2015a). Active immunity develops when an

individual produces antibodies towards the pathogen following exposure to the infection or having received a vaccination against the pathogen (CDC, 2015a).

Vaccinations, or vaccines, are most commonly administered by a needle injection, but can also be given by mouth or aerosol (CDC, 2015a). They work by introducing a dead or weakened version of the pathogen into a person's body (PHAC, 2012). In response, an individual produces antibodies and develops immunity against the virus, or bacteria (CDC, 2015a).

Influenza vaccine efficiency depends on: 1) the degree of similarity between the vaccine's viral components, and the circulating flu at the time of vaccination; and on 2) the recipient's health status (CDC, 2015b; Larson, 2007). When influenza vaccines are most like the circulating flu virus, it can reduce the risk of illness by 50 to 60% in the overall population (CDC, 2015b; Larson, 2007).

The creation of seasonal flu. Seasonal influenza is created as a result of a change to an already existing flu virus in a process called *antigenic drift* (Cox & Subbarao, 2000; Larson, 2007). During antigenic drift, influenza's H' and 'N' surface glycoproteins rapidly undergo a series of substitutions, insertions, and deletions in their genetic sequence throughout viral replication (Cox & Subbarao, 2000; Lagacé-Wiens et al., 2010; Larson, 2007). These mutations occur because the influenza's RNA polymerase, an enzyme, makes multiple errors while copying the virus' genome (Cox & Subbarao, 2000; LaForce et al., 1994; Lagacé-Wiens et al., 2010; Monto, 2008).

If favorable conditions are present, these viral replication mutations are preserved and amplified to impact a population in the form of a new seasonal influenza (Cox & Subbarao, 2000; Kuiken & Taubenberger, 2008). Every time antigenic drift creates a new influenza sub-type, and it is introduced to the human population, it replaces the previously circulating seasonal

virus (Kuiken & Taubenberger, 2008; Michaelis et al., 2009; Viboud et al., 2006). One exception to this is the re-emergence of H1N1 from 1977 that was not replaced and continues to exist in tandem with H3N2 (Kuiken & Taubenberger, 2008). Despite the changes that occur during antigenic drift, the influenza's antigenic properties remain the same (Cox & Subbarao, 2000; Stephenson & Zambon, 2002). Thus, there are no changes to the virus' 'H' and 'N' antigens' nomenclature (Lagacé-Wiens et al., 2010).

Antigenic drift processes typically occur at certain times annually. In the more temperate climates of the Northern Hemisphere, the annual flu season mainly happens in the winter (Viboud et al., 2006). For example, in Canada, flu season begins in late November and ends around April (PHAC, 2015). Flu outbreaks typically spread through a community within 12 weeks or more (Cannell, Zaslloff, Garland, Scragg, & Giovannucci, 2008; Cox & Subbarao, 2000; Monto, 2008; PHAC, 2015). However, in tropical climates, sporadic outbreaks develop throughout the year and are more frequent (Cox & Subbarao, 2000; Monto, 2008; WHO, 2014). These tropical flu seasons tend to occur during the regions' rainy periods (Cannell et al., 2008; LaForce et al., 1994; Monto, 2008; Stephenson & Zambon, 2002). Due to the different seasonality and frequency of infection in the tropics, it is more difficult to assess the impact of influenza in these locations (Cox & Subbarao, 2000; Monto, 2008; Simmerman et al., 2004).

As a result of ongoing antigenic drift, the population's existing influenza antibodies may not recognize newly produced seasonal flus (Cox & Subbarao, 2000; LaForce et al., 1994; Lagacé-Wiens et al., 2010; Michaelis et al., 2009; Monto, 2008; Viboud et al., 2006). Consequently, some members of the population will have partial loss of immunity and will be vulnerable to contracting the seasonal flu. For others, immunity will be present as a result of having encountered previous influenzas with similar properties (Cannell et al., 2008; Kuiken &

Taubenberger, 2008; LaForce et al., 1994; Lagacé-Wiens et al., 2010; Michaelis et al., 2009).

Seasonal flu transmission and societal impact. When a new influenza virus is created, it is spread amongst populations from direct person-to-person contact (Cox & Subbarao, 2000; Kuiken & Taubenberger, 2008). Specifically, the virus is most often transmitted by an infected individual releasing infectious droplets or aerosolized particles into the air by coughing, sneezing, and talking (Cox & Subbarao, 2000; Kuiken & Taubenberger, 2008; Monto, 2008; WHO, 2014). When a non-infected person comes into contact with these particles by breathing them in or by touching contaminated objects, he/she may inadvertently become infected by touching his/her face, nose, and eyes (Cox & Subbarao, 2000; Kuiken & Taubenberger, 2008). Consequently, influenza can spread quickly in organizations that promote the congregation of individuals, such as schools, nursing homes, and businesses (Larson, 2007; Monto, 2008; WHO, 2014). This is because in these environments, there is an increased likelihood of infected persons coming into close contact with immunologically susceptible individuals (Lagacé-Wiens et al., 2010; Stephenson & Zambon, 2002).

The time from contact with the flu virus to an individual developing the flu symptoms, or incubation period, is approximately two days (Stephenson & Zambon, 2002; WHO, 2014). A healthy adult may be infectious one day before showing symptoms of the flu, and up to seven days after becoming sick (CDC, 2015c). Symptoms of seasonal influenza, typically include sudden onset of fever, dry cough, and headache. It is quickly followed by joint pain, muscle aches and fatigue, loss of appetite, runny nose, watery eyes, sore throat, and general malaise (Kuiken & Taubenberger, 2008; PHAC, 2015; WHO, 2014). Children may also experience nausea and vomiting (CDC, 2015c; PHAC, 2015). The majority of individuals with seasonal flu recover within 7-10 days, without medical intervention (PHAC, 2015; WHO, 2014).

However, severe complications can occur from influenza including bacterial and viral pneumonia, septicemia, encephalitis, muscle damage, ear and sinus infections, dehydration, and worsening of other chronic medical conditions (CDC, 2015c; Cox & Subbarao, 2000; Kuiken & Taubenberger, 2008; Stephenson & Zambon, 2002). WHO (2014) estimates seasonal influenza has a global infection rate of 5-10% of adults, and 20-30% of children. Internationally, three to five million cases of severe influenza illness occur, resulting in anywhere from 250 000 to 500 000 deaths each year (WHO, 2014). Over a period of 30 years, from 1976-2006, flu-associated deaths in the United States ranged from 3000 to 49 000 people (CDC, 2015c). In Canada, seasonal viruses account for approximately 12 000 hospitalizations, and an estimated 3500 deaths each year (PHAC, 2015).

Individuals most likely to develop severe complications, or 'risk groups', include those with chronic medical conditions such as cancer and heart disease, people over the age of 65, children under the age of 5, pregnant women at any stage of pregnancy, aboriginal people, and nursing home residents (CDC, 2015c; PHAC, 2015; Stephenson & Zambon, 2002; WHO, 2014). Indeed, the majority of seasonal influenza-related deaths occur in people over the age of 65; with this age group accounting for an estimated 90% of severe and fatal cases internationally (Bennett & Carney, 2010; Cox & Subbarao, 2000; Miller, Viboud, Balinska, & Simonsen, 2009; Viboud et al., 2006; WHO, 2014). However, it is difficult to predict the annual impact of seasonal influenza due to antigenic drift processes continually producing mutations in the circulating flu's virus structure (CDC, 2015a; CDC, 2015c; Cox & Subbarao, 2000; Viboud et al., 2006).

The Presence of Pandemic Influenza

The term 'pandemic' refers to the spread of a new disease, over a wide geographical area, crossing international boundaries and impacting a large number of people (CDC, 2015a;

European Centre for Disease Prevention and Control [ECDC], 2015; Last, 2001; WHO, 2010).

'Pandemic' has been used to describe the spread of various diseases including HIV, cholera, and smallpox (CDC, 2015a; ECDC, 2015; PHAC, 2012). In the context of influenza, a pandemic is declared when there is sustained human-to-human transmission of a new flu virus that causes community level outbreaks in at least three countries in two WHO regions (WHO, 2014).

This geographical range is what differentiates pandemic influenza from seasonal flus and other location-specific public health emergencies, such as extreme weather events or natural disasters (Hargan, 2008; Morrow, 2007; Tam et al., 2005; WHO, 2014). Others have expanded the definition to describe pandemic influenza as a new sub-type A virus, that spreads widely, causing moderate to severe illness, as individuals have no immunity against the strain (Doshi, 2009; Miller et al., 2009; Potter & Jennings, 2011; Tam et al., 2005; Velasco et al., 2012; Viboud et al., 2006). Based on these definitions a key determining feature of a pandemic influenza is the degree of its viral spread, not infection severity (ECDC, 2015; Iskander, Strikas, Gensheimer, Cox, & Redd, 2013; Kendal & MacDonald, 2010).

Pandemic influenza is also heavily characterized as being fundamentally unpredictable (Drake, Chalabi, & Coker, 2012; Fineberg, 2008; Gabriel & Webb, 2013; Kiltz, Fonseca, Rodriguez, & Munoz, 2013). Unlike seasonal influenza, these viruses are not a yearly occurrence, which makes determining the occurrence of the next pandemic outbreak difficult (Drake et al., 2012). Since 1729, approximately 20 pandemic influenzas have occurred at irregular intervals (Beveridge, 1977). The three pandemic influenzas of the 20th century, 1918's Spanish flu (H1N1), 1957's Asian flu (H2N2), 1968's Hong Kong flu (H3N2), and this century's Pandemic H1N1/09 developed randomly (Fineberg, 2008; Kuiken & Taubenberger, 2008; Pratt, 2009). Although it was once believed that a pandemic influenza occurred every 10 to 14 years

(Cox & Subbarao, 2000), this is false as there were more than 40 years between the Hong Kong Flu and Pandemic H1N1/09 (Potter & Jennings, 2011).

Estimating the duration of a pandemic flu is another challenge. Seasonal influenzas typically have one predictable infectious outbreak that lasts five to ten weeks (Lagacé-Wiens et al., 2010). However, pandemic flus tend to have two or more infectious periods of similar intensity called 'waves' (Lagacé-Weins et al., 2010; Mummert, Weiss, Long, Amigó, & Wan, 2013). These waves are unique to each flu virus and cause pandemics to last longer than seasonal influenza outbreaks (Hargan, 2008; Lagacé-Weins et al., 2010; Miller et al., 2009; Morrow, 2007). Typically, each 'wave' lasts for approximately two to three months, and they are separated by an indeterminate period of months (Hargan, 2008; Kipnis, 2013; Lagacé-Wiens et al., 2010). Currently, the mechanisms behind pandemic influenza's waves are not well understood (Mummert et al., 2013). However, it is hypothesized that the pandemic virus' structure mutates during the inter-wave period, causing the population to lose partial immunity against the flu (Mummert et al., 2013; Stephenson & Zambon, 2002). This would allow the pandemic virus to have another infectious period (Miller et al., 2009; Mummert et al., 2013)

The creation of pandemic flu. In contrast to seasonal flu whose virus structure is a mutation of a previously encountered strain, pandemic influenza is a brand new virus with an original hemagglutinin (H) protein, with or without a new neuraminidase (N) (Cox & Subbarao, 2000; Lagacé-Wiens et al., 2010; Potter & Jennings, 2011). In order for this new complex to be created, a process called *antigenic shift*, unique to influenza sub-type 'A' viruses must first occur (Cox & Subbarao, 2000; Huston, 2004; Lagacé-Wiens, 2011; Miller et al., 2009; Potter & Jennings, 2011).

Antigenic shift is not to be confused with *antigenic drift* that creates seasonal influenza (Lagacé-Wiens et al., 2010; Stephenson & Zambon, 2002). It is the genetic re-assortment of a mammalian influenza 'A' with another mammalian, or avian 'A' influenza (Doshi, 2009; Louie, Kitano, Brock, Derlet, & Kost, 2009; Michaelis et al., 2009; Miller et al., 2009). Antigenic shift processes can occur in one of two different ways. The first is when an animal, or avian influenza 'A' virus, is transmitted from an animal to a human directly, without any genetic re-assortment of the surface hemagglutinin 'H' and neuraminidase 'N' glycoproteins (Cox & Subbarao, 2000; Lagacé-Wiens et al., 2010). While the virus is not necessarily novel, it is new to the human population (Cox & Subbarao, 2000; Potter & Jennings, 2011).

Secondly, antigenic shift can occur when two concurrent sub-type 'A' viruses living in an animal host 'mixing vessel' undergo significant re-assortment of their 'H' and 'N' glycoproteins, resulting in the creation of a unique influenza virus (Cox & Subbarao, 2000; Huston, 2004; Lagacé-Wiens, et al., 2010; Louie et al., 2009; Michaelis et al., 2009; Miller et al., 2009). Experts consider pigs to be particularly efficient in being these 'mixing vessels' for antigenic shift as they are highly susceptible to both avian and human viruses (Cinatl, Michaelis, & Doer, 2007; Ducatez et al., 2008; Larson, 2007; Louie et al., 2009; Michaelis et al., 2009).

Multiple biological, social, ecological, and technological advances of the past century facilitate antigenic shift processes and the development of new pandemic influenza viruses (Bloom et al., 2007; Ducatez et al., 2008; Leach, Scoones, & Stirling, 2010; Stephenson & Zambon, 2002). For example, continued rapid growth in international populations is contributing to the need for increased food production (Bloom et al., 2007; Leach et al., 2010). Global agricultural practices are thus expanding, and are providing opportunities for greater contact amongst animals, and between people and animals (Leach et al., 2010; Stephenson & Zambon,

2002). Scholars believe these changing practices are increasing the potential for the mixing of human, swine, and avian flu mutations in different mammal hosts to produce new influenza viruses (Bloom et al., 2007; Ducatez et al., 2008; Gabriel & Webb, 2013; Leach et al., 2010; Miller et al., 2009; Stephenson & Zambon, 2002; Suk & Semenza, 2011). Indeed, unique to the most recent Pandemic H1N1/09, was a genome consisting of a combination of human, swine, and avian elements (Lagacé-Wiens et al., 2010). This genome is thought to have developed as a result of intensive agricultural practices, and to have spread as a result of increased air traffic (Lagacé-Wiens et al., 2010; Suk & Semenza, 2011).

The transmission of pandemic flu. While individuals have varying degrees of immunity towards seasonal flu outbreaks, this is practically non-existent during a pandemic (Doshi, 2009; Lagacé-Wiens et al., 2010; Viboud et al., 2006). Any immunity resulting from prior exposure to seasonal influenza outbreaks is insufficient for the population to combat a pandemic flu (Cox & Subbarao, 2000; Lagacé-Wiens et al., 2010; Potter & Jennings, 2011; Viboud et al., 2006). This is because the flu virus is new, and individuals therefore lack the specific serum H1 antibody; the most important factor in determining immunity against influenza (Cox & Subbarao, 2000; Doshi, 2009; Louie et al., 2009; Miller et al., 2009; Potter & Jennings, 2011; Tam et al., 2005).

Consequently, pandemic flu has a higher *reproductive number* than seasonal influenza epidemics (Miller et al., 2009; Viboud et al., 2006). The 'reproductive number' references the average estimate of secondary cases of confirmed influenza that develop from exposure to a single viral infection (Miller et al., 2009). For increased pandemic virus transmission, local community-level infection of pandemic flu must first occur through human-to-human contact (Doshi, 2009; Tam et al., 2005; WHO, 2014). Without population immunity, the pandemic flu is able to easily infect large numbers of people within a region (Cox & Subbarao, 2000; Lagacé-

Wiens et al., 2010; Miller et al., 2009). Following this, the new influenza can then spread to other geographical regions (Bennett & Carney, 2010; Doshi, 2009; Gabriel & Webb, 2013; Tam et al., 2005).

Public health scholars are concerned about the numerous existing international trade and travel routes, particularly in global air traffic, that can contribute to the spread of pandemic flu (Bennett & Carney, 2010; Gabriel & Webb, 2013; Leach et al., 2010; Suk & Semenza, 2011). The existence of these routes and the documented two billion air travel flights a year, cause the period needed for a virus' spread to be drastically shortened (Bennett & Carney, 2010; Leach et al., 2010). An infected individual can board a flight in one country and within hours arrive at a previously un-exposed location, with the capacity to infect other individuals (Bennett & Carney, 2010; Suk & Semenza, 2011). Some scholars also discuss how increased migration, tourism, and human trafficking promote the expansion of sexual networks and contribute to the spread of new infections (Suk & Semenza, 2011; WHO, 2014). Subsequently, individuals are not only more highly susceptible to contracting a new virus, but can expose and infect more people in many different places (Doshi, 2009; Gabriel & Webb, 2013; Iskander et al., 2013; Nordqvist, 2009; Tam et al., 2005; Viboud et al., 2006).

The impact of pandemic flu. Perhaps one of the most intriguing characteristics of pandemic influenza is that the population most vulnerable to contracting the flu is not identified within traditional risk groups (Bennett & Carney, 2010; Cox & Subbarao, 2000; Monto, 2008; Potter & Jennings, 2011; WHO, 2014). Unlike seasonal epidemics where the risk groups are children and older adults, this has not been the case in the last four pandemic influenzas (Bennett & Carney, 2010; Potter & Jennings, 2011; WHO, 2014). Instead, there has been an increased shift in the morbidity, mortality, and potential years of life lost in younger adult aged groups

(Iskander et al., 2013; Miller et al., 2009; Monto, 2008; Potter & Jennings, 2011; Stephenson & Zambon, 2002; Suk & Semenza, 2011; Velasco et al., 2012). For example, in 1918's Spanish flu (H1N1), the highest number of deaths was among younger, previously healthy individuals, with an estimated 99% of deaths occurring in individuals younger than 65 years old (Bennett & Carney, 2010; Iskander et al., 2013). More recently, the H1N1/09 virus had its most severe cases and deaths in individuals under the age of 50 (Bennett & Carney, 2010; ECDC, 2015).

Interestingly, older adults appear to be relatively unaffected by pandemic flu compared to other age groups (Bennett & Carney, 2010; Michaelis et al., 2009; Miller et al., 2009; Potter & Jennings, 2011). Some scholars propose that this could be because the new pandemic virus' structure is similar to flu strains that were encountered by people many years ago (ECDC, 2015; Michaelis et al., 2009; Nordqvist, 2009). Thus, some older individuals may have had previous exposure to a comparable influenza outbreak, and developed a partial immunity towards the new pandemic virus (ECDC, 2015; Michaelis et al., 2009; Nordqvist, 2009; Rebmann & Zelicoff, 2012; Stephenson & Zambon, 2002).

Pandemic influenzas have higher rates of morbidity and mortality than seasonal flus (Cox & Subbarao, 2010; Hargan, 2008; Nordqvist, 2009; Potter & Jennings, 2011; Wu & Cowling, 2011). Complications that can arise from influenza infection, such as pneumonia, septicemia, and the worsening of other chronic conditions, contribute to these higher morbidity and mortality rates (Cox & Subbarao, 2000; Kuiken & Taubenberger, 2008; Lagacé-Wiens et al., 2010; Stephenson & Zambon, 2002). Nonetheless, it is almost impossible to predict the morbidity burden and overall mortality rate for future pandemic flu outbreaks (Cox & Subbarao, 2000; Drake et al., 2012; Eastwood, Massey, & Durrheim, 2006; Kotalik, 2005; Potter & Jennings, 2011). The unpredictable nature, duration, and complications that are associated with pandemic

influenzas contribute to these rates (Drake et al., 2012; Gabriel & Webb, 2013; Kiltz et al., 2013; Monto, 2008).

While Pandemic H1N1/09 had a relatively small mortality rate, with approximately 579 000 deaths worldwide, scholars often discuss the implications of a future pandemic outbreak (Bennett & Carney, 2010; Dawood et al., 2012; Hargan, 2008; Kipnis, 2013; Potter & Jennings, 2011; Syed, Hjarnoe, Krumkamp, Reintjes, & Aro, 2010; Thomas & Young, 2011; WHO, 2014; Wu & Cowling, 2011). In particular, it is anticipated that in a future pandemic flu, individuals will become infected at different times during the viral waves that can occur over many months (Drake et al., 2012; Eastwood et al., 2006; Gabriel & Webb, 2013; Kipnis, 2013; WHO, 2014). Health care facilities are predicted to receive a surge of infectious patients that will require care at irregular times (Kamoie et al., 2008; Kipnis, 2013; Monto, 2008; WHO, 2014). These patients are expected to be quite ill, and will require intensive care, with many potentially needing respiratory support (Kamoie et al., 2008; Monto, 2008; Selgelid, 2009).

The response to pandemic flu. Both primary and tertiary healthcare organizations are immediately impacted following the declaration of a pandemic influenza (Bennett & Carney, 2010; PHAC, 2012; WHO, 2014). For example, acute care hospitals have to prepare for the influx of patients who become sick with the flu virus (Ives et al., 2009; Kipnis, 2013; Osterholm, 2001; Stephenson & Zambon, 2002). Numerous infected individuals will require medical attention and nursing care, placing an increased demand for both human and material resources (Corley et al., 2010; Drake et al., 2012; Kamoie et al., 2008; Kipnis, 2013). Also, public health agencies have to implement infection control strategies, such as mass vaccination clinics (Bennett & Carney, 2010; Fineberg, 2008; Larson, 2007). These responses are essential as vaccines are the primary tool to help minimize transmission, morbidity, and overall mortality

rates of pandemic influenza (Drake et al., 2012; Kotalik, 2005; Tam et al., 2005; Wu & Cowling, 2011).

Healthcare organizations anticipate these types of responses and attempt to pre-emptively prepare for a future pandemic outbreak (Devereaux, 2015; De Ville, 2007). However, planning of certain response elements can only occur while information about the virus is still being discovered (De Ville, 2007; Fineberg, 2008; Rosella et al., 2013). Public health and tertiary care professionals can utilize the knowledge gained from the first pandemic wave to develop interventions to promote infection control in the future waves (Kipnis, 2013; Miller et al., 2009; Wu & Cowling, 2011). In particular, researchers identify the inter-wave duration as a time that would allow public health organizations to produce vaccinations and to plan for mass clinics (Eastwood et al., 2006; Miller et al., 2009; PHAC, 2012). This is because mass vaccination clinics have been found to be very effective for the administration of large quantities of vaccines to the population during a highly infectious virus outbreak (Fizzell et al., 2010; Herman et al., 2006; Osterholm, 2001).

However, vaccine production takes approximately four to six months upon the initial pandemic flu exposure, and thus vaccines cannot be stockpiled (Bennett & Carney, 2010; Kotalik, 2005; Osterhaus & Oxford, 2006; Wu & Cowling, 2011). This is because the pandemic virus first needs to be encountered, isolated, and identified, in order to develop a vaccine (Eastwood et al., 2006; PHAC, 2012). This can be complicated as the pandemic influenza continues to undergo antigenic drift processes, causing further mutations to the virus' structure (Stephenson & Zambon, 2002). The Canadian government recognizes this and has contracts in place with two different pharmaceutical companies to provide the infrastructure for the rapid

production of vaccines for a pandemic flu (Osterhaus & Oxford, 2006; PHAC, 2012, Tam et al., 2005).

Anti-virals are another group of pharmacological agents that are taken orally or via an inhaler, to decrease the spread of pandemic influenza (Iskander et al., 2013; PHAC, 2012; Tam et al., 2005). They reduce influenza symptoms, shorten the duration of the illness, and decrease the risk of serious complications (PHAC, 2012). Anti-virals are also considered to be very useful for protecting those individuals who cannot be vaccinated, for example due to a true egg allergy (Kotalik, 2005).

There is a call for antivirals to be stockpiled so they can be administered to priority populations within 48 hours of presenting symptoms of pandemic influenza (Hargan, 2008; Iskander et al., 2013; Morrow, 2007; Nicoll, 2010; Osterhaus & Oxford, 2006; PHAC, 2012; Tam et al., 2005; Wu & Cowling, 2011). Scholars feel that in a pandemic flu outbreak, healthcare professionals should be some of the first individuals to receive anti-virals prophylactically (Braunack-Mayer et al., 2010; Hargan, 2008; Kotalik, 2005; Selgelid, 2009; Wu & Cowling, 2011). This is to ensure they are healthy and able to implement their organization's pandemic response, while waiting for the production of a vaccine (Anderson & Hodge, 2009; Drake et al., 2012; Selgelid, 2009; Wu & Cowling, 2011).

Non-pharmacological strategies can also be implemented. These strategies include practicing cough etiquette, for example coughing or sneezing into your arm, washing hands frequently, and keeping common household areas clean and disinfected (Bennett & Carney, 2010; Kipnis, 2013; PHAC, 2012). If the illness severity warrants, social distancing and isolation measures can be implemented to prevent individuals from infecting one another (Kipnis, 2013). Such measures include implementing voluntary or mandatory quarantine, imposing travel

restrictions, and closing down public buildings like schools or community centres (Bennett & Carney, 2010; Kipnis, 2013; Syed et al., 2010; Wu & Cowling, 2011). However, scholars discuss that there are multiple ethical issues associated with forced implementation of social distancing measures (Bennett & Carney, 2010; Braunack-Mayer et al., 2010; Selgelid, 2009). Thus, the 'least-restrictive' means of social distancing should be implemented in case of a serious pandemic influenza outbreak (Selgelid, 2009).

Non-pharmacological strategies are used alone or in conjunction with the administration of vaccine and anti-viral drugs (Bennett & Carney, 2010; PHAC, 2012). In fact, the implementation of both pharmacological and non-pharmacological strategies is considered most effective and cost-efficient in reducing the human-to-human transmission of influenza, particularly when resources are limited (Bennett & Carney, 2010; PHAC, 2012; Velasco et al., 2012; Wu & Cowling, 2011).

Summary of Section One- Literature Review

In section one of the literature review, the nature of pandemic influenza was discussed. Unlike seasonal influenza, pandemic flu is composed of a brand new viral structure. Consequently, individuals have no immunity toward the influenza and are more susceptible to contracting the virus. Of particular concern is that pandemic influenza targets younger populations for infection at unpredictable times. These groups subsequently experience higher morbidity and mortality rates, than when compared to the seasonal flu. With ongoing technological advances such as evolving agricultural practices and increasing international travel routes, the creation, and transmission of pandemic influenza will continue to be facilitated. Fortunately, measures can be implemented that help to minimize the spread of pandemic flu, the

most effective being vaccinations. Health care professionals, particularly PHNs, have a significant role in implementing the clinics where these mass vaccinations are administered.

Section Two-Nurses' Experiences working during Pandemic Influenzas

The purpose of the second section of this literature review is to synthesize the current knowledge regarding PHNs' experiences working in pandemic influenza mass vaccination clinics. Before H1N1/09, the last pandemic influenza was over 40 years ago with 1968's Hong Kong flu. However, mass vaccinations were not used during that outbreak. As a result, there was a paucity of literature exploring this topic. Thus, I searched for literature that was published before H1N1/09 to determine what scholars had anticipated would be an issue for nurses during a pandemic influenza. Also, I reviewed the literature examining nurses' experiences working during 2003's Severe Acute Respiratory Syndrome (SARS) outbreak. Although SARS was not a pandemic influenza, it was a rapidly spreading virus that caused severe complications. SARS also provided an opportunity for lessons to be learned that could impact future pandemic planning. Finally, I searched for sources that examined nurses' H1N1/09 experiences in a variety of healthcare settings.

Five scholarly databases were searched including: PubMed, Scopus, Google Scholar, CINAHL (Cumulative Index to Nursing and Allied Health Literature), and The Cochrane Library. Database limits were set to include only English language articles of all publication types (both research and non-research), keywords evident in title/abstract, and all peer-reviewed journal articles. Keywords included 'public health nurses', 'pandemic H1N1', 'mass vaccination', 'immunization clinics', 'public health emergency', and 'nurses' experiences'. Because the first pandemic influenza occurred in 1918, no time limits were imposed on the database searches. This

was to ensure that all possible literature examining PHNs' experiences working in pandemic influenzas that were published before, and including 2015, would be obtained.

Next, a hand search of relevant nursing journals was conducted. The journals, searched from years 1968 to 2015, included *American Journal of Public Health*, *BMC Public Health*, *Canadian Journal of Nursing Research*, *Canadian Journal of Public Health*, *Journal of Advanced Nursing*, *Journal of Nursing Management*, and *Journal of Public Health Management and Practice*. The reference lists of pertinent articles that discussed nurses' Pandemic H1N1/09 experiences were scanned to identify other relevant sources. Also, nursing association websites such as the Registered Nurses' Association of Ontario [RNAO] and the Canadian Nurses' Association [CNA] were reviewed to determine if these organizations had produced reports on nurses' H1N1/09 experiences. Lastly, ProQuest @Scholars Portal was searched to find gray literature, such as relevant unpublished documents, reports, and theses.

All relevant quantitative and qualitative studies were reviewed and synthesized in the following section. Only two quantitative and five qualitative studies examining healthcare professionals' Pandemic H1N1/09 experiences were identified in the years since Pandemic H1N1/09. These studies were conducted in Australia, Canada, the United Kingdom, and the United States. Articles published before H1N1/09 discussing a potential pandemic, articles that examined nurses' experiences working during SARS and one meningitis outbreak, and those that studied nurses' H1N1/09 experiences, were reviewed together. Through this critical analysis, the following themes were identified: the shortage of PHNs for pandemic responses, a lack of staff emergency preparedness, a lack of vaccine and supplies, and lastly, the importance of effective communication channels with nurses.

Shortage of Public Health Nurses for Pandemic Responses

Before H1N1/09, scholars from all health professions had anticipated that the nursing profession would be most involved in pandemic flu mass vaccination clinics (Alexander & Wynia, 2003; American College of Physicians [ACP], 2006; Kort, Stuart, & Bontovics, 2005; Osterhaus & Oxford, 2006; Osterholm, 2001). Herman et al. (2006), Hrehoick (2008), Larson (2007), and Syed et al. (2010) predicted that there would be a lack of nurses available to immunize in mass vaccination clinics. Thus, scholars emphasized the importance of ensuring adequate staffing for a pandemic response (Anderson & Hodge, 2009; Kendal & MacDonald, 2010; Syed et al., 2010).

One Alaskan city's public health department, in an effort to address this issue, executed a mass vaccination drill to help plan for an anticipated nursing shortage (Ellingson, 2005). Ellingson (2005) described the drill's procedures to include having PHNs work extended hours and implementing mass vaccination clinics on the weekends. Similarly, Osterholm (2001) reflected on a mass vaccination response where 30 000 people were immunized against a deadly *N. Meningitidis* outbreak in Minnesota. One of the top lessons from this experience was to ensure there are adequate nurses for future mass vaccination clinics (Osterholm, 2001). Indeed, community health nurses who worked during the 2003 SARS outbreak in Ontario had to manage nurse 'short-staffing' by working more hours and taking weekend shifts (Bergeron, Cameron, Armstrong-Stassen, & Pare, 2006). Unfortunately, these participants experienced more stress and had to make sacrifices in their personal lives as a result of their increased workload (Bergeron et al., 2006).

Similarly, Bournes and Ferguson-Paré (2005), in a phenomenological study of 63 nurses' experiences working during SARS, identified that inadequate staffing affected the participants

personally, because they had an increased workload (Bournes & Ferguson-Paré, 2005).

Participants felt this impacted the quality of care they were able to provide their patients (Bournes & Ferguson-Paré, 2005). Bishop (2007), Liu and Liehr (2009), Malm et al. (2008), and Marjanovic, Greenglass, and Coffey (2007) also identified that staff shortages were problematic in providing care throughout the SARS crisis. They predicted that similar shortages would occur and cause many issues in a pandemic virus outbreak (Bishop, 2007; Liu & Liehr, 2008; Malm et al., 2008; Marjanovic et al., 2007).

The recommendation for health care managers to ensure an appropriate staffing mix of nurses was consistently suggested in the articles regarding nurses' experiences working throughout SARS (Bergeron et al., 2006; Bournes & Ferguson-Paré, 2005; Holroyd & McNaught, 2008; Liu & Liehr, 2009). One suggestion to establish an adequate supply of nurses to work during a pandemic influenza was to create more regular full-time nursing positions (Bournes & Ferguson-Paré, 2005). This would ensure that an adequate number of staff would be available when a pandemic was declared and a subsequent response was implemented (Bournes & Ferguson-Paré, 2005).

Indeed, in a quantitative study conducted on American home healthcare professionals' H1N1/09 experiences, nursing shortages were identified to be problematic in many agencies (Rebmann, Citarella, Subramaniam, & Subramaniam, 2011). Similar findings were noted for 13 health service workers who worked in three First Nations communities in subarctic Ontario (Charania & Tsuji, 2011). Charania and Tsuji (2011), in a qualitative community-based participatory study, examined the effect of the overall Pandemic H1N1/09 response on community members, and the barriers experienced by health care providers. They found that participants felt there were a shortage of appropriately trained nurses and other health care

professionals to administer mass vaccinations (Charania & Tsuji, 2011). Subsequently, it was felt that nurses often became ill in their immunizer role due to exhaustion, and because they perceived they did not have time to put on the appropriate personal protective equipment (PPE) (Charania & Tsuji, 2011).

While this is a noteworthy finding, the study was conducted in three small First Nations communities. It is also unclear how many of the participants were nurses. As such, experiences of those PHNs who worked in larger centers should also be examined. This is because nurses who work in cities could have a different experience due to the potential increased availability of nursing staff, and ancillary personnel who can assist in a pandemic response. Indeed, Corley et al. (2010) and Trossman (2009) identified that nurses' H1N1/09 experiences of pandemic response staffing should be examined, as it may be necessary to address nurse shortages in future pandemic plans.

Lack of Staff Emergency Preparedness

Although it is important to have adequate numbers of staff, it is also critical that nurses are prepared with the skills to safely immunize the public and to manage clinics. Basta, Edwards, and Schulte (2009), in their pre-H1N1 survey of public health employees' willingness to work during a pandemic, found that almost half of participants were only somewhat familiar with their emergency job responsibilities if a pandemic influenza was declared. Some participants expressed feeling so unprepared for an emergency that they were unsure if they would report to work during a pandemic outbreak (Basta et al., 2009). Charania and Tsuji (2011) echoed this finding as participants were stressed working during H1N1/09 in subarctic Ontario, due to a lack of mass vaccination training.

Similarly, Binns, Sheppard, and Staff (2010), in a qualitative descriptive analysis of the 'Australian Health Management Plan for Pandemic Influenza' document, highlighted the necessity of having the current nursing workforce adequately prepared for a declared pandemic. They recommended that nurses be required to complete immunization training on an ongoing basis in case a public health emergency occurs that requires mass vaccinations (Binns et al., 2010). Kotalik (2005) also discussed the importance of providing continuing skill-specific training to front-line workers in public health pandemic responses.

Holroyd and McNaught (2008) qualitatively studied the essays of six tertiary care nurses who worked during SARS in Hong Kong. They found that participants felt underprepared in front-line roles, and subsequently, experienced stress when caring for SARS-infected individuals (Holroyd & McNaught, 2008). While this article provided deep insight into the nurses' personal SARS experiences, no suggestions were put forth to assist health care managers, and nurses prepare for the next infection outbreak.

Similarly, Bergeron et al. (2006) surveyed 941 Ontario community health nurses to examine their SARS experiences. They identified that participants felt a lack of individual preparedness while working during SARS (Bergeron et al., 2006). However, this lack of training caused participants to 'hone' their personal nursing skills (Bergeron et al., 2006). Despite applauding these nurses' high personal accountability and professional autonomy, the researchers recommended that managers refine policies to ensure adequate and consistent training for all staff (Bergeron et al., 2006). However, Bergeron et al. did not suggest how managers could go about revising these training policies. Instead, they identified the material resources that would be required for a pandemic, or infection outbreak.

Lack of Vaccine and Supplies

While the timing of future pandemics is unpredictable, scholars have tried to prepare by identifying the material resources that would be required during an outbreak to ensure adequate stock would be available (Hrehoick, 2008; Kotalik, 2005; Pascoe, 2006). Thomas, Dasgupta, and Martinot (2007), using qualitative content analysis, examined pandemic influenza plans in several American states. They determined that the majority of these plans addressed the potential lack of antiviral agents, vaccines, and respirators for those individuals who became sick with a pandemic virus (Thomas et al., 2007). Hrehoick (2008) and Pascoe (2006) also identified this trend within American pandemic plans. Kotalik (2005), in addition to reviewing American plans, analyzed Canadian and British pandemic influenza documents. He found that suggestions were provided to ensure adequate antiviral medication stockpiles, and appropriate infrastructure for vaccine production (Kotalik, 2005).

Nurses who worked front-line during SARS also identified the lack of protective supplies to be an issue (Bergeron et al., 2006; Holyroyd & McNaught, 2008). The limited personal protective equipment (PPE) and explanations regarding its proper use contributed to nurses' fear of potential self-infection, and transmission of illness to loved ones (Holroyd & McNaught, 2008). Kotalik's (2005) analysis of pandemic plans was consistent with these nurses' experiences of having insufficient protective supplies. He identified that having an adequate amount of PPE for all health care staff was very important, as well as an ethical issue (Kotalik, 2005). Kotalik strongly recommended for policies regarding the use of PPE to be communicated early in a pandemic response with all staff, in an attempt to reduce nurses' anxiety about contracting an infection.

After the declaration of Pandemic H1N1/09, Rebmann et al. (2011) administered quantitative email surveys to American home healthcare agencies to evaluate their staff's H1N1/09 experiences. They found that almost a third of agencies had difficulty in obtaining the supplies they needed (Rebmann et al., 2011). Also, Rebmann et al. highlighted that smaller agencies were more likely to report difficulty in accessing the equipment that was essential to provide client care. Unfortunately, the questionnaire only yielded a 25% response rate, and the authors do not state if, or how many, of the participants were registered nurses (Rebmann et al., 2011). Similarly, a lack of supplies was also noted in Australian and American studies examining healthcare employees' H1N1/09 experiences working in acute care settings (Corley et al., 2010; Rebmann & Wagner, 2009).

In a rural context, Charania's and Tsuji's (2011) study on the pandemic response in subarctic Ontario, found similar results. Participants communicated that they had a lack of supplies, such as surgical masks and hand sanitizer (Charania & Tsuji, 2011). Community members also had issues with receiving infection control supplies in a timely manner (Charania & Tsuji, 2011). Further, the lack of communication about the proper use of supplies, and when to expect shipments of these necessary pandemic resources was also of concern (Charania & Tsuji, 2011).

Effective Communication Channels with Nurses

The most significant issue identified in the literature was the importance of effective communication with front-line healthcare professionals, including nursing staff. In a 2005 qualitative descriptive analysis, Australian researchers interviewed ten nurses and nine general medical practitioners about their concerns regarding a future pandemic influenza (Pearce et al., 2011). Participants anticipated that communication during the pandemic would be ineffective, and

the subsequent lack of knowledge regarding pandemic planning policies would cause employees stress (Pearce et al., 2011). Participants emphasized the importance of timely and accurate information, that could be delivered using a variety of channels, including email and text messaging (Pearce et al., 2011). Further, they proposed that information should be delivered in frequent small increments, to maximize the value and usability of the pandemic information (Pearce et al., 2011). However, in an Australian survey of emergency nurses' and physicians' pandemic experiences, it was found that while small and frequent increments of information are useful, updates should only be communicated on an as-needed basis to avoid overloading employees with too much information (Klein et al., 2010).

Similarly, British researchers, in a qualitative study that examined health care workers' (both nurses and non-nurses) attitudes towards working during a pandemic found that participants were concerned that they were unaware of what would be expected of them during a pandemic outbreak (Ives et al., 2009). Further, the anticipated lack of communication about pandemic information was identified as a potential barrier that would cause these individuals not to want to work in future pandemics (Ives et al., 2009). The authors do not make specific suggestions for meeting the healthcare workers' needs, as they felt that strategies could only be developed once individuals are in a pandemic situation (Ives et al., 2009). Also, the researchers did not describe the type of qualitative study that was used.

Corley et al. (2010) conducted a phenomenological study of 34 ICU nurses' and physicians' H1N1/09 experiences in Australia. The lack of effective communication channels that had been anticipated by the previous Australian Pearce et al. (2011) study were identified by participants in Corley et al. However, Corley et al. also included physicians in their sample. The different roles and responsibilities between nurses and physicians could influence the overall

study findings. Also, these participants worked in a tertiary care setting, providing care to H1N1/09 infected patients, rather than in a public health preventative capacity. A limitation of this study was that it claims a phenomenological methodology, but it does not specify whether it is descriptive, or interpretive. Therefore, it is difficult to determine to what extent these participants' experiences were analyzed, and how involved the researchers were in co-creating interpretations and themes.

Exploring the infection control approaches in the H1N1/09 response, Rebmann and Wagner (2009) conducted qualitative focus groups with 40 infection preventionists (IPs) who worked in American hospitals. Infection preventionists are infection control professionals who work to protect patients from healthcare-associated infections in a variety of clinical settings (Association for Professionals in Infection Control and Epidemiology [APIC], n.d.). This study was done to explore IPs' H1N1/09 experiences, and participants included, but were not limited to, nurses practicing in an IP role (Rebmann & Wagner, 2009).

Rebmann and Wagner (2009) found that Pandemic H1N1/09 communication channels were generally implemented on a larger scale, between the hospitals and the health departments. Further to this, participants identified problems with communicating to patients about H1N1/09, as information was changing rapidly, and often confusing for patients (Rebmann & Wagner, 2009). Communicating to patients was also hampered by a lack of H1N1/09 information materials translated into multiple languages to meet the public's needs (Rebmann & Wagner, 2009). Similar to Corley et al. (2010) Australian's study, participants felt communication was ineffective regarding pandemic policies (Rebmann & Wagner, 2009).

Rebmann and Wagner's (2009) study's inclusion criteria required participants to have worked with a patient who had a confirmed case of H1N1/09. Individuals with these experiences

did not reflect those of PHNs' in mass vaccination clinics working with 'non-infected' individuals. Indeed, the researchers call for continued research by public health agencies and other healthcare institutions to address gaps in pandemic planning to decrease future pandemic viral incidence (Rebmann & Wagner, 2009). This study discusses its small sample size as a limitation for generalizability. However, this is incongruent with the qualitative tradition aimed at exploring a relatively unknown phenomenon. Also, nurses were not the only participants as other health care professionals also worked as infection preventionists.

Similar to Rebmann and Wagner's (2009) study of IPs, Locatelli, Lavela, Hogan, Kerr, and Weaver (2012) conducted a non-specific qualitative study with 33 infection control officers. These participants were considered to be 'key informants' and were from 33 separate Veteran Affairs health care facilities across the United States (Locatelli et al., 2012). Semi-structured interviews were used to elicit information about information sources, barriers, and facilitators to communication during Pandemic H1N1/09 (Locatelli et al., 2012). Locatelli et al. found that timely organized information and the use of educational resources to promote pandemic information sharing were facilitators to communication. Barriers to communication included overloading participants with facts and participants encountering contradictory information in the healthcare setting (Locatelli et al., 2012). Participants suggested that tertiary care facilities decide upon one communication strategy to notify employees of ongoing developments, to reduce employee confusion, and promote consistency in care amongst staff in the next pandemic outbreak (Locatelli et al., 2012).

While the Locatelli et al. (2012) was a qualitative study, it did not explore the participants' overall experiences. Instead, it aimed to examine participants' perceptions of information sources and communication mechanisms instituted during H1N1/09. While learning about these topics

was beneficial, a broader study purpose could allow for healthcare providers to discuss other things they personally felt were issues. Further, the infection control officers' professions are not given. Therefore, it is not possible to determine if the participants were nurses, other health care workers, or both. Also, the type and the amount of patient contact participants had during the pandemic response were not discussed.

One study that did focus on PHNs was Long's (2013) research on PHNs' experiences working in Manitoba during Pandemic H1N1/09. In this qualitative description, 13 PHNs experiences were explored using three data collection methods. These included focus groups, telephone interviews, and a quantitative demographic questionnaire (Long, 2013). Four participants worked in an urban setting, consisting of a population of approximately 700 000 individuals, six worked in a rural setting (population of 100 000), and three worked in Northern Manitoba (population of 46 000). The focus groups were used for the urban and rural nurses, and telephone interviews were conducted with the Northern nurses (Long, 2013).

Long's (2013) major findings were that participants felt that the consistency and credibility in information shared by public health officials was lacking, particularly as PHNs practicing in more rural areas received minimal communication about updated vaccination priority groups. For PHNs, the dissemination of timely, and easily accessible information from the public health unit was of major importance for performing their pandemic roles (Long, 2013). However, Long examined all of the PHNs' H1N1/09 pandemic experiences, and was not specific to administering vaccinations in mass clinics. As such, while this study is pivotal to developing knowledge regarding PHNs' H1N1/09 experiences, there is still a place for further research.

Summary of Section Two- Literature Review

Themes from all identified literature included the shortage of PHNs to work during an emergency, the lack of staff emergency preparedness, the lack of vaccine and supplies, and the importance of effective communication channels with nurses. However, research regarding nurses' experiences working in pandemics is limited. Only five qualitative studies were found regarding healthcare professionals' experiences working during Pandemic H1N1/09. Three of these studies occurred in tertiary care institutions, and two in the community setting. Two were conducted in the United States, two in Canada, and one in Australia. Further, four out of five of these studies' samples included other health care professionals, not just nurses.

Two Canadian qualitative studies were identified on healthcare providers' H1N1/09 experiences; however, they differed from this dissertation's research. While Charania and Tsuji's (2011) study was Canadian, it examined a pandemic response in three rural subarctic Ontario First Nations' communities. It also investigated all of the health care workers' duties along with some community members, and not just nurses' immunization experiences (Charania & Tsuji, 2011). Further, Long's study (2013) explored PHNs' H1N1/09 experiences working in three different regions of another Canadian province. It also focused on nurses' overall pandemic roles including but not limited to, working in mass vaccination clinics.

As a result, before this study, there was no research conducted solely on PHNs' experiences working in a major Canadian city's H1N1/09 mass vaccination clinics. Due to the severity of pandemic influenzas, and the potential for another pandemic flu, it is important to identify what nurses' H1N1/09 clinic experiences were in order to appropriately plan for future pandemic responses. This was once again emphasized from the themes that were highlighted in the current existing literature. Thus, this study examines PHNs' H1N1/09 mass vaccination

experiences and their roles in pandemic planning. It also examines the impact that the communication of knowledge, and the exercise of power had on front-line PHNs' during the mass vaccination response.

Chapter Three- Conceptual Framework

Based on my paradigmatic position, personal experience during H1N1/09, and the necessity of communication highlighted in the literature, I developed a critical framework based on the Foucauldian concepts of *power*, *knowledge*, and *resistance*. This framework was chosen for this research to give PHNs' a voice about their H1N1/09 experiences, and to raise awareness of the issues they encountered throughout the deployment. As such, this framework guided the study's research question, and the research methods used for data collection and analysis.

In this chapter, this conceptual framework is described. First, a brief description of critical theorist Michel Foucault's background is presented to illustrate the philosophy that underpins the conceptualizations of this study. Following, Foucault's concepts of *knowledge*, *power*, and *resistance* are described individually and in relation to one another. These are described to demonstrate how they provide the lens for examining PHNs' H1N1/09 experiences.

Foucauldian Philosophy

Michel Foucault's contributions are often categorized as additions to both post-structuralism and post-modern theory because his conceptualizations were revolutionary compared to previous philosophers (Holmes & Gastaldo, 2002). Foucault himself, however, rejected these labels, and referred to himself as a critical historian of modernity, strongly influenced by Immanuel Kant (Mills, 2003). He maintained that he held no specified theoretical or paradigmatic position (McHoul & Grace, 1993).

While individuals have debated that Foucault's lack of confirmed worldview actually depreciates his work, Foucault negated these individuals' claims. Instead, he maintained that a constant evolution of thinking and an openness to improve on past work is imperative to thinking, and subsequent, knowledge development (McHoul & Grace, 1993; Mills, 2003). He clearly

discussed that individuals must never feel that they have determined a complete and final 'truth' about a topic, and that they should continually question their own perspective (Mills, 2003). With this positioning, Foucault as a philosopher, used history to provide insight into past human experience and social interactions (McHoul & Grace, 1993; O'Farrell, 2010). This was done with the objective of encouraging people to challenge the ingrained status quo of disciplines, knowledge, and institutions (O'Farrell, 2010).

Foucault's 'disciplines'. Prior to exploring the nature of Foucault's 'knowledge', 'power' and 'resistance', it is first necessary to have a sound understanding of 'discipline' because it is within the discipline where these concepts occur and are utilized (McHoul & Grace, 1993). Foucault extensively examined the nature of 'discipline' in society. In his investigations he conceptualized the word 'discipline' as both a noun and a verb. First, he defined 'discipline' as a socially constructed body of knowledge (i.e. discipline as noun) (Foucault, 1978). This includes the scholarly 'disciplines', with their corresponding bodies of knowledge, and how they utilize this in their disciplinary functions (McHoul & Grace, 1993). For example, scholarly disciplines include science, medicine, psychiatry, and sociology (McHoul & Grace, 1993).

Secondly, he identified the actions that disciplinary institutions implemented as 'disciplinary practices' (i.e. discipline as verb) (O'Farrell, 2005). Institutions, such as schools, hospitals, asylums, and confessionals apply disciplinary practices to regulate individuals' behavior for social control (McHoul & Grace, 1993; O'Farrell, 2005). Disciplines themselves are bodies of knowledge that continue to be guided by the development of new knowledge (McHoul & Grace, 1993). For this study, the disciplines that are being explored are the societal institutions of public health and the nursing discipline. These institutions' bodies of knowledge were combined when the H1N1/09 mass vaccination clinics were planned and implemented. More

specifically, the constructed body of public health knowledge, or its discourse at that time, shaped PHNs' disciplinary practice.

Foucault's Concept of Knowledge

According to Foucault, the knowledge that provides the basis for disciplines and their disciplinary practices often comes from 'non-pure' human sciences (McHoul & Grace, 1993). 'Non-pure' sciences are those methodologies that produce multiple interpretations of reality, and subsequently correspond with the non-positivist paradigms (McHoul & Grace, 1993). Thus in Foucault's (1978) conceptualization of knowledge, there are multiple 'truths' and, therefore many different forms of *knowledge*. Knowledge is produced by a discipline to develop its discourse in the place practices will be implemented (Foucault, 1978). Therefore, knowledge is considered to be context specific as a discipline's knowledge has limited practicality in other areas. This is because each has their own specific constraints, rules of formation, and conditions of existence (Foucault, 1978).

In his own investigations, Foucault (1978) studied the different historical conditions that occur and how they shaped the production of knowledge within established disciplines. Knowledge, regardless of the discipline to which it belongs, is conceptualized to be ever changing and will undergo multiple transformations and reorganizations (Foucault, 1970). This conceptualization differs from other theorists because knowledge development does not occur as slow continuous refinements of disciplinary concepts (Foucault, 1977; McHoul & Grace, 1993). Instead, disciplines, and the individual disciplinary knowledge producers within them, are abruptly impacted by historical conditions that are unstable and difficult to control for (Foucault, 1980). Thus, it is impossible to find a unique underlying principle for all knowledge production

(Foucault, 1980). If historical events were different, so would be the resulting developed knowledge (McHoul & Grace, 1993).

The development of disciplinary discourse. Discourses are the defined statements that express a particular component of a bounded social body of knowledge that constitutes, and subsequently guides, a discipline (Foucault, 1972). It also provides the rationale for practices implemented within the discipline (McHoul & Grace, 1993). According to Foucault (1972), there are laws in the arrangement of discourses, and they can be both objects and produced effects. Examples of discourse include clinical discourse, economic discourse, and psychiatric discourse (O'Farrell, 2005). Evidence of past and present discourse is often apparent in written documents, and transcriptions of verbal exchanges (O'Farrell, 2010).

Discourses are distinct from those of other disciplines and also from earlier and later versions of themselves (McHoul & Grace, 1993). When actions are implemented based on the discipline's discourse, effects can be produced that either constrain, or enable populations, within specific historical limits (McHoul & Grace, 1993). At any given moment individuals' writing, speaking, and acting about a specific object or social practice are influenced by the discourse that currently dominates within the discipline (Foucault, 1978). As such, discourses are considered not only units of knowledge, but also transformative units of history that impact disciplinary development and practice (Foucault, 1978).

Foucault asserts that political issues and cultural concerns impact the knowledge formed that provides the basis for the discourse that is utilized for disciplines (Foucault, 1990). Specifically, individuals and their own ideals can influence what impacts discourse development (McHoul & Grace, 1993). He proposed that knowledge consists of two components that he termed 'connaissance' and 'savoir' (Scheurich & McKenzie, 2005). While formal knowledge, or

connaissance, is important in achieving disciplinary goals and providing a basis for discourse, it is not free from external influence (Scheurich & McKenzie, 2005). Indeed, *savoir*, the informal elements of knowledge, influence this more structured development of *connaissance*. Such *savior* elements include individuals' philosophical ideas, and (un) popular opinions on institutions and politics (Foucault, 1990). Ultimately, both these formal and informal knowledge elements amalgamate and provide the basis of discourses for various disciplines (McHoul & Grace, 1993).

In the context of an established discipline, discourse is often used by individuals who are in a position of authority, as an instrument of 'normalization' to maneuver populations into forms of thinking and action that are considered 'correct' (McHoul & Grace, 1993). Thus, it is important to have a sound understanding of a discipline's dominant discourse, prior to examining how power is utilized in knowledge production and in how the standards for 'appropriate' behaviour are determined (Foucault, 1972).

Public health agencies are government institutions based on specific disciplinary discourse aimed at maintaining and improving the population's health (Lupton, 1995). These organizations implement planned health promotion and protection activities to maintain the overall health status of the population (Lupton, 1995). However, in an attempt to maintain the population's health, they delineate what are considered normal and optimal health behaviours, as well as those that are excluded (Holmes & Gastaldo, 2002). From a critical stance, implementing certain disciplinary practices based on public health discourse is done with the goal of obtaining, and maintaining a conformed and normalized 'healthy' population, i.e. a population free from illness (Lupton, 1995). This goal is established to align with the public health discipline's dominant discourse (Holmes & Gastaldo, 2002; Lupton, 1995). However, what is considered to be a beneficial health practice, and 'healthy' overall, will most definitely vary depending on

individuals' personal interpretations of health, their own personal *savoir*, and understanding of the current dominant discourse (Lupton, 1995).

The impact of discourse can only be examined when it has already been utilized within the discipline, by a disciplinary practice (O'Farrell, 2005). Thus for this research study, it was only possible to examine the impact of the public health discourse that was used to ensure a healthy 'uninfected' population after the implementation of the H1N1/09 mass vaccination clinics.

Foucauldian knowledge development. Foucault's work, entitled his "oeuvre" is a substantially large portfolio that scholars tend to divide into three separate periods of philosophical investigations: archaeology, genealogy, and the esthetics "care of the self" phase (Kendall & Wickham, 2004; Scheurich & McKenzie, 2005). As Foucault's investigations are considered conceptual in nature, these first two approaches are frequently categorized as historical methods intended to explore knowledge and discourse development within various disciplines (Kendall & Wickham, 2004; McHoul & Grace, 1993). Understanding these methods allows for individuals to have a greater appreciation of Foucault's own conceptualization of knowledge and disciplinary discourse (McHoul & Grace, 1993).

Archaeology. Archaeology was Foucault's first substantial attempt at a defined investigation methodology that was concerned with problem-based questions of epistemology (Kendall & Wickham, 2004). In this method, various disciplines' systems of discourse were examined through the investigation of their stabilized knowledge, practices, and relations (Kendall & Wickham, 2004; McHoul & Grace, 1993; O'Farrell, 2010; Scheurich & Mckenzie, 2005). These elements are contained in historical texts he termed the 'archive' (O'Farrell, 2010). Through an investigation process he called 'systems of thought', he investigated how knowledge was produced and attempted to uncover any conditions that influenced its development (Kendall

& Wickham, 2004). More specifically, he concentrated on identifying any potential rules that may further shape these given forms of knowledge (Koopman, 2010).

According to Foucault (1972), if history, for whatever reason, were different, so would be the resulting discipline and knowledge. He disagreed with continuity as an explanation for the historical development of discourse and any subsequent events that transpired within a discipline (O'Farrell, 2010). This is because the notion of continuity within experiences often implies unproved metaphysical assumptions about phenomena (Foucault, 1971). Further, such assumptions are considered to strengthen existing power systems that may contribute to societal injustice (O'Farrell, 2005). Instead, Foucault (1971) emphasized that each idea, activity, and human experience has to be individually examined. This is to determine how events transpired, and what external forces influenced their development (Foucault, 1971).

Thus, the Foucauldian concept of *discontinuity* supports the idea of contingent beginnings to many possible experiences within disciplines (O'Farrell, 2010). Discontinuities are breaks, ruptures, mutations, and thresholds that occur during the history of specific events (Scheurich & McKenzie, 2005). Their presence oppose the philosophical ideas of unchanging core essences in historical phenomena (O'Farrell, 2010). Consequently, the 'discontinuity' concept also challenges the ideas of the positivist's paradigms assumptions of 'cause and effect', and the importance of a singular 'truth' (O'Farrell, 2010). While usually applied to massive paradigmatic shifts, for example the shift in modern to post-modern thinking, discontinuities can also refer to factors that contribute to an unprecedented turn of events in discourse development (Koopman, 2010). Therefore, archaeologists seek situational discontinuities that can lead to different disciplinary developments in the experience under investigation (Kendall & Wickham, 2004).

In the medical and life disciplines, what is considered to be 'true or false' and 'right and wrong' can abruptly change based on such discontinuities (Foucault, 1980). According to Foucault (1980), over a short period of time the discovery and introduction of new evidence replaces the discipline's existing dominant discourse. This causes old knowledge to be discarded and health care professionals utilize this different evidence to support their practice (Gastaldo & Holmes, 1999). A profound example of this was seen in the mid-nineteenth century with the evolution of public health from mainly curative disease techniques to that of health promotion and illness prevention approaches (Lupton, 1995). As such, the dominant discourse that is utilized as the basis for today's public health could also be challenged in the future.

Genealogy. In addition to examining the archaeological conceptualizations of disciplinary discourse, genealogists challenge the leading modern notion of the 'origin' of phenomena and knowledge (Scheurich & McKenzie, 2005). This is because Foucault believed that there are no pre-determined unchanging elements at the core of all experiences that can be 'discovered' (McHoul & Grace, 1993). Foucault also explained that trying to establish disciplinary origins is just another attempt to release a singular, 'true' reality to promote as knowledge within the disciplines (McHoul & Grace, 1993; Scheurich & McKenzie, 2005).

Foucault (1970) maintained his assertion that reality and the origins of 'reality' could change due to multiple factors. Thus, the beginnings of knowledge development, presiding discourse, and its impact on the discipline could also be different (McHoul & Grace, 1993). Genealogists through extensive analysis, attempt to identify the contingent sources of knowledge within disciplinary discourse (Watson & Vessey, 1997). They critique individuals who claim they have found pure and universal 'origins' of phenomena, and conclude that such inceptions are fabricated. Also, with this newer methodology, Foucault desired to eliminate the hinting of

transcendence, the ability to see data objectively, which was sometimes said to be apparent in his archaeological discussions (Koopman, 2010). This view of his beginning work was upsetting to Foucault as he felt that it was not possible to separate oneself from discipline being studied (Legrand, 2008).

Despite Foucault's continued emphasis that 'origins' were not possible, he saw the importance of understanding the historical precursors that shape the discourse being examined (Lopez & Willis, 2004; Watson & Vessey, 1997). In particular, as a critical historian, he emphasized that exploring the deepest structures of individuals' experience is a necessity in understanding knowledge and discourse development (Kendall & Wickham, 2004). By identifying these different structures, it is possible to highlight the human influence on existing discourse, and how past and present discourse has shaped individuals (Koopman, 2010). Such investigations are conducted with the ultimate goal of identifying issues that require change, or action, within a discipline (Kendall & Wickham, 2004).

Foucault's Concept of Power

According to Foucault (1977), power is a fluid entity that circulates between the bodies of two or more people in established relationships based on an institutional discourse. It is located outside conscious decision, and changes with the development of, and changes in existing relationships (Foucault, 1977). Power does not have a specific origin, and only exists when it is being exercised (Holmes & Gastaldo, 2002; McHoul & Grace, 1993; O'Farrell, 2010). Therefore, it is not a 'thing' or 'capacity' that can be owned by the State, any social class, or particular individual (Foucault, 1977; O'Farrell, 2010). Instead, power is the relationship where one person is often rendered subordinate to the other(s) (McHoul & Grace, 1993). This can be used

strategically to meet outcomes deemed necessary by a disciplinary institution, such as modern day democratic governments (O'Farrell, 2005).

These relationships and their resulting interactions are guided by the discipline's discourse. All parties in the relationship must agree on the discourse to some extent, as power can only be exercised over free subjects (Foucault, 1977). This freedom means that individuals are able to react and behave in different ways if they so decide (O'Farrell, 2005). Power acts on individuals, and these individuals decide to respond accordingly (Foucault, 1990). When an individual no longer agrees to act within the discipline's discourse, the dynamics of power will change, the discipline's discourse will be impacted, and the relationship will alter to become something new (O'Farrell, 2010).

Through relationships, Foucault's (1980) power is capable of creating things, inducing pleasure, producing knowledge, and contributing to overall disciplinary development. As such, Foucault (1980) differs from other philosophers in that he did not see power as negative or repressive, nor did he construct an overall theory of power. Instead, in his own investigations, he differentiated power historically to propose solutions for specific disciplinary concerns (McHoul & Grace, 1993). To do so, he examined the historical conditions that contribute to how power manifests in society and within disciplines, and also the material effects that result from power's presence (McHoul & Grace, 1993).

Power relations, and the struggles that result from its presence, are pervasive in society as disciplines utilize dominant discourses that compete with others' conflicting interests (Foucault, 1990). However, despite these struggles, Foucault's (1990) power conceptualization does not divide populations into 'rulers' and those who 'are ruled'. Instead, power strategies can be exercised by all individuals and are perceived to include everything from coercion to

manipulation to the subtle exercise of influence (Weberman, 1995). Due to this range of power techniques, there are many ways that power could be exercised to minimize conflict amongst disciplinary groups (Holmes & Gastaldo, 2002; Weberman, 1995). However, the type of power used is only apparent and understood when individuals implement techniques to produce effects (Foucault, 1980). Disciplinary power techniques are one kind of strategy used by organizations to produce desired outcomes.

Disciplinary power. Disciplinary power, also referred to as the 'new mechanism of power', began to emerge at the end of the 18th century (O'Farrell, 2005). This 'technology' replaced sovereign power, as this type of power became less efficient in regulating populations (Foucault, 1977, McHoul & Grace, 1993). Sovereign power existed when a highly individualized authority figure held power by divine right or public ceremony, such as a king or priest (O'Farrell, 2005). However, with the new implementation of modern society's disciplinary power, individuals are instead assigned positions of authority, due to their capabilities and knowledge of the discipline (McHoul & Grace, 1993). Subsequently, they are given the right, by the institution, to exercise power in disciplinary decisions (McHoul & Grace, 1993). However, in order for this to function, the majority of individuals have to agree with the discipline's discourse, and the rationale for choosing the individuals in authority (Foucault, 1977). While all persons can exercise power within a disciplinary institution, not all can have authoritative positions.

Through continuous surveillance, individuals in authority exercise specific disciplinary power techniques to improve individuals' capacities (Foucault, 1977). First developed and implemented in armies and schools, disciplinary techniques were quickly utilized in factories, hospitals, and prisons (O'Farrell, 2005). Today such strategies are evident in other societal institutions, and are used to produce concepts, ideas, and structures that are concerned with the

management of life processes (McHoul & Grace, 1993; O'Farrell, 2010). For example, public health professionals use disciplinary power techniques with the intent of documenting and regulating the health status of populations (Lupton, 1995).

Disciplinary power techniques are exercised over individuals to produce the discipline's desired effects on persons' health conduct and attitudes (Hindess, 1996). Individuals are trained to make optimal use of their own physical and psychological potential, to act in accordance with the institution's discourse (Foucault, 1977; Holmes & Gastaldo, 2002). In turn, these individuals are rendered docile, as they conform to maintain disciplinary standards, and are useful in meeting institutional goals (Foucault, 1977).

Exercises of disciplinary power are subtle and do not use overt forms of violence (Holmes & Gastaldo, 2002). Individuals are not constrained, and instead they are taught to police themselves to meet satisfactory pre-determined standards (McHoul & Grace, 1993). In fact, the ways disciplinary power is utilized can sometimes be insidious in its ability to oppress humans' free will in the creation of these conformed 'docile bodies' (Foucault, 1977; Lupton, 1995). For example, rationale can be provided to entice individuals to behave in a way that corresponds with the discipline's discourse (Foucault, 1977). Some disciplinary power techniques used to ensure individuals abide by the discipline's discourse-based standards include hierarchical observation, normalizing judgment, and examination (Foucault, 1977; Holmes & Gastaldo, 2002; McHoul & Grace, 1993).

In *hierarchical observation*, a disciplinary institution organizes masses of individuals within the organization to be continuously monitored (Foucault, 1977). Individuals are examined, so that each person can be defined as a 'case' to determine if they are performing satisfactorily against group norms (to the other cases) in meeting institutional standards (Foucault, 1977). As

such, the distribution of individuals within a space must allow for constant surveillance (Foucault, 1977). Examples of spatial distribution that promote observation include the physical layouts of prisons and army camps (Foucault, 1977). Designs in these institutions often make it possible to see everything constantly (O'Farrell, 2005).

However, hierarchical observation mechanisms can also be implemented in other contemporary institutions such as hospitals and educational settings (Foucault, 1977). In these settings, surveillance is not just conducted through physical mechanisms. Individuals may also be monitored by their personal sharing through writing accounts of their experience, or by conversing with other individuals (McHoul & Grace, 1993). In order for the hierarchical observation practice to be 'effectively' implemented, both the discipline's practitioners and monitored cases must perceive that the discipline has the right to observe the individuals (Foucault, 1977).

Following this surveillance, Foucault (1977) explains the second disciplinary power technique to be *normalizing judgment*. This includes the ranking and subsequent training processes of the individuals being monitored (Foucault, 1977). Upon observation, disciplinary experts give rankings of either 'satisfactory' or 'unsatisfactory' to individual 'cases' in their ability to conform to group norms as defined by the discipline's discourse (Foucault, 1977). Those that obtain an unsatisfactory ranking are not punished violently (Foucault, 1977). Instead, interventions are implemented to provide support to the individuals to correct their behaviours, and to attain a 'satisfactory' disciplinary performance, and/or outcome (Foucault, 1977). Specifically, the expert provides training, with both rewards and penalties, to assist 'unsatisfactory' cases in meeting the institution's standards, or norms.

The last and final disciplinary power technique is *examination*. Examination provides the basis of the hierarchical observation and normalizing judgment strategies. It includes all methods used to monitor and evaluate the individual, and the subsequent interventions implemented to correct the individual's behavior (Foucault, 1977). Examination also transforms individuals into both objects of knowledge and power (O'Farrell, 2005). This is because after individuals are monitored and evaluated, they are trained to reproduce desired behaviours that are based on the discipline's knowledge and existing discourse (Foucault, 1977).

In examination, a disciplinary expert, exercises power when determining where the individual 'case' is in relation to others within the institution (Foucault, 1977). The expert also exercises power when implementing different training methods for the individual. This results in an increase in the case's knowledge about the discipline's dominant discourse, and any institutional pre-determined satisfactory standards (Foucault, 1977). Further, information garnered from the monitoring, ranking, and training of individuals can be filed away to generate disciplinary knowledge to help authority figures monitor and control others in the future (O'Farrell, 2005).

Disciplinary power techniques can be used to bring about change in biological and medical fields (Holmes & Gastaldo, 2002). For example, PHNs are in a position whereby they have the professional knowledge, or the *connaissance*, of the discipline's currently presiding health discourse. The public is aware this discourse exists, and recognizes the nurse as a disciplinary expert in public health and its practices (Holmes & Gastaldo, 2002). In the nurse-client relationship, PHNs subsequently have the authority, and are able to exercise power to engage in therapeutic assessments and interventions necessary to influence client behaviours. By

doing so, they are able to contribute to the construction of clients as 'healthy citizens', as based on the dominant discourse of public health (Holmes & Gastaldo, 2002; Lupton, 1995).

The Relationship between Power, Knowledge, and Discourse Development

Foucault studied the link between power relations, knowledge production, and the development of discourse used in disciplines and that guides society (McHoul & Grace, 1993). Foucault (1977) believed that knowledge and power are closely related and operate interchangeably. According to Foucault (1977), power mechanisms can be exercised to collect information about people's activities and their existence. This information is subsequently used to produce knowledge for the discipline, and to provide a basis for institutional practices (O'Farrell, 2005). In essence, newly crafted knowledge either contributes to the existing, or transforms a discipline's established discourse (Foucault, 1977). In turn, as a person becomes increasingly aware of information about individuals and their disciplinary practices, their ability to exercise power within the institution further increases (McHoul & Grace, 1993; O'Farrell, 2005). Also, the more authority an individual has within the discipline, the more likely they are to have access to the information guiding the existing dominant discourse (McHoul & Grace, 1993).

Individuals within an institution have different levels of assigned authority. Regardless of their position, all individuals are capable of exercising some degree of power because they have knowledge, and exist in relationships with others in the discipline (O'Farrell, 2010). As such, individuals are never totally powerless, or powerful, and are continually repositioned within the power relationship as a result of implemented discourses (Lupton, 1995). In these relationships, individuals can share information/knowledge through both formal and informal communication methods (Lupton, 1995; O'Farrell, 2010; Wilkinson, 1999). These networks can be personal, or professional in nature. Upon learning of institutionally implemented practices, if individuals do

not agree with the discourse utilized, varying acts of resistance can occur (Lupton, 1995; O'Farrell, 2010).

Foucault's Concept of Resistance

According to Foucault (1979), *resistance* is an expected component, and/or outcome of power. Power is exercised within the disciplines when specific disciplinary practices are implemented. Resistance develops when individuals disagree with the power structure, and the discourse that is used to provide the basis of the disciplinary practices (McHoul & Grace, 1993; O'Farrell, 2010). As a result, individuals reject the discipline and its institutional practices (McHoul & Grace, 1993). However, in order to do so, an active examination of the power techniques being employed must first occur (McHoul & Grace, 1993). Once they are identified, individuals can demonstrate resistance through multiple acts that refuse the discipline and its institutional practices (McHoul & Grace, 1993).

Individuals can demonstrate resistance against exercised power because of their own conscious frustration and anger (Lupton, 1995). However, resistance can also result from individuals' unconscious resentments (Lupton, 1995). Resisting acts can range from mass collective action that overtly challenges exercised power to many subtle non-conforming acts (Lupton, 1995). These subtle smaller actions can often be more difficult to manage than blatant displays of opposition as "mundane everyday acts of resistance [can] potentially produce profound effects" (McHoul & Grace, 1993, p. 86). Regardless, the rationale for resistance is never static, and is dependent on each person's individual life context (Lupton, 1995; O'Farrell, 2010).

Resistance is necessary for power to exist as a relational concept, as it stabilizes, and balances existing power structures in disciplines (McHoul & Grace, 1993). Indeed, multiple

resisting forces including struggles, confrontations, contradictions, inequalities, and transformations, shape the way that discourse is utilized in disciplines, and thus the way power is implemented (McHoul & Grace, 1993). If these forces were to differ historically in any way, so would the resulting outcomes of power (McHoul & Grace, 1993). As such, there is no overall essential, and universal, component to resistant forces.

The power-resistance relationship is thought to be inevitable in socially constructed disciplines that have the 'directors' and the 'directed' (McHoul & Grace, 1993). Individuals can experience resistance when they have less awareness of the 'truth' utilized for the basis of the presiding dominant discourse, and also if they disagree with it (Lupton, 1995). However in any situation, as individuals' knowledge and opinions regarding the discipline change over time, power and resistance struggles will also vary accordingly (Lupton, 1995; O'Farrell, 2010). For example, an issue of contention may become irrelevant when knowledge, guiding rationale for specific actions, and strategies to cope are presented to individuals (Lupton, 1995).

As resistance is inevitably present, it is important for its existence to be recognized and addressed (McHoul & Grace, 1993; O'Farrell, 2010). Individuals within disciplines can then use their knowledge of the dominant discourse appropriately to respond effectively, overcome severe resistance, encounter minimal conflict, and be productive in reaching their organizational goals (Holmes & Gastaldo, 2002).

Knowledge, Power, Resistance in the Workplace – An Integrated Framework

Power exists in relationships between people, at every level of society (O'Farrell, 2010). As such, it is present within all disciplines and their corresponding work environments (O'Farrell, 2010). This is evident in Figure 1 (page 69), in a conceptual framework schematic developed to represent these concepts of knowledge, power, and resistance specifically for this

study's exploration of PHNs' H1N1/09 experiences. While typically power is perceived as repressive, and as such negative, from a Foucauldian perspective power can be constructive and beneficial (Holmes & Gastaldo, 2002; O'Farrell, 2010). For example, according to Foucault, it can be considered a particularly positive force when it is used to produce desired effects, or *goals* (Holmes & Gastaldo, 2002).

Individuals in a position of traditional workplace authority strategically use disciplinary power techniques, and their understanding of the existing dominant discourse to decide upon the explicit actions to take to meet determined goals (Lupton, 1995; McHoul & Grace, 1993; O'Farrell, 2010). When using Foucault's conceptualization, one notable goal of using power in the workplace is to develop an effective and efficient workforce (Holmes & Gastaldo, 2002). This workforce, in turn, will be able to complete the specific objectives as determined by those in positions of authority who most often exercise disciplinary power. This is the case, for example when managers, who due to their authoritative workplace positions, make organizational decisions regarding goals that the employees are then responsible to implement.

However, it must be noted that while goals may be determined, these may not be necessarily considered positive by all of the individuals within a given work setting. In fact, the knowledge that is utilized to make decisions regarding workplace goals may be only considered the 'truth' for some within the organization (Lupton, 1995). For example, in a public health agency, only those who agree with the discourse about vaccinations and their ability to provide herd immunity will consider the implementation of a pandemic mass vaccination response important and necessary.

Regardless of personal opinions, employees often implement the actions necessary to achieve organizational goals, and in essence, act in a conformed way that managers have deemed

appropriate (Holmes & Gastaldo, 2002; Lupton, 1995). However, as free agents with their own knowledge, they may not understand the rationale behind employers' decisions. In particular, if employees are uninformed about the specific discourse that guides the decision-making for disciplinary goals in the first place (Holmes & Gastaldo, 2002).

Further, if employees disagree with the discourse that managers use to choose goals and plan actions, they may perceive the exercised power as negative (Lupton, 1995). It is also possible employees may not see the organization's goals themselves as valuable, and may be more resistant to managerial objectives (Lupton, 1995). For example, while resistant employees may implement prescribed actions to meet organizational goals, they may perform them less effectively and/or at a slower rate. Further, they may harbor ill feelings toward the organization, and have less inclination to remain in the workplace (McHoul & Grace, 1993). In Figure 1, the possible occurrence of resistance is presented specific to the key players involved in the H1N1/09 mass vaccination response.

In workplaces, one method managers can use to potentially handle resistance is to ensure that the knowledge that shapes organizational actions is communicated to employees (Lupton, 1995). This can be done in an effort to have staff behave in a manner that will help meet the organization's goals. For example, public health managers could teach employees the rationale for an emergency response, in an effort to have these individuals perform the tasks that the organization requires to meet its goal. While the information that is shared may not correspond completely with the employees' existing knowledge, their awareness of the rationale for workplace actions will nonetheless increase (Lupton, 1995). As a result, employees could become more informed, and potentially work more efficiently toward organizational objectives (Holmes & Gastaldo, 2002).

Foucault asserts that all individuals can exercise power, and not just those individuals in positions of higher traditional authority (Holmes & Gastaldo, 2002). This includes those who are in a position to direct organizational decisions, the management, and those that are directed to implement actions, the employees. This is evident in Figure 1 whereby power is exercised by all individuals involved in the H1N1/09 response. What distinguishes these groups, however, is the traditional authority these individuals have within the disciplinary institution and the how they exercise power techniques over different groups (Foucault, 1977). For example, while management can exercise power over its employees, the employees can exercise power over the clients they are serving (Holmes & Gastaldo, 2002; Lupton, 1995). This is particularly the case in the health-related disciplines as managed 'employees' are professionals that use a range of power techniques over individuals when providing care in an attempt to maintain 'healthy citizens' and prevent the spread of disease (Holmes & Gastaldo, 2002; Lupton, 1995).

Employees are able to exercise more power as a result of increased awareness of the discourse that guides their profession and impacts their workplace (Lupton, 1995; McHoul & Grace, 1993). Figure 1 demonstrates this as knowledge informs individuals who exercise power within the discipline. This is represented as knowledge and power being placed on the same arrows within the diagram. Also, employees' ability to exercise power is enhanced when they are able to act based on disciplinary knowledge from their own experiences (Lupton, 1995). This is because they require less training to conform to the established disciplinary norms to meet organizational objectives (Lupton, 1995). Awareness of the utilized discourse can contribute to individuals seeing the validity behind actions used to achieve workplace goals (Kinchloe & McLaren, 1998).

Traditionally, it is managers who have increased access to information that provides the basis of the discipline's discourse, as a result of the authority inherent in their positions (McHoul & Grace, 1993). With workers maintaining their participation in the 'manager/employee' relationship, managers will continue to be able to exercise power over employees within workplaces, and decide upon the discipline's discourse that guides organizational actions (Holmes & Gastaldo, 2002). For the purposes of this project's conceptual framework, this assumption will be maintained. Figure 1 outlines the integration of these concepts in a schematic for this study's developed conceptual framework.

Figure 1. Integration of knowledge-power-resistance for PHNs' H1N1/09 experiences.

This figure illustrates the directions of the dispersion of knowledge/power (the red arrows), with the simultaneous occurrence of resistance (the blue arrows). Knowledge informs the discourse utilized by individuals within the structure. This impacts how power is exercised and resistance is demonstrated. The concepts are exercised amongst key players: managers, employees, and the community (the three boxes). All these players' actions are based on the public health discourse aimed at maintaining citizens 'healthy' and free from pandemic flu.

Chapter Four- Research Methodology

In this chapter, the study's research methodology will be discussed. Interpretive description was utilized to examine PHNs' experiences working during the H1N1/09 response. First, the philosophical underpinnings of interpretive description is presented, along with a concurrent discussion as to how the Foucauldian Knowledge-Power-Resistance framework is appropriate and integrates with this methodology. This is done to facilitate the reader's understanding of how this qualitative design fits with my critical epistemic stance. Following, the study's setting and sample, along with the data collection and analysis methods, will be described. Lastly, strategies implemented to enhance rigour, and ethical considerations will be presented.

Research Design

Interpretive description, as described by Thorne (2008), was used to investigate PHNs' experiences working during the H1N1/09 response. Philosophically, interpretive description is based within a constructivist paradigm (Thorne, 2008). It is situated on the ontological assumption that individuals produce their own unique reality of an experience, and thus, there are multiple concurring realities (Thorne, 2008). It recognizes that each individual's experience is constructed and contextually based, while understanding that humans do indeed have shared realities, or shared components of realities (Thorne, Reimer-Kirkham, & O'Flynn-Magee, 2004). As such, reality is not an external, fixed, or objective entity that can be explicitly examined (Guba & Lincoln, 2005).

From an epistemological standpoint, the underpinnings of interpretive description propose that the researcher's previously established knowledge provides the foundation for the investigation (Thorne, Reimer-Kirkham, & MacDonald-Emes, 1997). It is a naturalistic research approach that is presented as a form of qualitative description filtered with a disciplinary lens, for

example the researcher as 'nurse' (Thorne, 2008). This is because if the researcher had no previous disciplinary or theoretical background, there would be no existing source to develop research ideas, and to produce new knowledge (Hunt, 2009). With their awareness of the discipline's current practice, researchers make assumptions regarding the discipline's informational needs, elements of the study's design, and the proposed research's relevance (Thorne et al., 2004).

According to Thorne et al. (1997), beyond positioning the researcher with a disciplinary lens, the use of a theoretical framework is appropriate when conducting an interpretive description. This is a component of what Thorne (2008) terms *theoretical scaffolding*, and helps ground the study academically. It does this by identifying the assumptions, beliefs, and values that the researcher is bringing to their study. Theoretical scaffolding consists of two separate elements that help to provide the researcher's rationale for the study. These components include a completed literature review and the location of the researcher as 'self' (Thorne, 2008).

Interpretive description fits with the critical paradigmatic stance as the critical theory and constructivist paradigms epistemologically converge (Guba & Lincoln, 2005). This particularly fits with the assumption that there is no set singular reality and that knowledge is inextricably linked to the meaning an individual gives an experience (Guba & Lincoln, 2005). Moreover, the Knowledge-Power-Resistance framework fits with an interpretive description, as Foucault believed there was no such thing as an overall 'truth', or the production of knowledge that was pure and unbiased (McHoul & Grace, 1993). In particular, he emphasized that the discovery of one true reality is unattainable as all humans' realities are legitimate to each existing person (Koopman, 2010). Like Thorne (2008), Foucault also maintained that these different realities are individually created as a result of many different factors (McHoul & Grace, 1993).

Located within a critical stance, Foucault (1977) maintained that obtaining another's pure thoughts is not possible, as any information shared in an interview would ultimately be affected by the researcher's background in future analysis. He also avoided giving authority to the research participant, as they, or their knowledge, are no more important than the individual researcher (McHoul & Grace, 1993). As such, it is integral that I participate in continuous self-reflection to identify any values that can have an impact on the research (Guba & Lincoln, 2005; Kincheloe & McLaren, 1998; Sumner, 2003). This process will highlight what I consider to be pertinent. I can then examine if these assumptions are appropriate when engaging in the development of new disciplinary knowledge (Kincheloe & McLaren, 1998).

In interpretive description, when an individual locates himself/herself as researcher, he/she is essentially examining what he/she is bringing to the study. This is because, as in many other qualitative methods, interpretive description "explicitly recognizes and capitalizes on the researcher as instrument" (Thorne, 2008, p. 64). The researcher's ideas will therefore impact the quality of the study and the overall trustworthiness of the research findings for clinical applicability (Thorne, 2008). The researcher's location of 'self' encompasses three separate elements: 1) the location of himself/herself within the discipline; 2) the identification of his/her fore-structures; and 3) the establishment of any theoretical, or conceptual, underpinnings for the research (Thorne, 2008).

As per Thorne (2008), I located my 'self' for this study as I am situated in the discipline. My experience of being a nurse, and a Masters' student in the Pandemic H1N1/09 mass vaccination clinics helped guide the development of this study. With this, I identified my fore-structures on the subject as previously identified in Chapter One's epistemic stance: 1) My personal experience impacted how I viewed PHNs' H1N1/09 experiences and contributed to my

desire to give these nurses a voice; 2) PHNs work to promote and maintain the health of communities; 3) PHNs work in a variety of settings; 4) PHNs have different knowledge, experience, and skill-sets; 5) PHNs may have not felt prepared (and/or may not have had the knowledge) to assume their roles as immunizers and supervisors in the H1N1/09 clinics; and lastly, 6) Managers and planners (individuals in the IMS) had easier access to the information, or knowledge, that provided the basis for the mass vaccination clinics.

The last element of the 'identification of self' is the description of the researcher's theoretical influences that will provide the philosophical underpinnings to the research design (Thorne, 2008). However, as interpretive description was created to pursue inquiry within applied disciplines, it must be emphasized that this is not used for the beginnings of theorization or the confirmation of any particular viewpoint (Thorne, 2008). Instead, a theoretical framework provides the researcher with an additional lens to help establish the research problem, and to guide elements of the study design. Specifically, a framework can help to orient the inquiry, and provides rationale for anticipated boundaries of data collection and analysis (Thorne et al., 1997). It also explicitly shows the researcher's theoretical assumptions, biases, and preconceptions that drive research decisions (Thorne et al., 1997). In this interpretive descriptive study, I used my nursing background for my disciplinary lens, while my fore-structures, and the Foucauldian Knowledge-Power-Resistance framework served as my theoretical underpinnings. Together, these elements helped me to make decisions surrounding the study's sample, the data collection methods (interviews and document review), and how I conducted data analyses.

Interpretive description was specifically designed to explore individuals' experiences to generate nursing knowledge regarding a clinical phenomenon of interest (Thorne et al., 2004). It addresses the methodological challenges that arise for researchers when attempting to examine

clinical problems using other research designs where the purpose is theorizing (Thorne, 2008). Unlike some other sciences, nursing is an applied or practical science that needs 'particular' information to meet the discipline's knowledge needs (Thorne et al., 1997). Interpretive description provides a form of inquiry that allows for patterns of experience, action, or expression to be interpreted within an applied disciplinary domain (Thorne, 2008). With this design, the overall goal is to develop knowledge from research findings that can be directly applied to improve a front-line clinical scenario (Thorne, 2008). Specifically, this interpretive descriptive study was done to generate knowledge from front-line nurses' H1N1/09 experiences to help inform pandemic planning for future mass vaccination responses.

Setting

PHN participants worked in Ontario, in a large urban population centre municipal's public health agency. A description of the public health agency's mandate was obtained from the organization's website and is presented below.

This agency provides a variety of public health services for the city's population as per the requirements of the Ontario Public Health Standards and Organizational Standards.

Further, this agency advocates for the development and implementation of healthy public policy, while serving as a teaching unit with nearby post-secondary institutions.

PHNs at this agency work in a variety of community programs including breastfeeding support groups, school-aged vaccination clinics, prenatal classes, and sexual health services. Moreover, PHNs work at different sites as some services are offered at multiple locations. For example, sexual health services are provided at one main clinic and four satellite sites. Other programs are delivered only at certain pre-determined times of the year, like the school-aged immunization program.

Recruitment and Sample

Purposive sampling was used to ensure that recruited participants had been deployed to the H1N1/09 mass vaccination clinics. Inclusion criteria for recruitment was as follows, participants must: 1) be a registered nurse (RN); 2) have been 'deployed' as either a front-line 'immunizer' or 'clinic supervisor' to the mass vaccination clinics for a minimum of two weeks; 3) have worked at the agency for a minimum of one year prior to the H1N1/09 response; and lastly, 4) speak English. 'Front-line immunizers' were PHNs who worked at an 'immunization station' and were responsible for explaining the procedure to clients, obtaining informed consent, and administering the H1N1/09 vaccination. 'Clinic supervisors' were PHNs responsible for overseeing the entire mass vaccination clinics' operations. This included managing nurses (i.e. immunizers) and other non-nursing staff (i.e. administrative and information technology personnel) and overseeing clinic logistics. These inclusion criteria were necessary in order to obtain a homogenous sample of participants (i.e. all RNs who worked in the mass clinics), with heterogeneous backgrounds (i.e. PHNs who work in a variety of public health departments before and after H1N1/09). This sample provided the multiple 'angles of vision' regarding their individual experiences working in the H1N1/09 response.

Amendments were made to the original inclusion criteria during the first few days of participant recruitment. Specifically, the criterion that 'participants must have worked at the agency for a minimum of one year' was omitted as I was contacted by PHNs who were interested in participating in the study, and who did not meet this eligibility criterion. I determined that these individuals' experiences were still valuable despite not having worked at the agency for the previously established time period. Also, that these PHNs would provide another 'angle of vision' regarding the phenomenon of interest. According to Thorne (2008)

there may be experiential elements that are worthy of inquiry that the researcher did not realize at the study's onset. She recommends that the researcher adjust the study's inclusion criteria accordingly if/when these are identified (Thorne, 2008).

Thorne (2008) suggests that interpretive descriptive studies obtain between five and 30 participants. However, an interpretive description's overall sample size is influenced by the nature of the research question. It is considered appropriate when there are enough participants to provide a meaningful description of the clinical phenomenon through a disciplinary lens (Thorne, 2008). Overall, a final purposeful sample of 23 participants was interviewed. This included 16 front-line immunizers and seven clinic supervisors. I determined this sample to be adequate as the recruited participants worked in multiple different departments within the agency, including baby/children wellness programs, sexual health centres, and workplace health initiatives. They also possessed a wide variety of nursing career histories, career lengths, and public health experience. Further, participants had been deployed to all of the agency's six fixed clinics and multiple roving mass vaccination sites. Thus, participants had a variety of work experience prior to H1N1/09, and were also able to provide different deployment perspectives due to being assigned to work at the different clinics.

Data Collection

In an interpretive description methodology, engaging with data during its collection and analysis is a collaborative process (Thorne, 2008). The researcher is entering into the participant interview actively collaborating in the discussion, or examining a document data source, with his/her thoughts on the subject clearly identified (Thorne, 2008). Although he/she makes every attempt to not allow his/her held ideas to bias the overall research, the researcher is a human with

his/her own experience. Thus, when the researcher engages with the study's data, he/she is co-creating and contributing, to the overall findings (Thorne, 2008).

Thorne (2008) discusses the value of using multiple data sources. Specifically, using multiple data sources can help the researcher to counterbalance the limitations of using only one source and provide additional 'angles of vision' about the phenomenon (Thorne, 2008). For this study, data was collected in two ways, semi-structured conversational interviews and a review of pandemic procedure documents. The interviews allowed participants to reflect on H1N1/09, and permitted for a deeper understanding of these PHNs' experiences. As PHNs were the front-line employees responsible for implementing the clinics, their professional experiences contributed to the agency's goal of protecting the community against the H1N1/09 influenza. Review of the pandemic procedure documents helped to establish if the agency's planners had foreseen and arranged for PHNs' needs in the event of a pandemic mass vaccination response. Also, these documents provided context to the study.

Semi-structured interviews. One-to-one semi-structured interviews were used as they are considered the most useful technique for gathering descriptions of experiences (van Manen, 1990). The loosely structured format permits the researcher to ask a limited number of questions about the phenomenon and participants are thus able to speak freely about their experiences (Polit & Beck, 2012). The researcher attempts to keep an open mind, the participant identifies those experiential elements that have personal significance, and a deeper understanding of the phenomenon is created for both individuals (van Manen, 1990).

Interviews are not neutral tools for data collection. Instead, they are subjectively created through the active communication between two people who each have their own personal characteristics and histories (Fontana & Frey, 2005). It is these attributes that cause both the

researcher and the participant to respond to one another in a particular way. It also contributes to participants feeling comfortable enough to share certain things with the investigator (Hutchinson & Wilson, 1994). For this interpretive description it was my responsibility to examine *how* my attributes contributed to the interview and to the analysis of the participants' experiences (van Manen, 1990). I did this by clearly identifying my fore-structures prior to commencing the participant interviews (Thorne et al., 2004).

Additionally, I continued this identification process through the progression of interviews in my reflective journal. This is because data collection and analysis are iterative processes in qualitative research, and data collected from the first interviews helped guide future participant interviews (Sandelowski, 2000). Particularly, researchers need to be aware of their thoughts as to better understand how they will approach and interpret the collected data (Thorne, 2008). New comprehensions were created through each interview as a result of a negotiation between my evolving understanding of the phenomenon and the participants' different contextual interpretations of their own experience (Fontana & Frey, 2005).

Similarly, critical approaches maintain the transactional and subjectivist epistemic stance that the investigator and the participant are continuously connected (Guba & Lincoln, 2005). Methodologically, critical theory-based research data collection and analyses processes are both dialogic and dialectical. They are dialogic in that it is necessary for critical researchers to engage in a negotiated dialogue with those individuals they wish to study (Campbell & Bunting, 1991). They are dialectical in that dialogue is used to investigate issues with the aim of transforming existing misconstructions, or potential misunderstandings, to increase individuals' awareness (Guba & Lincoln, 2005). Specific to this study's framework, Foucault (1977) maintained that there is a connectedness between individuals, the 'investigator' and the 'investigated' that cannot

be eliminated. Consequently, his philosophy recognizes that the background of both individuals is necessary, and equally important in creating findings and in subsequent knowledge development (McHoul & Grace, 1993).

Conducting the interviews. After ethical approval was obtained from both the researcher's educational institution, and the municipal public health agency that provided the recruitment site (See Appendix B for the Research Ethics Board approval certificate), interviews were conducted. These occurred between January 2014 and September 2014. All PHNs working were notified of the study by the agency's internal email (see Appendices C and D for the participant recruitment email in English and French). I determined, in consultation with the agency, that internal email would be the most effective method to use for recruitment as every nurse has a work email account that they are expected to access. Further, there are multiple sites where PHNs are employed, and email was the most effective way of ensuring all eligible participants were informed of the study, regardless of their physical location.

The email was sent from a pre-determined program manager's email account, and was sent on my university's letterhead as an attachment (Appendices C and D). The email described the research and explained that the manager sending the email had no affiliation with the study. Also, that the manager would not be made aware of those employees who did, or did not, participate. Interested individuals, who wanted to learn more about the study, contacted me directly. I then sent them a combined informed consent/information letter to review (see Appendices E and F for the informed consent/information letter in English and French). Upon reading this document, those nurses who wanted to participate contacted me and we arranged an interview time and location. Finally, in an attempt to use snowball sampling technique, I

mentioned to participants that if they knew of any PHNs that may be interested in the study, either who were still working or who have since left the agency, to contact me.

Interviews were conducted in-person at mutually agreed upon venues. These occurred in meeting rooms located at the agency's main headquarters ($n=14$), agency satellite offices ($n=2$), coffee shops ($n=5$), my educational institution ($n=1$), and lastly in a PHN's home ($n=1$). Before the start of the interview, I explained the project purpose once again and asked for permission to audio-record the session. I explained the informed consent and ensured it was signed before the interview began (Appendix E). Every effort was made to establish rapport and build trust with the participants, as this is essential to the comfort of the participant, and the overall success of the interview (Speziale, 2007). I attempted to accomplish this by giving my undivided attention to the participants during the interviews.

Also, prior to the start of the interview, I asked general demographic questions to establish the participants' professional backgrounds prior to entering the H1N1/09 mass vaccination clinics. This was also done to ensure participants met the study's inclusion criteria (see Appendix G for the demographic questions). Table 1 outlines the participants' professional background information, their sample characteristics, as determined by their responses to the demographic questions.

Table 1

Sample Characteristics

Characteristic	Number of Participants (<i>n</i> =23)
Clinic role	
Immunizer	16
Supervisor	7
Level of completed education	
Diploma	1
Bachelor's degree	20
Masters' degree	2
Years working as a registered nurse	
0-10 years	6
10-20 years	7
> 20 years	10
Years working at the agency	
0-10 years	11
10-20 years	8
> 20 years	4
Length of deployment in H1N1 clinics	
0-6 weeks	5
6-8 weeks (full duration)	18
Number of H1N1 clinics worked in	
1 fixed site	12
2 or more fixed sites	7
Multiple roving sites	4
Programs participants deployed from	
Emergency planning	2
Health hazard prevention	1
Health promotion for babies	5
Health promotion for older adults	4
Healthy eating/ physical activity	3
Tobacco prevention	2
Needle exchange	1
Regular immunization programs	5

Because this study's interviews were semi-structured, I developed a limited interview guide aimed at understanding PHNs' experiences working in the mass vaccination clinics (see Appendix H for the participant interview guide). The Foucauldian Knowledge-Power-Resistance conceptual framework informed the questions produced for this interview guide. However, Foucault's conceptualizations of knowledge, power, and resistance were not described to the participants. This was done to ensure participants identified their own level of H1N1/09 preparedness, knowledge, and experience without being influenced by an explanation of the study's framework. Further, the openness of this study's semi-structured interview guide granted participants the opportunity to share what they felt was significant about working in the clinics. This format also allowed the participant to disclose issues that I may not have originally identified as pertinent (May, 1991). Indeed this was the case because after my first interview, I made revisions to the interview guide by adding more probes and prompts.

Interviews were audio-recorded to ensure a full record of the interview was obtained (King & Horrocks, 2010). Also it allowed me to focus primarily on what the participants were saying, without being distracted by note taking (Thorne, 2008). While interviews were ongoing, I kept a reflective journal log to capture my thoughts, feelings, and reactions to the data collection process following the interviews. This information was maintained using an electronic log. According to Thorne (2008), such documentation helps the researcher track his/her own ongoing reflections and analytical thoughts as they develop. They also support the researcher to become more aware of their role within data collection, analysis, and interpretations. This is because this documentation helps highlight the researcher's ongoing thoughts about the study process (Speziale, 2007; Thorne, 2008).

Field notes were written at the interview's onset to briefly describe the interview's location and the participant's demeanour. These were done in order to help me remember the specific interview during data analysis. They were also used to capture elements of the interview that a voice recording was unable to obtain (i.e. interpersonal space, body movements and posture, and changes in voice volume and tone). Likewise, moments of silence were documented in field notes. This allowed me to recall the certain topics that participants required more time to reflect on prior to answering a question, or discussing a certain element of the experience. I remained open to silences as this time provides participants with an opportunity to process thoughts that can further contribute to the researcher's understanding of the topic (Munhall, 1994).

Interviews lasted between 39 and 87 minutes. These time lengths are typical for qualitative interviews aimed at understanding and interpretation (Hutchinson & Wilson, 1994). However, the interview length was determined by the participants' needs, and their comfort in sharing with the researcher. Following the interviews, I made every effort to listen to the voice recordings as soon as possible as this is recommended to ensure that they are audible and understandable (Carpenter, 2004). These recordings were then transcribed verbatim; I transcribed 21, while two were professionally transcribed to help me with data analyses timelines. I transcribed the majority of the interviews, because I wanted the opportunity to become more submersed in the data, and to help the progression of my analysis. Thorne (2008) further emphasizes that the primary researcher attempt to engage in transcription as reflection and interpretations can be aided by hearing the interview "nuances, words phrases, and pauses... what the language contains" (p. 143). Therefore, I listened to all the audio recordings and documented

any additional nuances of note. By listening to the recordings and reviewing the transcriptions of all the interviews, I was also able to check the accuracy of the transcribed data.

Review of pandemic procedure documents. According to Thorne (2008) the use of multiple data sources is encouraged to compare and challenge the analysis of other collected data. Documents are one type of data source that can develop findings, as they are another angle of vision that provides valuable insight into the phenomenon of interest (Thorne, 2008). They are particularly beneficial as they can help minimize the degree of researcher subjectivity, contribute a range of less-subjective knowledge (when compared to interviews), and also counterbalance the potential limitation of using only one data source to learn about the phenomenon (Thorne, 2008). Thus, in addition to interviews, I analyzed a sample of four of the agency's public health emergency and pandemic planning documents.

In the proposed study, the agency's management and human resource personnel, those in a position of assigned authority outlined in a pre-determined IMS structure, planned all elements of the response that ultimately affected front-line PHNs (MOHLTC, 2010). These arrangements were communicated in several emergency/pandemic protocols. As participants' experiences working during the H1N1/09 response were examined using interviews, the pandemic documents were studied to explore if PHNs' professional roles were presented. Also, to determine if plans were prepared for nurses to take on these roles in the next declared pandemic. In particular, if communication procedures, mass vaccination work environments, and clinical practices, identified by participants during interviews were identified before the pandemic.

The inclusion criteria for documents were that they must: 1) address public health emergencies, including pandemic responses, within the text; 2) be used by the public health agency for pandemic planning where the study was being conducted; 3) be accessible to the

public upon request; and 4) be available in English. These inclusion criteria were established to ensure that the chosen documents were applicable and relevant to the research question and objectives. Also, that they addressed specific elements of the H1N1/09 mass vaccination deployment that were highlighted by the participants. Particularly, with respect to the communication of pandemic information to front line PHNs, as well as the planning of appropriate work environments for these nurses to safely administer mass vaccinations.

All documents are accessible to the public upon request to the agency; however, to ensure anonymity of the public health agency, the name of the city has been removed here and replaced with the word '**city**'. The documents that were reviewed include the: **City** Public Health Influenza Pandemic Service Continuity Plan; **City** Public Health Influenza Pandemic Preparation and Response Plan; **City** Interagency Influenza Pandemic Plan; and the **City** Public Health Mass Immunization Clinic Plan. The first two of these documents were issued in January and June 2006, respectively; the third was printed in November 2008, while the last was produced in October 2009. Influenza H1N1/09 was declared to be a pandemic in June 2009 and the city's mass vaccination clinics opened on October 26th 2009. Although the first two documents were published three years before pandemic H1N1, the third was published less than a year before, and the last was released the same month of the response. Further, media reports that were written in the city's local, provincial, and national newspapers during the deployment were also examined (but not identified to ensure anonymity). This was done to help establish the context of the mass vaccination clinics (i.e. physical buildings, line-ups, wait times) once the pandemic response was implemented.

Data Analysis

'Interpretation' is the key analytical stage that separates the interpretive descriptive methodology from other qualitative approaches focused more on description. According to Thorne (2008), descriptive studies are used when the researcher's purpose is itemizing an experience, event, or situation. Although she identifies this as instrumental for bringing clinical phenomena into awareness, she maintains that the nursing discipline cannot be satisfied with anecdotal description, and that interpretation in research is absolutely necessary (Thorne, 2008). This is because it requires the researcher to go beyond just recounting an event, to fully considering a variety of integral practice components for a phenomenon (Thorne, 2008). It is 'interpretation' in the analysis that provides the researcher with the opportunity to appreciate the cultural, ideological, and political complexities that may have shaped the participant's experience (Thorne, 2008). This in-depth exploration into nurses' experiences contributes to the pivotal insights necessary for the development of knowledge to improve clinical scenarios (Thorne et al., 2004). It is the objective of interpretive description to be exhaustive in all stages of data analysis. Researchers should engage in interpretive analysis to the degree that creates findings that are most useful for clinical practice (Hunt, 2009; Thorne, 2008).

Data analysis in interpretive description includes three separate stages, the development of a topical survey, followed by a thematic summary, and lastly the creation of the most abstract thematic description (Thorne, 2008). It is the goal of an interpretive description to present a thematic description, or at least an extensive thematic summary (Thorne, 2008). As separate data analysis approaches are not necessary for this methodology, the same type of interpretive descriptive analysis was used to analyze data from the interview transcripts and the documents. I will begin by describing the process used to analyze the interviews.

Analysis of interviews. I submersed myself fully in the data by listening to the interviews' audio-recordings, re-reading interview transcripts, and integrating thoughts from my reflective journal into the transcripts. Then I began the process of producing a *topical survey*.

Development of topical surveys. According to Thorne (2008) a topical survey is an initial inventory of the topics addressed by participants. It is created to reduce, organize, and produce categories to address all of the points identified in the participant interviews (Thorne, 2008). Inductive analytical approaches can be used to create these inventories, as they are useful to build a list of codes (Thorne et al., 2004). As such, inductive content analysis was used in this interpretive description because it is an appropriate method when there is little information about the investigated phenomenon (Elo & Kyngäs, 2008).

In interpretive description, data collection and analyses processes are iterative (Thorne et al., 2004). As new emergent possibilities arise and ideas develop, the future direction of the study is influenced (Thorne et al., 2004). The researcher's continuous engagement with the data helps to confirm and expand on codes and conceptualizations that were made early in the data collection and analyses processes (Thorne, 2008). This is to ensure that premature coding does not lead to a superficial understanding of the phenomenon at the expense of more meaningful interpretive analysis (Thorne et al., 1997).

I completed two topical surveys for the participants' interviews, one for the front-line immunizers' transcripts, and another for the clinic supervisors. Transcripts were imported into NVIVO 11.1 qualitative data analysis software. Within this, I used an open coding, constant comparative process, to arrange data from the transcripts in an organized and manageable form. This process produced broad codes and categories that addressed the research question and that were pertinent to the study's objectives. Within interpretive description specifically, a 'code' is a

“certain term or signifier applied or not applied to each data instance” (Thorne, 2008, p. 147).

However, they are not intended to be rigid entities with explicit words and clearly stated declarations (Thorne, 2008). Instead, they are devices to help the researcher organize their thinking whereby ‘like’ study elements are grouped together, and can be used in further conceptualizations (Thorne, 2008).

As interviews were ongoing, I continually reviewed all of the transcripts and grouped data units that were similar in nature, labeling them with a ‘code’. As I progressed, I went back to transcripts to create new, and add to, existing codes. Thus, the topical surveys evolved and were used as flexible coding templates that were modified as interviews continued, and transcripts were further analyzed. Ongoing coding, and the continually modified topical surveys were discussed with my thesis supervisor and committee to ensure I was reflexive in the initial data analysis process (see Appendices I and J for supervisors’ and immunizers’ codes, respectively).

Development of thematic summary. Once the topical surveys were completed, I entered into the next higher stage of interpretive descriptive analysis to create a *thematic summary*. A thematic summary differs from a topical survey as it goes beyond the original broad coding to provide an organized representation of groupings and patterns found in the data (Thorne, 2008). It is a transformative composition that represents overall common themes while also accounting for possible variations amongst participants (Thorne, 2008). In this approach, the themes provide structure to the findings by linking common elements of the clinical phenomenon in a logical manner (Thorne, 2008).

For this study, I developed themes and created the thematic summary by examining the individual codes within each topical survey in relation to each other, and by identifying any

similarities and differences between them. My disciplinary background and the Foucauldian Knowledge-Power-Resistance framework provided the lens for examining potential relationships amongst the codes. According to Thorne (2008), it is during this process where relationships are uncovered, and themes are developed. Initially, I created two separate thematic summaries, one for the front-line immunizers' ($n=16$) and another for the clinic supervisors ($n=7$). I then created an overall thematic summary by analyzing the themes identified from both the supervisors' and immunizers' summaries in relation to one another. This overall participant thematic summary was presented to the thesis committee for discussion and an overall consensus was reached. Specifically, I identified how I developed the thematic relationships between the immunizer and supervisor groups to ensure my analytical decisions were transparent.

Analysis of pandemic documents. After I created the thematic summaries for the immunizers and clinic supervisors, I then reviewed the pandemic planning documents. The study's research question, objectives, and the Foucauldian Knowledge-Power-Resistance conceptual framework guided my review of the documents. Also, I kept in mind the professional concerns that had been identified by the participants during the interviews. This was with the objective of examining if these issues had been pre-emptively planned for by the agency, as evident by being described within the pandemic planning documents.

I created a topical survey for the analysis of the pandemic documents because the majority of the agency pandemic plans were outlined in point form. Similar to the interview transcripts, I reviewed all of the documents by engaging in open coding by constant comparison of the documents' points to produce broad overall categories. Points addressing similar planning elements were grouped together, labeling them with a 'code'. As I progressed, statements that concentrated on different planning points were labeled with a new code. I created new codes and

returned to existing codes to modify them as I continued to review the documents. This list of the overall categories, the pandemic planning document topical survey, was then examined in relation to the themes identified in the participants' thematic summary, to create a thematic description.

Thematic description-integrated analysis of interviews and documents. Once the participants' thematic summary and the pandemic documents' topical survey were produced, I began a higher level of analytical abstraction by creating a thematic description. A *thematic description* presents the study's findings to explicitly clarify linkages within the phenomenon (Thorne, 2008). It also presents them in a meaningful way to advance the discipline in a particular area (Thorne, 2008). By allowing the researcher to view the experience from multiple angles, the analysis of multiple data sources allow for a more informed explanation of the patterns within the phenomenon (Thorne, 2008). Although this type of report is the most 'abstract' presentation of the research themes, ideally it is created so that the discipline's practitioners can easily apply the study's findings in a clinical setting (Thorne et al., 2004).

To produce a thematic description, the 'in-situ' and 'external' data sources are examined in relation to one another (Thorne, 2008). The 'in-situ' data sources arise directly from the research itself. For example, these could be the original participant interviews that are used to identify elements of the phenomenon being investigated. The 'external' sources are already established data sources that exist externally, and were originally separate to the research study. These can include written documents or acknowledged theoretical frameworks. Concepts from these 'external' sources are imported and analyzed in relation to the 'in-situ' identified themes to uncover overall latent patterns in the data and interpretations (Thorne, 2008).

For this interpretive descriptive study, the immunizers' and clinic supervisors' interviews were considered the 'in-situ' data sources, and concepts identified within this document review were identified as the 'external sources'. I thoroughly interpreted the immunizers' and supervisors' thematic summaries in relation to one another. Following this, I analyzed these findings in relation to significant planning concepts found within the pandemic documents' topical survey (i.e. the need for prepared staff and the importance of timely communication). It is within the thematic description that I first incorporated a discussion of study themes as they linked within the Foucauldian Knowledge-Power-Resistance conceptual framework. This was done to create a comprehensive explanation of PHNs' experiences of being deployed into the H1N1/09 clinics. Throughout this process, I documented the steps I took in making my interpretations for the thematic description. To ensure reflexivity, this was presented to my thesis supervisor and thesis committee to demonstrate how my analytical decisions contributed to the overall study findings.

Data Analysis within the Conceptual Framework

The Foucauldian Knowledge-Power-Resistance framework, along with my nursing disciplinary placement and acknowledged fore-structures, provided the theoretical scaffolding for the interpretive description. While the framework is explained in Chapter Three, the following breakdown describes the three separate elements of *knowledge*, *power*, and *resistance* as they were conceptualized for this study's analysis. However, as the framework's purpose was to provide a beginning point to orient the study and its design decisions, I recognized that these conceptualizations could be challenged during data analysis (Thorne et al., 1997). For example, participants could have shared elements they felt was knowledge that I had not considered as part

of the original framework. Further, if findings were interpreted to vary from the framework, they were not forced to 'fit' within this structure during data analysis.

Knowledge. This concept was applicable in many ways when approaching the examination of PHNs' H1N1/09 experiences. However for this study, *knowledge* was primarily conceptualized to be PHNs' awareness of the units of disciplinary discourse that guided the planning and implementation of the mass vaccination clinics. This included all information that participants identified was, or was not shared, with front-line workers throughout the duration of the H1N1/09 deployment.

The pandemic was considered to begin when management started to preliminarily plan for H1N1/09 response clinics. For the purposes of this study and the explicit experience that is being explored, the pandemic timeframe ended the day mass vaccinations clinics were closed. This is because once H1N1/09 clinics stopped, PHNs no longer required clinic operational information, as they were not working as immunizers and supervisors anymore. Therefore, *knowledge* included all relevant H1N1/09 information provided to participants prior to clinics' opening, along with any ongoing updates that were shared throughout the duration of the clinics.

Within this framework, participants' *knowledge* was thought to increase as a result of front-line nursing staff having opportunities to receive pandemic response information. This is as it was during these occasions PHNs became informed about the virus, the nature of clinics, and any changes that could have a potential impact on their professional practice. Communication of this information to PHNs could have occurred through verbal, written, or technological methods.

All PHNs' expertise regarding vaccinations and clinic operations from past seasonal flu and regular school-aged vaccination programs was also considered *knowledge*. I examined if PHNs' *knowledge* was different than the discourse managers utilized for decision-making when

organizing the H1N1/09 specific clinics. Further, if participants voiced that management did not seek PHNs' input for the clinics, I examined how this lack of front-line nursing *knowledge* in pandemic planning impacted the participants' deployment experiences. Lastly, participants developed *knowledge* about pandemic influenzas and mass vaccination clinics as a result of working in the H1N1/09 response. This knowledge could be utilized to expand on the public health discourse for future pandemic mass vaccination clinics' planning.

Power. According to Foucault's (1977) conceptualization, *power* is not owned, but is practiced by individuals who exist in socially constructed relationships through a variety of techniques. Within this framework, participants' ability to exercise power increased as their awareness of the discourse that guided the public health agency's mass vaccination decisions also increased. Opportunities that provided PHNs access to H1N1/09 information resulted in a surge of participants' ability to exercise *power*. When exercised, *power* could impact an individual's ability to act in a direct and informed manner.

For managers and other pandemic planners, *power* was conceptualized as these individuals' inherent capacity to make decisions and take actions. These individuals exercised this power through the traditional authority associated with their hierarchical placement into more 'powerful' roles in the agency. This was particularly evident when the organizational authority of these individuals was compared to that of front-line nurses. An assumption for this framework is that managers and planners had easier access to the information, or knowledge of the discourse, that provided the basis for the pandemic response. They also had the authority to exercise *power* by choosing the discourse that they felt was appropriate to guide the agency's overall actions. Specific to this study, they chose the particular knowledge that guided the planning and implementation of the H1N1/09 mass vaccination clinics. Managers did this by

exercising *power* through disciplinary techniques to meet the agency's goal of vaccinating the public, and minimizing the transmission of H1N1/09. For example, they decided how front-line staff would be notified of, and prepared for, their mass vaccination roles.

With respect to the individual nurses, power was conceptualized as how individuals interpreted their knowledge level regarding their specific H1N1/09 deployment assignments and subsequently exercised power in their roles. This could only be determined after the completion of interviews. For example, *power* was evident if PHNs shared that they used professional disciplinary techniques such as hierarchical observation, normalizing judgment, or examination over clients during the vaccination process. Particularly, when they were determining clients' eligibility for the vaccine, and encouraged individuals to get immunized against the H1N1/09 virus.

Resistance. Resistance was conceptualized to represent any components of the H1N1/09 mass vaccination clinics that PHNs had an issue with and that they subsequently acted on. This included actions displaying either overt or covert resistance. Overt resistance was conceptualized as any challenging acts that were openly conducted by participants. For example, if a participant refused to work in their pandemic role because they disagreed with the agency on a component of the mass vaccination response. Also, if participants expressed any other contradictory actions they performed when working during the response. For example, while they attended the clinics, they may have intentionally worked less efficiently due to ambivalent feelings toward the agency.

Conversely, covert resistance was evident if participants disagreed with the discourse utilized, but did not openly reject the practices used by the agency to obtain the mass vaccination goal. This could occur if participants shared that they were upset about the information given, or

processes instituted, during the H1N1/09 clinics. For example, if participants expressed that they strongly wanted to see specific changes in future planning situations. Covert resistance was also identified if PHNs described that they had issues with public health's discourse to provide herd immunity through mass vaccination responses. Lastly, while participants may not have explicitly taken action against the clinics, any negative feelings that were shared in response to the managers' exercise of power, and the discourse they utilized, was conceptualized as resistance.

Methods to Ensure Rigour

Within qualitative investigations, rigour is utilized to enhance the research findings' quality. This research study's rigour was evaluated by Guba and Lincoln's (1994) trustworthiness framework. This framework includes five criteria: credibility, transferability, dependability, confirmability, and authenticity. Each of these will be described to show how they established trustworthiness in the study and helped to produce overall rigorous findings.

Credibility

According to Guba and Lincoln (1994) credibility is one of the most important factors when determining a qualitative study's trustworthiness. It addresses the confidence in the 'truth' of the findings and subsequent interpretations of data (Guba & Lincoln, 1994). To meet this criterion, studies need to be conducted in a manner that strengthens believability in the research findings. Reflexivity, the examination as to how the researcher influenced the study's findings, and the use of multiple data sources and data collection methods, are strategies used to contribute to this process.

To be reflexive, I took field notes during interviews and also kept an electronic journal where I described my initial thoughts after meeting with study participants. In addition, I developed an audit trail to document the steps taken in my data analysis and in the development

of my interpretations. Lastly, I engaged in debriefing sessions with my thesis supervisor. These meetings assisted as my supervisor helped identify potential enhancements to the data collection and analyses processes. As a result of these exchanges, the interview guide was edited to elicit more pertinent information from participants regarding their H1N1/09 experiences. Also, these meetings helped me to engage in a deeper level of interpretive analysis.

Further, I used two data collection methods, interviews and document review. Also, my interview participants consisted of two different data sources, front-line immunizers and overall clinic supervisors; all of who worked in the different clinic sites, for varying time periods. This allowed for multiple perspectives from both groups of individuals and the documents, to help inform the overall findings.

Transferability

Transferability is the extent that the study findings can be used, or applied to other group settings (Guba & Lincoln, 1994). As researchers cannot assume how others will utilize their study's results, it is important that they provide a sufficient contextual description of their study. In particular, they need to describe the research's boundaries so that readers can assess the findings' appropriateness for other settings (Shenton, 2004).

For this study, thick descriptions of the study setting and sample were created. Specifically, the organization that provided the recruitment site, the participant inclusion criteria, and the clinics themselves were clearly described. Participants' demographic information (sample characteristics) was presented (Table 1), and the interview procedures were documented.

Dependability

Dependability addresses the stability or reliability of data over time and conditions (Guba & Lincoln, 1994). Credibility and dependability are connected (Polit & Beck, 2012); as such,

strategies utilized for credibility also contributed to this study's dependability. Two data collection methods were used. Also, two individuals, my thesis supervisor and myself, reviewed a sample of transcripts. Lastly, I documented an explicit account of the research process' analytical decisions in an audit trail. This is so that individuals could implement comparable analytical decisions that would result in similar findings (Shenton, 2004).

Confirmability

Confirmability is the criterion that ensures that the data that is presented as findings is representative of the participants (Guba & Lincoln, 1994). It is necessary that the results reflect what participants' shared, and not the researcher's interpretation that is influenced by their own motivations, characteristics, biases and perspectives (Guba & Lincoln, 1994; Shenton, 2004). I attempted to achieve confirmability by clearly identifying my own preconceptions regarding the topic, as identified by Shenton (2004). This helped with the clarity and objectivity of the developed audit trail. Also, a sample of transcripts was selected for independent coding by both my thesis supervisor and myself, in an attempt to ensure similar reasoning. Lastly, I met regularly with my thesis supervisor and committee, composed of two other faculty members. In these sessions, data was reviewed and thematic findings were discussed to ensure the analysis was appropriate.

Authenticity

Authenticity is the trustworthiness criterion whereby readers get a clear understanding of the participants' lives (Guba & Lincoln, 1994). It also contributes to the reader's increased sensitivity to the issues being described, including the experience, mood, feeling, language and context of the lives of participants (Guba & Lincoln, 1994). Authenticity is achieved by the researcher ensuring the meticulous description of the experience, as shared by their study's

participants (Guba & Lincoln, 1994). In this research, strategies used to amplify authenticity included those that were also implemented to meet the other trustworthiness criteria. These included myself, as researcher, engaging in continuous reflexivity to ensure my potential biases were not impacting data analysis. Also, I provided a thick description of the study setting and sample to help the reader appreciate the context in which participants' experiences occurred.

Ethical Considerations

Ethical approval was obtained from my academic institution (see Appendix B for the Research Ethics Board approval certificate). Approval was also obtained from the public health agency, however this certificate will not be included in an appendix to maintain the anonymity of the recruitment site. Similarly, in descriptions of the public health agency, I replaced the city's name with 'city' in an effort to protect participants' anonymity.

Upon receiving ethical approval, PHN participants were recruited who were deployed to the H1N1/09 mass vaccination clinics. Prior to the beginning of the interviews, participants were informed that their participation was completely voluntary, and that they did not have to answer any questions, or discuss anything, if they did not feel comfortable doing so. It was also emphasized that they were able to withdraw from the study at any point, if they so decided. Further, it was stressed to participants that their decision to participate, or to decline, would have no effect on their job status with the agency.

All participants' identities were safeguarded as each individual was assigned a unique numerical identifier. The list of participant names and their corresponding numerical identifiers was kept on a password-protected file on my computer. I was the only person to have access to the numerical identifiers. Further, the only document that contains the participants' actual names was the informed consent forms. These consents were stored in a separate locked cabinet away

from storage of the interview transcripts. In fact, I analyzed the transcripts electronically on my computer and as such, transcripts were not printed. This electronic data was stored on a password specific file on my computer, and the computer also requires a password to access. All identifying information was removed from the interview transcripts. Therefore, all illustrative quotes utilized in the study's findings are anonymous. Lastly, there was no financial incentive to encourage PHNs to participate in this study.

Chapter Five- Findings Part One

This chapter presents the overall thematic summary that was created for the clinic supervisors and the front-line immunizers. These participant groups are placed in the same summary to highlight the similarities and differences of PHNs' experiences based on their assigned clinic role. However, first a description of the mass vaccination clinics will be presented in order to help the reader to be able to situate the context of the findings. When describing the supervisors and immunizers working in the clinics, the pronoun 'she' will be used as all participants were female.

Description of the H1N1/09 Mass Vaccination Clinics

On October 26th, 2009 the public health agency that provided the context for this study initiated a mass vaccination response to protect the community from the Pandemic H1N1/09 flu virus. Clinics were planned using a delivery model based on the agency's regular seasonal influenza immunization programs. Annually, these programs are responsible for approximately 10% of the city's seasonal influenza vaccinations. However, with Pandemic H1N1/09, the agency was responsible for almost all of the city population's vaccinations.

An estimated 70% of the agency's employees were deployed into the mass vaccination clinics including PHNs, administrative employees, program coordinators, and information technology (IT) professionals. The public health staff members who were not deployed were required to stay behind and maintain the city's critical programs. Public health employees, regardless of their pandemic role, were often required to work longer and different hours to ensure that the agency's programs were functioning.

Six stationary, or 'fixed', mass vaccination clinics were established. These clinics were located at: 1) the public health agency's headquarters located in the west end; 2) a satellite office established in the east end of the city; 3) a vacant retail space in a south end suburban mall; and

4) three recreational complexes in the city's centre (2) and south end (1). Clinic hours ran from 2:30 pm to 8:30 pm, Monday to Friday, and 9:00 am to 3:00 pm on Saturdays and Sundays.

Clinics had large free parking lots. However, at busier times it could be difficult for clients to find available parking. All sites were located on one of the city's major bus routes. Outside each building there were large illuminated signs indicating the presence of an H1N1/09 vaccination clinic. All locations were wheelchair accessible from the street with ramps. Inside, the clinics were also accessible; stairs and elevators were present at those sites that used multiple floors for clinic operations.

At the beginning of the response, the province's media had heavily reported the deaths of two previously healthy youths. Consequently, citizens were eager to be vaccinated as they arrived at the clinics. They would often show up prior to the clinics' opening, and waited for several hours to register to be vaccinated. At times, line-ups extended out the door to have individuals standing outside the building. As the clinics started in the fall season, at the end of October, the weather was often rainy and cold. To provide shelter for clients while they waited in line, tents were set up outside some of the clinics. Chairs were also set up along the side of these line-ups for clients to use. However, at times there were an insufficient number due to the large volume of people waiting to be vaccinated.

On reaching the registration table, individuals were required to answer pre-screen questions asked by the administrative staff. This was to determine if clients were eligible for the vaccine on that day, as priority populations had been identified. During the initial weeks of the clinics these priority populations were designated to ensure 'at-risk' individuals received the vaccination first, in case a vaccine shortage occurred. If they were eligible, citizens presented

their health card and completed a registration form to be vaccinated. They were also given a consent form to complete.

These clients then entered a 'post-registration line'. Here, clients would wait and complete the consent form that they had received from the administrative staff during their registration. Non-nursing public health staff, most often public health inspectors, would walk up and down the line-ups monitoring this process. They would help clients with their informed consents and answer their questions. If these public health employees were unable to answer a client's question, they would get the clinic supervisor for assistance. Clinic supervisors monitored the clinics and addressed issues that developed. They answered clients' and staff questions, and they were responsible for receiving and sending supplies to the agency's main headquarters. Clinic supervisors had a cell phone to be able to communicate with headquarters should they need advice on how to deal with clinical issues.

The majority of clinics had all of their operations situated on one floor. However, two sites were located in buildings where the separate clinic areas were split up between two and three floors. In these locations, the post-registration line up would be located on the second floor. There were chairs available for individuals off to the side of this line for those who wanted to rest. However, clinic staff often preferred that individuals refrained from sitting to ensure their place in the line.

At the end of this line, PHNs, external agency nurses, and paramedics, who were working as immunizers, sat at immunization workstations. These front-line immunizers were responsible for explaining the procedure to clients, obtaining informed consent, and administering the H1N1/09 vaccination. Their immunization workstations were set-up at long banquet hall tables. There would often be four to six immunizers sat at these tables, with two or three immunizing on

each side. Immunizers' equipment, completed consent forms, and a computer were located directly in front of them on the table. To their side, there would be one or two chairs for their client(s) and their family members to sit.

The location of the immunization stations depended on where the buildings were located. For example, at the agency's headquarters, these workstations were situated in a bright cafeteria. In the satellite office, they were located on the well-lit second floor of a client services center. In the mall, this area was at the back of the retail space, with minimal natural light. In two of the recreational complexes, these areas were located in an observation area above a hockey rink. In the last complex, the immunization area was in a large hall.

When an immunizer was ready for a client, she would indicate this to the line-up's 'traffic director' (who was most often a public health inspector) by raising her hand, or holding up a brightly coloured piece of paper. The 'traffic director', who was responsible for monitoring the post-registration line-up, would then lead the next client in line to that immunizer. The client would give the immunizer their informed consent. Also, if the client had any other questions, they could ask the immunizer.

If the immunizer had any concerns about vaccinating the client, she could call on the clinic supervisor, or the 'charge nurse' for assistance. This 'charge nurse' was an immunizer who the clinic supervisor had assigned to be an additional support for immunizers. He or she was usually more clinically experienced than the other PHNs, and could answer immunizers' general questions. The immunizer obtained the client's signature for the informed consent and inputted the client's demographic data into a computer program. IT personnel were circulating and addressing the immunizers' questions about the computer system as they occurred. After this, the immunizer prepared the vaccine.

The vaccine was contained in multi-dose vials with ten doses per vial. Each vaccine vial needed to be re-constituted with one vial of diluent. Multi-dose vials and syringes with vaccine had to maintain a temperature of 2°C to 8°C. As such, both the vials and syringes were kept on ice packs at the immunizer's workstation. Once the vaccine was ready, the client exposed their bare arm to the immunizer. If for whatever reason this vaccination process was delayed, and the vaccine was not used within 30 minutes of being drawn up from the multi-dose vial, it had to be discarded.

After administering the vaccination, the immunizer would give the client a 'proof of vaccination' paper. The client would then move on to a separate 'adverse events' area to be monitored by the 'adverse events' nurse. The clinic supervisor would choose an immunizer to be the 'adverse events' nurse daily. Generally, this was a PHN who was experienced in clinical assessment, and who felt comfortable taking on this role. In the 'adverse events' area, chairs were lined up, and there were also a couple of stretcher-type beds in case a client needed to lie down.

Depending on the clinics' set-up, the 'adverse events' area may, or may not have been, separated from the public. Clients were monitored for 15 minutes in case they had an adverse reaction to the vaccine. Most times, individuals waited for the mandatory 15 minutes and then left. However, in the case of an adverse response, for example, if a client became faint, or went unconscious, the 'adverse events' nurse would perform an assessment, including taking the client's vital signs. With this, the nurse determined if it was necessary to contact first responders.

After the first few days of the response, the city's Parks and Recreation staff were introduced to help manage the mass number of people attending the clinics. They circulated through the clinics to help provide crowd control and security. At this point, the agency also

implemented a wristband system to decrease clients' wait times. Specifically, citizens were provided with a bracelet that indicated a timeframe they could anticipate being immunized. This meant that citizens could leave, and return to the clinic when it was closer to their turn to be vaccinated. Parks and Recreation employees were also responsible for handing out wristbands to citizens when they first arrived at the clinics.

The city's final mass vaccination clinics ran on December 22nd, 2009. Following the closing of the clinics, the majority of staff returned to their pre-deployment agency roles and responsibilities. During the public health agency's H1N1/09 mass vaccination response approximately 53% of the city's population was vaccinated. Overall, the provincial vaccination rate was 45%.

Thematic Summary- H1N1/09 Clinic Supervisors and Immunizers

Three overarching themes describe the PHNs' experiences of working in the H1N1/09 mass vaccination clinics as clinic supervisors and front-line immunizers. These are '*Anticipating an Emergency*', '*Surviving the Chaos*', and '*Persevering Over Time*'. In the first theme '*Anticipating an Emergency*', participants' experiences learning about the pandemic response and their preparation for their deployment roles is described. The second theme '*Surviving the Chaos*' describes the clinic environment and reflects the challenges of working in the response, particularly during the first few hectic weeks of the clinics. The last theme '*Persevering Over Time*' encompasses participants' experiences as they became more familiar with clinics' operations and their own responsibilities. It includes the strategies utilized to address clinic challenges and also discusses the agency changes that have since been implemented in anticipation of a future mass vaccination effort.

Each of these themes has a number of sub-themes that will be presented accordingly.

Figure 2 represents the overall thematic summary.

Figure 2: Thematic summary schematic.

This figure illustrates the three overall themes, and corresponding sub-themes, identified in the thematic summary of the participants' interviews.

In the subsequent thematic summary, the labels 'supervisors' or 'immunizers' will be clearly identified when findings are specific to either of these participant groups. However, in instances

where findings are applicable to both immunizers and supervisors, the overall term 'participants' will be used.

Anticipating an Emergency

'Anticipating an emergency' is a broad theme that describes how participants' came to learn about the pandemic and how they began to prepare for the H1N1/09 mass vaccination clinic deployment. It is comprised of two sub-themes. *'Becoming Aware of the Response'* describes how participants became aware of their mass vaccination roles. *'Preparing for the Deployment'* presents the ways participants prepared themselves to become clinic supervisors and front-line immunizers.

Becoming aware of the response. While PHNs were aware of the ongoing surveillance of Pandemic H1N1/09, they were unsure when a community response would be implemented, and what exactly it would entail. Only one participant, who was assigned to be a clinic supervisor, received any direct communication from management regarding ongoing H1N1/09 mass vaccination planning. This was because she was hired by the agency to plan for pandemics and other public health emergencies.

Instead, most PHNs identified becoming familiar with ongoing mass vaccination preparations through informal types of communication, such as through talking with their colleagues. As one immunizer describes "You know, cause there's always the rumour mill, I remember starting to hear that something might be coming, something might be happening in September" (I#13). Although this participant discusses the 'rumour mill' as her pandemic information source, some participants also independently monitored H1N1/09 using the World Health Organization, and the Public Health Agency of Canada websites. They felt it was their

obligation to be knowledgeable as public health professionals. Participants also realized that as a public health organization, the agency would be involved in the pandemic response.

Indeed, those participants who had worked in public health for longer durations had previous experience with public health emergencies and fully expected that as PHNs they would be re-assigned to mass vaccination clinics. Some participants had started mentally preparing for a potential deployment before it occurred. One immunizer explained,

Emergency responses that occur in public health, it ranges from a Hepatitis A outbreak in a school, to a mass flu outbreak, to ice storms to floods, and so when it's within your department, you're expected to be helping out and you sort of want to because it's sort of your thing. (I#16)

What participants could not predict was how they would be affected, or how much time they would have to prepare for the clinics. Looking back, participants stated that they could not have anticipated the magnitude and intensity of the H1N1/09 response. Those with experience of past public health emergencies made comparisons with the duration and scope of the H1N1/09 response. For example, during Ontario's 2013 Ice Storm, where many citizens lost electricity for a number of days, PHNs were deployed to visit senior citizens in their own homes to ensure they were managing without power. However, the H1N1/09 response was longer (for months) and affected more population groups across the city.

When the agency employing the participants did announce the start date of the mass vaccination response, most participants typically were 'notified' of their specific deployment assignment of 'front-line immunizer' or 'clinic supervisor' by a phone call or email. One supervisor described how she found out about her deployment role,

I got home at midnight one night and my husband said 'There's a message for you, it came in at 10 o'clock' and it was this nurse. She did not ask, she said 'We'd like you to be charge nurse for the clinics, contact (X) tomorrow, and she'll go through how they're going to do it'. She did not ask. She said 'I want you to be supervisor at the (X) clinics. (S#5)

Two participants recalled being asked to become supervisors, and as a result, felt that they had some choice in their deployment role. Of these, one supervisor had been hired specifically to work in emergency planning and was fully aware that she would be in this clinic position. The other supervisor worked in an essential agency program where only a small number of PHNs were required to deploy into the mass clinics. Here, volunteers were requested for immunizers, and this participant stepped forward because she felt it would be an opportunity to develop other public health skills. However, after only a short time as an immunizer, a trusted program manager urged her to become a clinic supervisor.

Most immunizer participants, like clinic supervisors, were also 'notified', of their role as immunizers in the mass vaccination clinics. Many felt that they had little choice regarding their pandemic response roles, as it was very evident that there was a need for all available staff to come together during the public health emergency. As one immunizer explained,

We were told! We were 'voluntold'! Yeah, that's kind of how it happened. I think what happened was that there was a very 'strong request' that came from senior management that anybody who had any ability should be participating in these clinics. (I#18)

The deployment notice was usually given to immunizers only a few days before the response began through an email or phone message. As such, many participants felt there was little opportunity, or identifiable mechanisms in place, for them to voice objections regarding their deployment roles.

Some experienced feelings of professional obligation to enter into the clinics. As one immunizer described, "The direction to participate came because they needed more people, so pretty much everybody was sort of pulled into it. It wasn't a volunteer thing, you couldn't just say like 'oh no, I don't really feel like it'" (I#16). As such, all participants accepted their assignment and began preparing to enter the clinics. One immunizer nurse, however, discussed

refusing, or resisting, the 'charge nurse' (not to be confused with supervisor) role once she entered into the clinics.

Despite having little choice in being deployed or their assignment, participants did mention that efforts were made to help nurses' transition into their clinics. For example, attempts were made to assign PHNs to clinics that were close to their homes, or that were otherwise convenient. This was considered to be a positive element in a difficult situation.

Although there was some expectation by participants that supervisors would be chosen for the role based on experience, the majority of supervisors felt that this was not the case. One supervisor, in particular, wondered why she had been selected. She explained,

I was the most naïve nurse. I don't know why they picked me to go there. There are nurses who work here at the (X), who work with these at-risk people. I had never worked with at-risk anybody- adults, youth, seniors, never. So, I'm not sure why they weren't asked to be the supervisor in the (X) clinics cause (X) meant a lot of the at-risk population who couldn't get to one of our fixed clinics, right? So, I'm not sure why one of them was not asked. (S#5)

Although most supervisor participants felt that they were competent nurses, and were aware that their colleagues were also assigned to be supervisors, many experienced self-doubt and anxiety in taking on the role. Particularly, they felt that they did not have the specific experience that was necessary to run the clinics. For example, this included how to deal with the mass crowds who showed up to be vaccinated. As one participant elaborated,

So the way it happened was on the Thursday, myself and three of my colleagues on the same team, we're all pretty strong nurses and we're all experienced nurses but not in immunization, we're all in the (X) team or the (X) team, we all got a call saying 'Guess what, this is what you're being asked to do! Show up for your orientation tomorrow morning.' (S#10)

Of all the immunizer participants who were regular full time employees with the agency, only two reported volunteering for the immunizer role in the response. Similar to the above

supervisor who volunteered to enter the clinics, these immunizers worked in a high priority program that provides wellness care to babies and children. Thus, many of these 'essential' nurses did not have to deploy into the H1N1/09 clinics. One immunizer explained why she volunteered,

So originally there wasn't going to be any (X) nurses deployed, but then they needed the numbers, so they called for volunteers and I thought it might be a nice break for a couple of weeks so I volunteered. Yeah! (I#8)

She further explained why she considered a deployment into the H1N1/09 response clinics as a 'break',

In the clinic there's no stress, the clinic is a controlled environment. There's no stress, people are coming in, they're getting their vaccines, they're waiting. If there's any adverse, you've got back-up there, you have everybody in the clinic there with you. It's very controlled, you know what's going to happen in a clinic. Even crazy chaotic clinics, you still know what's going to happen. Whereas when you're going out in the community, you're by yourself, and you have no idea what's going to happen, which is one of the things I really love about my job, by the way. I'm not complaining, that community nursing is a very non-controlled environment, and there's all sorts of factors that you can't control for on any given day, so it's a different type of stress. A clinic is a break. It's a breeze. (I#8)

Also, these volunteer immunizers were able to easily reassign their caseload to their teammates for the duration of their absence, as most of their colleagues remained working in this essential program. Additionally, these individuals felt supported by their departmental supervisor to deploy into the clinics. The choice to volunteer and collegial support allowed these participants to enter into their deployment roles, knowing that their regular work would be done.

Consequently, participants who volunteered and had the ability to establish parts of their own schedule seemed to have less concerns when preparing for the clinics. In particular, when compared to those participants who were 'notified' that they were to deploy into the clinics.

However, participants who worked in areas of 'lesser' priority during the emergency response did not have a similar experience. These individuals expressed feeling stress

distributing their ongoing caseloads, as there were only a few remaining teammates 'left behind to run the show'. This created guilt and a sense of helplessness for participants as their colleagues had to assume their workload. For one immunizer this concern extended beyond her coworkers as she felt that she was also abandoning her clients with very little notice. She explained,

I understand the importance of getting things going but there was also the question of your links with community partners, your commitments in the community. Like having to sort of drop everything from your usual day-to-day workload, sort of abruptly. People understood when you explained this is what's going on, but it was fairly quick, you know... There's that communication piece where you have to advise them of what's going on and of course they've heard stuff in the news, but they don't know, are you going to show up, or are you not going to show up? If you're not going to show up, when are you ever going to show up again? They have curriculums as well so yeah, that was just a little bit challenging. (I#16)

Although her program was deemed 'non-essential' by the agency, she was still nonetheless responsible to her community partners. Her experience was shaped by the professional concern she had for her clients.

The only other few participants who voiced volunteering to immunize in the response were the agency's casual nurses who worked in the regular seasonal flu and school-aged vaccination clinics (not regular full time PHNs). These nurses worked on-call on a part-time, seasonal basis as immunizers in annual, pre-planned vaccination clinics. They were not part of other public health teams, and thus did not have to worry about leaving behind ongoing workloads. Indeed, these participants forwarded their availability to the agency as H1N1/09 was seen as an opportunity to obtain more employment. They did not verbalize experiencing the stress that was voiced by regular full-time employees. One such immunizer explained,

I volunteered. I liked it! Yeah! We didn't have to! We could choose. If I was tired I would take 3 days off instead of 2 or whatever, you know, so it's not an obligation! I chose to do it. (I#19)

Preparing for the deployment. Supervisors were responsible for managing all nursing and non-nursing support staff during challenging circumstances in unique physical environments. They also had to ensure the clinics had the proper supplies to function, and to manage clients. However, the majority of participants received very little formal training for their H1N1/09 deployment role. Some participants felt that the quick turnaround between the clinics' announcement and their actual implementation did not allow the agency the time to adequately train staff. Further, it did not afford individual nurses the opportunity to independently prepare for their roles, even if they had desired. For supervisor participants this lack of training was particularly unfortunate, as they did not have previous experience running vaccination clinics. One supervisor explained,

I had no prior experience in managing any kind of clinic, because we do have immunization nurses here who work in immunization. I had the experience as a supervisor for public health because I had done one year as a supervisor prior to the clinics, but not within that context. (S#10)

Some supervisor participants reported attending a morning information session before the clinics opened, however, this was deemed insufficient for training on the responsibilities of managing a mass clinic. As one supervisor explained,

We had no idea what we were heading into. The orientation we received was very confusing. Nobody knew what was going on, nobody knew what we [were] going to be doing. We weren't prepared for, you know, how do you run and manage a clinic. How do you deal with mass numbers of people that show up that you're not prepared for? We weren't expecting the crowds! Then dealing with the nurses that were being assigned to the clinic who themselves didn't have the experience. (S#10)

The training that was provided in this information session consisted of information on basic vaccination procedures and on the H1N1/09 virus. It did not include information on how to 'run a clinic'. As a result, some were confused and uncertain about managing the clinics and how to

deal with non-nursing clinical components. For example, participants did not receive training on the computer system being used for collecting clients' demographic data, or how to manage crowds of citizens. This lack of preparation contributed to supervisors' anxiety even before entering into their response clinic role. One supervisor elaborated,

At the beginning of the experience I felt totally unprepared for it. I had not worked in immunization clinics. Then to be basically told I was going to be a supervisor at the clinic, by a phone message. Not even like 'How would you feel about this?' It was 'The following individuals will go to a meeting to find out about their role as a supervisor at the H1N1 clinics' and there was a list of names, and I was like 'What? Really?! I haven't done immunization. I don't know anything! I don't know how to supervise a clinic! What?!' There was no real time to prepare! Like these things were happening and they were happening fast! (S#2)

Also, the paucity of hands-on training on the actual clinical skill of vaccination was concerning for some supervisor participants. Particularly, for those that had worked in public health programs that did not require them to use this nursing skill. One supervisor explained,

It was like nothing I had done before. What was hard is that I hadn't given needles since I worked in hospital in (X) and so that was a challenge because suddenly we were thrown in, and I actually had never given a deltoid because I worked at the (X), and we weren't allowed to give deltoids. So I had never given a deltoid and I'm starting at this clinic, and [I] really didn't have a lot of training. (S#12)

Indeed, training for immunization seemed to only consist of online learning modules about vaccination. These modules included assessment questions to ask clients prior to vaccination, and an explanation of how to administer a vaccine. While some participants considered these to be somewhat helpful, some felt they were simply not enough to prepare a supervisor to immunize, or to mentor others in vaccination. One supervisor explained,

[They] had set-up a module for nurses to actually go through. So, that they had at least as a refresher. But, you know, when it's been years and you haven't done any of it...it was, I felt like a nurse in first year. (S#10)

A description of feeling 'like a nurse in first year' brings images of a novice practitioner who is often filled with uncertainty and doubt as they develop their practice. Already ambivalent about working as a pandemic response supervisor, this unpreparedness heightened her anxiety about her ability to manage a clinic where mass vaccination was the primary goal.

Despite the perceived lack of training by some participants, other supervisors felt comfortable in the deployment role. One participant attributed this to her normal position within the agency. She explained,

I was at (X), where all the planning was also going on, so I could participate in meetings more than people who might have been stuck out in the rural area or something like that. So I'd been involved in the planning preceding and leading up to it. There were some supervisors who normally weren't in a supervisory role, who were brought into a supervisory role from a staff nurse position [that] might not have felt as able to ask questions or as familiar or as at home. But I felt quite able to question like "Why are we doing? You're doing what?" So, I felt quite, quite comfortable. (S#1)

However, this participant's situation was unique as she was the only participant who was hired by the agency to work specifically in emergency planning. Her comfort and ease of entering into the clinics was impacted by her ability to have access to ongoing H1N1/09 information. Another participant felt equipped to be a supervisor because she believed she had the nursing experience and the personal leadership qualities that were necessary to manage a clinic, even though she regularly worked in a department not related to vaccination.

In preparation for her role, one supervisor took it upon herself to visit a clinic to see what this role comprised because she was not assigned to work in the beginning days of the clinics. While she originally had intended to observe and learn, she ended up working in the clinic that day. She explained,

So I thought I'll just sit down and talk to her [to find] out what I'd [be] doing and she can tell me what I need to [do]. I went in, I watched her, I jumped in! You just deal with these issues that come up. I say I was in there for three hours and didn't stop, zoom, zoom,

zoom! I'd kind of grab her and say, 'What have you been doing about this?' So it was an interesting, interesting process. It helped me for the next day. I stayed with her after the clinic and we figured out, because she has gotten to know a few of the nurses, 'Well this nurse would be good in this role'. This was not necessarily who turned up the next day but it helped! I would not have [been as prepared] if I had not shadowed her. (S#9)

Conversely, most immunizer participants, although also given limited notice and time to prepare, felt comfortable and competent to immunize. This was attributed to recent experience with clinical skills. Some immunizers had been employed in hospitals prior to working for the agency, while others had recently worked in a public health program that requires nurses to practice their clinical skills. As one immunizer explained,

It wasn't a big deal and the reason being is that we're one of the very few areas in public health where we provide regular clinical services anyway, so I mean things like providing immunization we do it all day in clinic, you know, dealing with anaphylactic responses, it was all part of what we do every day anyways, unlike some programs where it's primarily health promotion. So it had very minimal impact on my preparedness. (I#18)

A few other immunizers felt prepared because they had recently completed their nursing education (i.e. Bachelor's degree). This was especially evident when they compared their clinical skills to those of some other senior PHNs who worked in traditionally non-clinical public health programs. One such immunizer explained,

I, on the other hand, as a new grad, had only recently learned these skills and I had recent, I'm using quotations 'clinical experience', in my practicums in hospitals and in other settings. So it's not like I was doing IM injections all the time when I was doing my placements in nursing school, but I would say I was more immersed in a clinical setting where that type of thinking was more on the top of my mind than maybe it would be for some of my colleagues who had been working in public health for decades and who hadn't given any type of injection, or even thought about giving an injection, in years and years. (I#13)

Unlike the supervisors, a few immunizers were also given the opportunity to have hands-on practice giving vaccinations in the regular annual school-aged and seasonal flu immunization programs. However, only a few of these participants actually participated in these clinics. For

one particular immunizer, this was a positive component of the pandemic response. It was through this experience that she was able to practice immunizing individuals in a slower paced environment with peer support. This increased her comfort level substantially as it allowed her the chance to enhance her manual dexterity prior to working in the more hectic mass vaccination clinics themselves.

While all immunizers voiced comfort with vaccinating the population, some participants witnessed colleagues become distressed by having to vaccinate clients. However, it was felt that these colleagues became more proficient as clinics progressed. One immunizer discussed,

The in-house public health nurses who came, who weren't too familiar with immunization, became quite familiar quite quickly. I mean they've already done all this in their lifetime, it was just needing a refresher, and once they got over the shock I think of the volume of people and the protocol and all that stuff, they were absolutely great. So, it was no longer a concern. (I#20)

Although comfortable with the vaccination skill, some immunizers were more ambivalent concerning their knowledge regarding H1N1/09 and the vaccine itself. The agency had attempted to provide immunizers with computer learning modules to complete, however not all nurses received the modules prior to the clinics. Further, some participants that did access this training felt that these modules were 'unclear' and insufficient in appropriate material. As a result of a lack of knowledge, these nurses' confidence was impacted. Likewise, other participants felt that the quality of client care was influenced by their own lack of vaccine-related knowledge; especially when they had to answer clients' specific questions or when they felt they had to make clinical judgements surrounding the vaccine. One immunizer explained,

To be honest with you, I didn't know a lot about vaccines and how vaccines were developed like I do now, you know? Now I'm a lot more confident when I vaccinate a client, in saying 'well you know what, this vaccine...' If they have concerns, I feel more capable and competent in reassuring them. Like when people said 'Well it's a new vaccine...' well, I knew flu vaccines weren't new, but I didn't understand how the whole

thing worked really and how vaccines are developed. So I guess I may have lacked a little bit of confidence. (I#16)

Interestingly, a few participants had been assigned to work on the agency's H1N1/09 phone lines prior to the organization securing a pandemic vaccination. These were hotlines set up to provide citizens with general information regarding the pandemic flu. In this role, participants had access to content experts and printed materials, to adequately address the citizens' questions. While this was not 'official' training for their deployment role, participants considered this to be very useful learning and preparation for when they were deployed into the clinics.

The most prepared participants for the deployment were the agency's regular casual immunization nurses. They were very comfortable when entering the pandemic response, as their background in vaccination helped them to understand how to successfully operate in a clinic environment. As one such participant described,

This group of gals I work with, all of us casual nurses have worked together for years. So I worked probably 2 seasons of immunization clinics before H1N1. So we always have our orientation and then we just started working [H1N1] like when we run our casual flu! All of us, we only ever do flu clinics! We go in, we know how to set up our tables, set up the drugs, get everything ready so there's smooth sailing! Yeah, we know what works, how you run a clinic smoothly, what you check for, how to stay on top of it and everybody has a role. I mean they're really great when they do our casual pool! We get all of us casual nurses together, we do our annual refresher, usually in October, and we meet with our supervisors, we go through the process again, how to give injections, injection site practicing, for those that have never given one before, we'd open up ourselves and say 'yeah, go ahead, practice on me!' (I#21)

With this knowledge and experience, participants were surprised that these casual immunization nurses were not overall clinic supervisors. Nor were they aware of any casual immunization colleagues assigned to the supervisor role.

Surviving the Chaos

The theme '*Surviving the Chaos*' describes the professional challenges participants managed in their roles, in particular during the beginning weeks of the mass vaccination effort. It consists of three sub-themes. '*Working in Challenging Environments*' illustrates the physical layout and the atmosphere of the mass vaccination clinics. '*Dealing with the Public*' describes the interactions participants had with members of the public during this time. Lastly, '*Navigating Clinic Operations*' discusses the ongoing logistical issues that impacted the clinics' functioning, and how participants managed them to effectively administer mass vaccinations.

Working in challenging environments. Mass vaccination clinics were established at six fixed locations across the city. A supervisor described arriving at one of these sites and encountering the long lines of people during the first week,

It was total chaos out front. We actually called the facility staff person, our contact. We didn't want to go through the front of the building because it was nasty, there were police there, it was nasty! So, we asked if there was a way we could park, and [if] we could enter in the back of the building. We had to go in clandestinely because we were afraid to go through the crowd because they knew you were a nurse, they could tell and if you were seen as the staff going in everybody was like all over you! (S#2)

This particular supervisor was fearful about interacting with disgruntled individuals and subsequently altered her behaviour to reduce the likelihood of being confronted by clients. However, upon entering the clinic, participants would again face line-ups of agitated people. One immunizer described what nurses encountered once they were inside the clinics,

The clinics really were quite awful. I mean the kids were screaming and the sound, the high pitched screams were bouncing off the walls, and I mean, these little toddlers and the parents holding them in line with their coats on, and everyone hungry. I was at (X) and there's nothing to eat there after hours. We had vending machines, but you know, you're kind of out of luck and people probably didn't pre-plan for that because they didn't realize maybe that they'd be in line for three hours. (I#3)

Other participants also discussed the noisiness of the clinics. It was also reported that the presence of a crying child could cause other children to become upset. This further contributed to the clinic's noise, making it even more difficult to immunize this client group.

Participants experienced unique concerns that were dependent on the location of their specific clinic site. For example, some verbalized that the clinics' physical layout made it difficult to optimally serve clients due to accessibility concerns. One supervisor elaborated on the challenges that occurred at clinics that were set up on multiple floors,

The challenge that was ongoing was the fact that anyone that had mobility issues had to take the elevator to go up to the third floor, so the elevator kept breaking down, because it was in overuse. So I had to kind of bring part of the clinic down to the first floor in a special room to deal with either people who could not be in crowds because of some mental health issues, or [who] had mobility issues. So we had almost this separate small clinic happening on another level to accommodate the people that were coming in. (S#10)

Similarly, another supervisor identified how locations with multiple floors could contribute to an accident not related to vaccination. She explained,

So, at [X], we're on 2 floors. Everybody's waiting downstairs near the arena and we're upstairs, and so we watched, we monitored traffic flow up and down the stairs. Last thing I wanted was somebody to get hurt going up and down the stairs. The second thing is I didn't want people waiting on the stairs if there was an emergency I wanted to keep that path clear. (S#7)

Keeping the path clear was considered essential in case a client were to experience an adverse event. This was to make sure that paramedics would be able to access the clinic as quickly as possible in order to get to the affected client. However, during this process other challenges would be introduced, because the clinic would become 'paralyzed' (i.e. other clients would not be able to use the elevator). This was in order for the paramedics to have full access to the person in the 'adverse events' area, or other clinic space where the adverse reaction occurred.

Indeed, clinics themselves were implemented in buildings that were not designed for the implementation of mass emergency responses (i.e. recreational complexes, a shopping mall).

One immunizer highlighted some issues with a recreational complex location,

The room was located beside their skating rink. Now the skating rink was a lower level, we were up on the second level, but we still had pucks hitting the windows besides us. It didn't happen often, but it happened enough that if you were in the middle of an immunization, you could, you know! It's enough of a start when you've got a puck flying at your window, right by your head. Also, they could never keep the temperature of the room right. It was too hot and that's why we felt we had all those fainters that one day. Then it was too cold and all we heard was 'it was too cold'! We're like 'it's better than it being too hot'! It was small, the waiting area was small, the reception area was small and we still saw a lot of people through. But the biggest thing was those pucks and the windows. I remember the first time it happened, it literally sounded like a gunshot hit, like it was just that noisy and it kind of startles everybody! (I#6)

As such, the clinical environments were less than ideal for immunizers and supervisors to comfortably work. The above immunizer highlighted clinic temperature to be an issue, however, lighting and cramped workspaces were also of concern. A supervisor explained,

The lighting wasn't great. I mean it's mood lighting, it's a hall, right? So when it started to get dark, if they had the arena lights on it was much better, [but] if they didn't have the arena lights on, it was really hard sometimes for us to see. There wasn't as much waiting space, with all of the people playing hockey. So you'd have parents coming in to watch their kids play hockey, plus you'd have this line up of people waiting for clinics. So, it got a bit jammed packed. (S#7)

Some participants also felt that the set-up of immunization stations could contribute to the anxiety of those clients who were waiting. One supervisor explained,

My God the set-up was soooo terrible at some places! All the people who were waiting were watching the people get shots, and they were also watching the adverse [events] area, so if someone is having a hit fit, you (the client) were waiting there and you were watching. (S#5)

Other participants voiced issues with the ergonomic setup for the immunizers of these immunization workstations. One immunizer participant articulated the impact the cramped stations had on the PHNs physically,

Physically it was very hard with the work set-up to have good body mechanics. So you always went home with an aching back and stiff shoulders because you're trying to manage your immunization area, and keep it somewhat clean, but then you have consent forms that you have to sign and you have the information that you have to discuss with the clients. So it's trying to keep everything in an area that you can work at and it ends up that you're twisting your body in bad positions. Yeah, so it was a couple of months of a lot of back strain and discomfort from that. (I#17)

One participant unfortunately endured a major back injury as a result of working in a confined workspace at a roving clinic location. She subsequently required a surgery and a leave of absence from the organization. Although the agency was supportive in giving her the time for her recovery, this continues to be an ongoing issue.

It was not just immunizer safety that was impacted due to the nursing workspaces. It was felt by some that there were also potential client safety concerns due to nurses working in close proximity of one another, and because of the placement of their equipment. One immunizer described,

Sometimes I would notice with kids they wanted to touch actually the sharp boxes! So that's probably something, a safety issue for the young kids, so being able to always eye them, making sure that they're not touching the sharp boxes! (I#22)

Participants felt that the likelihood of an accident was further increased in these cramped workspaces when nurses had to deal with parents who insisted that their refusing child be immunized. This was compounded by the organization's 'no-restraint' policy, whereby nurses were not allowed to restrain anyone who refused the vaccine. Indeed, one immunizer had an unfortunate incident with a particularly resistant child. She described,

We had a poking incident. We were trying to immunize [a] 7 or 9 year old boy. We were having a really hard time and the parents were really insisting and the boy was screaming really loud. They took him away and brought him back, and then my colleague was just trying to help out and after I injected him with the vaccine, I was going to discard, and then poked my colleague, as I was discarding 'cause she was reaching over to help lower the kid's arm. (I#16)

However this clinic's supervisor, upon learning of the needle stick injury, made changes to the immunization workstations. She explained,

The set-up, the 2 sharp boxes were together. They went to hit the sharp box, and one over shot, right? So it was purely set-up, and we moved that around and they were more vigilant and we made sure that sharp boxes weren't together on the tables any more so that they weren't both headed to the same sort of general location. (S#7)

When it came time for participants' to leave their workstations and take a break, there was a variety of different 'break' spaces available depending on the specific clinic. Most participants who worked in buildings with break rooms that were separated from the ongoing clinics were able to decompress during their break. However, some individuals worked in locations where the break space was not completely partitioned off from the clinic. They were exposed to the population awaiting vaccinations, and had a different break experience. One immunizer elaborated,

You're eating your dinner standing up in a room that's not blocked off to the rest of the clinic, so you're still hearing all the screaming, crying, and buzzing that's happening in the clinic, you know? You're trying to be on break and eat your dinner but you're not completely separated, so you don't really get that mental break because you can still hear everything that's going on. I mean the door had the glass in it, so anybody walking by can see that there are staff just sitting around. Like, 'No we're not sitting around! We're on break, we are eating lunch!' But to angry citizens who are just there, they want to get their shot. I'm of the exact same mind, to see a number of staff members not at a table, and just sitting around wouldn't look very good, I don't think. (I#4)

As a result, some participants did not feel rested after their break. They felt that this could have potentially impacted their practice when they returned to their immunization station to finish their shift.

In addition to the six fixed clinics, multiple 'roving' or 'outreach' clinics were conducted across the city to vaccinate 'at-risk' populations. These clinics were intended to serve clients that for whatever reason were unable to visit the mass fixed clinics. PHNs went to different locations such as community housing projects, shelters, and group homes, to administer vaccinations. The supervisor assigned to the roving clinics was anxious about her assignment, because she did not have previous vaccination or supervisor experience. Further, she perceived there to be a lack of pre-emptive planning for the locations of the roving sites that she found especially disconcerting. She explained,

I don't think they even had a schedule of where I was! They didn't because I didn't have a schedule! I found out the day of, most of the time. Just the whole planning of it did not instil any confidence in what I was doing, or how I was doing things or whatever. You're not organized! You don't know where you're sending me, why don't you come out with me. It was really unorganized. (S#5)

This participant already felt like 'an outcast' due to being assigned to supervise the clinics that serviced vulnerable populations. Not knowing the roving locations until the day of the clinics, gave the participant very little preparation time to enter these sites. As a result, she experienced anxiety about establishing the clinic and working in unfamiliar environments. She explained how she would have dealt with these concerns, and planned to enter these clinics, had she been given more time to prepare,

If I knew who was going the night before, to the clinic, I'd say 'ok, we're going to go in together'. You know? Or I'm going to call this person, they're going to come and help us [with the clinic]. (S#5)

Due to roving sites generally be located in traditionally 'rougher' sections of the city, she worried for her own safety. As a result, this significantly shaped how she experienced entering into these different 'roving' clinic locations.

Although all of the clinic locations were less than ideal, a few participants were satisfied with their overall fixed site location. One supervisor went as far as to describe her assigned clinic as 'ideal' in comparison to some of the other locations. She explained,

I know our clinic here was a pretty good set-up. I know that some of the nurses worked in less than ideal situations, you know community centres, where maybe people were coming in on the ground floor, and they had to go upstairs and it wasn't as ideal. Maybe I've got a little bit of a better outlook or impression than some people. (S#1)

Most participants also understood management's predicament in procuring appropriate space to administer mass vaccinations because of the magnitude of the response. Indeed, these participants themselves were unable to determine where else management could have possibly implemented the mass clinics.

Dealing with the public. For the majority of the participants, the first few days of working in the clinics were the busiest and the most 'chaotic' of the entire response. Participants described the clinics as a 'zoo' as long line-ups of 'alarmed' and 'panicked' citizens waited for hours to be vaccinated. Many participants felt that managing these crowds was one of the most stressful elements of working in the response. One supervisor explained,

That was a major challenge, dealing with the mass number of people that showed up for the clinic that we weren't really prepared for because in the early days we didn't have really anyone to look after crowd control so the supervisor at the clinic had to look [after] everything. (S#10)

While the agency realized there would be a demand for the vaccine, they had not anticipated the mass initial numbers of people that showed up. As a result, the number of citizens that were originally planned for, and the numbers of people who actually attended the clinics were two

very different scenarios. The media's reporting of the H1N1/09 fatalities of younger, previously healthy individuals was thought to have substantially contributed to a large number of clients initially showing up and wanting to be vaccinated. One supervisor explained,

When the news came out that some young people had died and there was a gentleman here on a respirator and there were a few deaths, then all of a sudden people really started to become anxious, especially when young adults [are] the vulnerable population. It just brought out [fear] in people. I'm sure people don't behave like that on a regular day, but you know 'My kid might die and he needs this vaccine right now', some parents kick into high gear and become very, very aggressive. (S#10)

In fact, at times scared citizens lied about being a member of a priority group, or masked flu-like symptoms in order to ensure they, or their family member, would receive the vaccination.

Clinics supervisors, as the managers of the clinic operations, at some point had to talk to distressed members of the population. Sometimes these individuals were aggressive in their demand to be immunized, or have their family member immunized. One supervisor described a particular stressful situation,

I can just remember people were so stressed and they'd be yelling at you. I had one daughter of a gentleman shove a cell phone in my face saying 'His doctor wants to talk to you!' At that point you almost have a mental melt down because it's like I don't even know what to do anymore! (S#2)

Participants as public health professionals realized the potential catastrophic impact of Pandemic H1N1/09. In the beginning days, vaccine was thought to be limited and participants understood the importance of maintaining priority populations. In particular, to ensure that those most at-risk of contracting the virus were immunized first. However, most supervisor participants experienced consistent pressure from clients to immunize everybody in the clinics' line-ups. This was regardless if the citizen were a member of a priority population or not. This issue was compounded for many participants, as they also felt unsupported by the agency's managers in adhering to these guidelines. As one immunizer described,

We had line-ups of people who didn't need to be there in those early nights. I went down at one point with the sandwich board that had all the criteria on it, and I just walked through the crowd and said 'Please, if you don't fit this criteria, and you don't need to be here, we'd ask you to come back another time. We'd like to get the vulnerable people done first'. Older people would say 'My doctor said I should get this' and also saying that the MOH (Medical Officer of Health) had said, 'Nobody would be turned away' and [it] was true. So because of that we couldn't, we didn't have a leg to stand on. (I#20)

One supervisor recalled being threatened by an upset citizen who she had refused to vaccinate. She became upset when a manager later told her that she 'could have let that person through'. She felt that managers were not sticking to the criteria and were being 'wishy-washy'. She felt guilty because in an effort to maintain the priority populations, a client became very upset with her. Also, if something were to happen to that one particular client, she felt she would be responsible. She explained the impact of this experience,

Everyone had a story about why they should be immunized and (if) they didn't fit that day's criteria... You know, for some of them you could go like 'I totally get it' but you're being told this is who we should be immunizing because they were afraid at that time that vaccine would run out. It was really, really challenging to deal with that anger and then, it was like you were told these are who we should be immunizing, but then you started to hear that not everybody was sticking to those guidelines about who was supposed to be immunized and who was supposed to be coming to the clinics. That exceptions were being made at other clinics, and then it became 'Well, how do I decide?' Because every person came to tell me a story. If there's a grey area, you can immunize? Am I supposed to stick to those guidelines? And you use your best clinical judgement but then, you know, it becomes a watershed, if you let one person in, how do I then say no to the next person? Like where do I draw that line? That, I have to say, was one of the biggest difficulties that I had. (S#2)

Despite the presence of priority populations, a few supervisors used their own clinical judgement in certain circumstances to assess whether or not she should vaccinate a client. As a supervisor explained,

He's not (on the list) today, but he will be tomorrow and do you want to take that risk? So you just immunize him, they're there you might as well do them. So, we had to make

some of those judgment calls. I certainly didn't report them all, but we got through it. (S#7)

As the days passed, clinic supervisors voiced their concerns with crowd control to management and measures were taken to decrease the amounts of people showing up and waiting to be vaccinated. One supervisor described,

Just feeding things back to management helped. They eventually implemented the wristband system and figured things out that helped with the line-ups and the flow and that kind of thing. People could show up ahead of time, and get a wristband that kind of gave them an idea of when, what time, they could come back and be seen. So, it was like they had X amount of wrist bands over a certain period of time, so if you were a number from this number to this number then you could come back. So you knew you would be seen that day and you didn't have to wait in line for like 6 hours. (S#2)

Further, the city's Parks and Recreation staff, the public health agency's municipal partner, was brought in to perform crowd control and clinic security. This freed up the participants to focus on the clinical components of the mass vaccination clinic. One supervisor explained,

Just that crowd control once we had someone in place to do that, it helped tremendously because then I could focus on the clinic side a lot more! We had our municipal partners, like with Parks and Rec, and some of the other departments at the city were very much involved in supporting us in this event, and so our experts at Parks and Rec, that are used to dealing with large events, they took over dealing with the line-ups, and all the public that showed up at the clinics. And as soon as they stepped in, it was amazing. Because they have the experience in dealing with line-ups, people who are frustrated, dealing with the flow to make sure that people are getting through as quickly as possible, and that your priority groups are being accessed right away. (S#10)

Despite some unpleasant encounters with aggressive members of the public, most supervisor participants' interactions with the public were positive and people were thankful for the nurses' efforts. One supervisor elaborated,

There was a lot of interaction with the public. Not just [with] the people that you were trying to calm down, but other people who were so thankful, that we were providing that vaccine. They knew it was a Friday night or a Saturday and that we were working. You got all types, of course you always do, but it was quite gratifying. (S#1)

Like these supervisors, most immunizer participants voiced overall positive interactions with the public. If there was a client issue, immunizers felt they were able to manage these appropriately. Indeed, the ability to provide the community with herd immunity was often considered to be a positive part of front-line immunizers' experiences. However, immunizers were not ignorant to clients becoming frustrated and angry with staff. They recognized that the majority of challenging issues probably occurred earlier when clients were waiting in the line, out of the immunizers' sight. One participant explained,

I thought people felt sorry for us, and even if they were probably quite ornery when they were in line, even the people that were really frustrated and tired of waiting and everything else, as they would get closer they would see the light at the end of the tunnel! They'd be quite joyous when they would come and sit down in our seats for their immunizations, that part was fine. I mean people were really quite nice and grateful and pleasant with the nurses, for the most part, you know? So we didn't have to deal with the [angry] people in the lines, so it was all right. (I#3)

Navigating clinic operations. One of the primary responsibilities clinic supervisors had was to manage the nurses and other health care professionals, such as paramedics, who were immunizing the population. Often, supervisors were not aware of who they would be working with until they arrived at the actual clinic. The following supervisor described,

When you got your number, your quota ahead of the clinic all I would see was sort of 'RN, RN...' I wouldn't see their names. So I'm getting there and I'm not really knowing until the very last minute who these people are that I am working with that day. (S#1)

The supervisors were expected to coordinate and manage the practice of a large number of immunizers. For example, one supervisor was responsible for upwards of 40 front-line immunizers. Additionally, these supervisors had to deal with ongoing staff turnover as changes to their roster of immunizers frequently occurred. One supervisor explained how these changes impacted her,

So you'd identify these various roles for the nurses and then the next day a whole new set of nurse[s] would turn up that weren't the people identified on your list, or a good number of them, so you'd sort of go through all that work [of reassigning roles]. (S#9)

Supervisors were not just responsible for the agency's own PHNs. External agency nurses had been hired by the organization to increase the number of available immunizers. Unfortunately, participants did not always consider these individuals to be adequately prepared to work in the response. One immunizer explained,

They were actually getting contract nurses just to show up. Some of them hadn't immunized in years and they would just show up and not really know the process and we would just sit them down and say 'go!' It was purely about getting those [vaccination] numbers down rather than running a safe and calm and effective clinic. They may have completed their modules, but a lot of them, the ones that I'd seen and dealt with were very nervous, they were very uncomfortable. The mass clinics can be very overwhelming for experienced nurses who do clinics, and if you're a nurse you should be able to give an immunization, fine, but it's not about that. The concern is what you're giving, what are the contents, what are your screening questions, do you know what the contraindications are? How are you going to react if something goes wrong? (I#14)

Although the agency's human resources department hired external immunizers, participants felt there had not been enough time to adequately train these individuals. This was because these participants felt that even full-time agency staff did not receive sufficient training. As such, supervisors were concerned with these agency external nurses' knowledge regarding the H1N1/09 flu and their vaccination competency.

Contributing to this concern, the agency did not provide participants with any clear communication that these newly hired immunizers were prepared to administer vaccinations. For example, external immunizers arrived at the clinics, showed their nursing license, and informed the supervisor that they were there to work. The following supervisor elaborated on the limited knowledge she had about these individuals,

There were a lot of agency nurses and there were new hires on. So [there were] a lot of nurses I didn't know that were coming to work, so I needed to get to know them but

[that] wasn't always possible. Sometimes from day to day it was different people coming for the first time to a clinic from the different agencies. Sometimes they had not received the information modules, most times they had. Sometimes they had a chance to read them, sometimes they didn't. (S#9)

This did not sit well for most participants as they felt that client safety was of upmost importance in the clinics and that this could be jeopardized if nursing staff did not have proper training. One supervisor explained how that affected her,

So that worried me, that they hadn't been adequately trained. They may or may not have gone through the orientation process that had been set up because at the beginning we were running out of staff. So they were bringing them on and they said 'Oh yeah, I went', but we had no way of knowing. (S#7)

As there was 'no way of knowing' if these individuals had been trained, supervisors assumed the responsibility for assessing the competency of these immunizers. This placed further demands on these individuals as clinic supervisors. One supervisor explained,

So they would come and were like 'I was just told to come' and it's like whoa! Because it was just so busy, it was really difficult. What do you do with a person who comes with nothing? Who's got time to orient a person? But yet you were thrown into that situation where you've got staff, and sometimes it wouldn't just be an odd person, sometimes you could have 4 people, 4 nurses that were not trained who you have to put to work because you've got these masses [of people]. But yet they hadn't had training so it was trying to get them up to speed safely. (S#2)

The experience was often considered 'hard' as they had to somehow coach nurses in a professional manner, without embarrassing the individual, or potentially worse, upsetting a client that the nurse may have just immunized incorrectly. Immunizer participants also voiced frustration about the presence of external agency nurses because sometimes they refused to vaccinate certain population groups, particularly children and pregnant women, if they were uncomfortable doing so. As it was a professional expectation to immunize everybody, participants felt this was inappropriate. Further, they were frustrated with the use of external staff

when they were aware that the agency had its own casual immunization nurses who were available to work in the mass clinics. One supervisor elaborated,

There was lots of staff who I knew from [X], and they were available and they didn't get called. They were more casual staff, so they weren't staff that worked [full-time], there were a lot of them. [They] were either retired or worked casual and actually worked in the immunization program, but as casual staff. And so there was a lot of frustration because they were getting staff from outside sources, but they weren't pulling some of the staff that they could have pulled from. I don't know why that was an issue. (S#12)

However, it was not just external agency nurses who were unfamiliar with vaccination. Some participants discussed situations where their own colleagues, some of the organization's regular full-time nurses, were also uncomfortable giving vaccinations. They realized that this probably was because it had been quite some time since some of these individuals had given injections.

Beyond staffing issues, one component that was consistently highlighted as an issue for the majority of participants was the computer system that was implemented to track the administration of vaccinations. With this, the immunizer was required to enter the client's demographic information prior to administering the vaccination. One supervisor explained,

We had new software programs that were imposed upon on us, one of which was called [X]. So this computer program had to track the age of the person, where they were from, any other underlying illnesses they had, any allergies that they had. All of this data was kept on a computer program, which was fine, but as soon as they changed the parameters of who was to receive the vaccine, we couldn't go in and change the program. It was a closed source computer program that wasn't meant for mass vaccinations, it was adapted from something that was used for just routine so we had no control. (S#1)

The computer program was not designed for a mass vaccination effort, but instead was utilized in a region-specific vaccination program for a much smaller population. As such, the immunizers had to override pre-determined parameters within the program to make it correspond with elements of the H1N1/09 response. This was particularly problematic whenever there were

changes made to priority populations. This would involve the nurse going into the computer program, and overriding the age parameter, in order to proceed with the data entry and the client's immunization. One supervisor elaborated on the impact the computer system had on the nurses,

There were so many issues related to the computers! Especially at the beginning, it really slowed things down at the beginning. It was not helpful. It just sort of seemed like adding a lot of stress to the nurses. Like why are we trying to train all these nurses on a computer system? Do we want to get the needle in the arm? And with all this craziness, at one point I almost felt like 'Could we just take the computers away'? (S#2)

Many questioned the continued adherence to an electronic documentation system that was not user friendly. They often brought these issues up to management, in particular because H1N1/09 was an urgent scenario. Despite participants' request to stop using this system, managers maintained that the agency was required to keep using the computers for data collection.

Some supervisors equated this electronic entering of client information as administrative work, and 'a waste of' nursing time. One supervisor described,

We felt that this was data inputting, and that you were using nurses' time to data in-put rather than letting us just focus on giving the immunizations. Absolutely we need to make sure the client's informed and go over all of that information, but we didn't need to take the time to input! So we didn't do near as many immunizations as we could of, it wasn't necessarily something that nurses needed to do, on the spot, at that time when there was such a high need for immunizing people. We could have gotten through a lot more had we not had to do that. (S#12)

Participants felt the actual vaccination was what was needed in order to meet the goal of protecting the community. The electronic documentation, while good for data collection, was not essential to the goal of obtaining herd immunity. Participants voiced further frustration when hearing that immunizers working in clinics where the computer system was not functioning were able to give 'like a thousand more vaccines a night'. Also, not all immunizers were necessarily

technologically equipped to use computers. Fortunately, IT personnel were at the clinics and considered to be an invaluable nursing support. These individuals assisted immunizers on the spot with their computer difficulties, and thus freed up supervisors to address other more clinically pertinent issues.

Some participants went as far as to be concerned about whether the pre-determined computer program's assessment questions were infringing on individuals' rights. Indeed, this was recognized after the first few weeks when a client made a formal complaint to the city's privacy commission about the type, and amount, of questions the computer program required. Due to this complaint, the computer program was removed from clinic operations. As one immunizer explained,

Yeah because we were asking way too many personal questions. I mean the privacy issues! They're in for a flu shot and we were asking ethnicity and all this kind of stuff. Yeah, they really went overboard and then later on the privacy commission did say 'Yes they're asking way too many questions about ethnicity and where you're from and all of this kind of stuff'! When they cut that out, it did speed [vaccinating] up...(I#23)

Nonetheless, prior to the computer system being removed, a few participants did voice becoming more comfortable with the program over time with continued practice.

In addition to this electronic documentation, immunizers were required to complete paper consent forms for each client they vaccinated. Participants became even more frustrated because they felt that this 'double documenting' substantially slowed down the immunizers. Further, changes occurred to these documents frequently over the course of the response, with no rationale for the changes provided to front-line staff. One supervisor described,

The forms! Really? Do you think that nurses need to be 'Guess what, you're not collecting [X] today! Today you are collecting [X]. Oh no, no, forget about it! Now it's [X]!' They would even change the colour of the forms, so we went through every colour of the rainbow in the time that we were there. (S#10)

Participants felt that consistency in the documentation was key in ensuring staff properly completed their paperwork. While the colour of forms appeared irrelevant to managers, these continued changes seemed to cause unnecessary stress for staff. This specifically was because participants had to continually take the time to learn about each new form and what vaccine and age group it was for. This was particularly upsetting when nurses were trying to provide safe quality care in an already tense scenario. One supervisor questioned why immunizers were required to fill out any paper documents at all as they were already required to use the computer program. She described,

I don't think we needed to do so much paperwork 'cause we had the computers, [a] total waste of time. I had clients come to me and say 'why is it taking you guys so long?' and I said 'Let me give you your shot, and then let me show you how much paperwork I need to do before you get up.' He's like, 'that's atrocious'. (S#5)

Along with inconsistencies in the clinics, many felt that the agency reacted to the pandemic in a manner similar to 'the sky is falling'. Due to the long line-ups and the persistent public demand for the vaccine, participants felt ongoing pressure from upper management to be more 'efficient', by speeding up the vaccination process, and vaccinating more clients. One supervisor described,

The nurses had this constant pressure of 'Come on!' At one point there was a comparison made, 'Oh, the (X) clinic is seeing 1400 people in this much time, what's going on with (X)? You saw 200 less today!?' So in our communication with management and the other supervisors, there was this comparison going on. Which was ridiculous because every clinic operated differently, faced unique challenges, every day was different. So, to almost have this race going on where 'How many people can you do in one day?' It just made no sense! I think it got a little ridiculous when it came to that kind of messaging that was actually received. (S#10)

Participants understood that clinics were unique entities with their own characteristics and that it was unfair to compare the outcomes from one clinic to another. Supervisors and immunizers were attempting to implement safe and effective clinics. However, when management pushed for

increased vaccination numbers, many felt that the agency did not seem to share this priority. Due to this pressure, participants experienced difficulty in maintaining their professional standards, and some felt that the risk of errors was increased. An immunizer articulated,

At the clinics themselves, you'd see some of the upper management show up, just to walk around and see what was going on and you'd get the comments, 'Well can't you move things faster? Can't you get people through faster?' Well, do you want to have a safe clinic or do you just want to have a fast clinic? It became very much about numbers rather than [safety] and it was worrisome. (I#14)

Dealing with the mass numbers of panicked people was one of the most stressful components of participants' experiences working in the mass vaccination clinics. It was often verbalized that the beginning days of the clinics could have been smoother if there had been consistent managerial support present. Despite the initial chaos, participants attempted to provide the best quality care possible.

Persevering Over Time

The last theme '*Persevering Over Time*' illustrates participants' experiences in managing clinic challenges to get through the response. Usually, this was following the first few chaotic weeks, when PHNs were more comfortable in their roles and the initial clinic stressors were lessened. It is composed of three sub-themes. '*Working Together to Protect the Public*' describes participants' experiences working with their colleagues to provide mass vaccinations. '*Getting Through the Day*' explains the strategies participants adopted to function effectively in their deployment roles. Lastly, '*Reflecting Back and Looking Forward*' presents participants' reflections of the deployment and discusses changes that have since been implemented in the agency.

Working together to protect the public. Participants did not work alone in the H1N1/09 clinics. Clinic supervisors and front-line immunizers alike interacted with many other employees

including other nurses, administrators, and security personnel. Some were individuals that the participants knew prior to H1N1/09, while others were people that they had never met. Despite some challenges, supervisors 'gained so much more respect for the profession' and felt that 'the nurses really rose to the occasion' when they talked about their immunizing staff.

Most supervisors felt that professional relationships within the clinics contributed to a more efficient mass vaccination response. For example, several discussed the benefits of having a co-supervisor or an assistant supervisor to share the role's responsibilities. One supervisor explained,

I had an assistant supervisor as well; a colleague that I had worked with for a long time. We both were on the same page, we both knew what we had to do, we both agreed on the same sort of philosophy for the clinic. So once we'd get everything sorted and we got the vaccine, then we would have a staff meeting, and make sure that everybody knew what the routine of the day was. Thank God I had an assistant supervisor! She made sure to look after the problems [at X]. We had a very collegial atmosphere in the clinic. Both the assistant supervisor and myself felt that that's how we were going to get through this. So we had fun, and we chatted and personalities didn't have time to get in the way. We had to be cohesive and if you have that kind of atmosphere and everybody wants to come to work, then that was the way it worked. At least we knew what the set-up was going to be and how it was going to run. So, it was similar and staff knew what they were walking into. (S#7)

For participants the presence of another supervisor was considered 'very useful', as they could collaborate with their supervisor counterpart for tough clinical decisions. Also, for one particular supervisor, it was most often the other clinics' supervisors that helped when she doubted her own leadership skills and her clinic's operations. She elaborated,

For me personally, [the response] caused me a lot of anxiety, the whole thing, it was like 'Oh my god'. But you know I knew other people were in the same boat, so it's not like I took it personally that I felt inadequate. At first you think 'Is it just our clinic, like what is this?' you know? But then you talk to other [supervisors] in the same situation and you go, ok this is across the board, everybody's experiencing the same issues. (S#2)

In addition, participants highly valued their colleagues who were experienced in clinical assessment and vaccination. While supervisor participants recognized that it was their responsibility to manage the overall clinics, the presence of experienced and confident immunizers helped to lighten supervisors' workload. Especially when these individuals were assigned to the central roles of 'charge' and 'adverse events' nurse, and could assist the other front-line immunizers in clinical situations. One supervisor participant elaborated,

Very quickly I realized that I needed to assign some key individuals who had experience and knowledge that could manage those pieces, because it was absolutely impossible for one person to oversee all of those elements. So I drew on the nurses that had experience with immunization to look at overseeing whether the nurses that were in the clinic on any given day had the competency to be there. They were overseeing how the nurses did their practice, whether there needed to be any corrections made, as people were going through their day. So it helped tremendously to have that right hand person doing the clinical side! (S#10)

With a long list of responsibilities, supervisors were able to delegate some tasks to these competent colleagues. They could then use their own time and resources to handle other vaccination concerns, because they were comfortable knowing that experienced nurses were handling other clinical elements. For example, supervisors could ensure their nurses were informed of H1N1/09 updates and changes to practice, while charge nurses were insuring workers were taking their breaks. Similarly, immunizers perceived the 'adverse events' and 'charge' nurses to be beneficial because they were an additional resource to answer questions and to provide clinical assistance when needed. Also, it minimized the amount of requests that immunizers had to make of their supervisors.

Additionally, participants felt having consistent nurses in the clinics over time helped to 'streamline processes' and contributed to a smoother, more effective mass vaccination response. This was because supervisors had the time to become familiar with their staff, identify their backgrounds and strengths, and best utilize individuals for the clinics' operations and needs.

Also, immunizers got to know their colleagues and established patterns to collaboratively work together more effectively. An immunizer described one specific strategy she used with a colleague,

[Sometimes] we'd have two parents and two kids and we're at the table, it's like 'Well let's divide them', give me one parent and one child, I'll bring them over here', it's quicker for the family, and it's more efficient. (I#21)

When participants sometimes found working with others to be challenging, they would develop collegial strategies to work together to improve the clinics' effectiveness. For example, when ensuring the competency of the externally hired nurses, supervisors gave hard copies of the training modules to new immunizers as they arrived at the clinic. By implementing this 'mini-training' on-site, supervisors had the ability to witness the immunizers reviewing training materials. Another supervisor had unfamiliar immunizers shadow experienced nurses at the clinic prior to letting them independently immunize. Using these strategies, supervisors could ensure new hires had some clinical preparation. As a result, some felt more comfortable letting these individuals practice. Other supervisors, however, despite attempting to get external hires 'up to speed', used professional judgement on occasion. One supervisor explained,

I had a few people I had to say 'You're not staying' and I had to get rid of them, gone! Because you had to make decisions that are firm and there's no opportunity to negotiate 'Oh, well maybe if we do a bit of coaching, that person will...' No! It's like 'You're not working out, out you go!' and I did have to do that a few times. (S#10)

Some participants who were more experienced, particularly those casual vaccination program nurses, were happy to mentor their public health colleagues, in particular, in immunization. One such immunizer described how this helped to make clinics more efficient,

All of us casual nurses who worked flu clinics for years, we all actually grouped together in our own areas because we could run it smoothly! What we would do is we would alternate with a person that never worked a flu clinic before so we could help them, and kind of 'Here's a process, set it up like this!' So, we kind of took the lead and we would

switch our own seats, make sure we were seated opposite somebody who never worked a flu clinic before. Regardless of what medication we're giving, or for what, it was still a flu clinic. It just happened to be H1N1! You know, getting nurses who had never done this before, and they're panicking! It's like 'Don't panic, don't worry about it! Here's how you can set it up, make sure you've got good ergo set up' and talking to them in that way. So we would take the lead from the supervisor in the clinic but then we're like 'Ok, let's see how we can set this up and talk to each other to run it smoothly for our clientele'. Because if you've never given an immunization before, or you might've in your career, but normally [now] you're a desk nurse, and you come out of public health, and you're working with kids that are screaming, it's intimidating! It's like 'No, we can totally do this', like help out, and give some little pointers, and tips and work together. (I#21)

Another immunizer was happy to help 'support' those external agency staff that were uncomfortable vaccinating certain populations by vaccinating these individuals herself. She knew she was comfortable working with these clients, and wanted to help maintain the flow of client traffic through the clinic. She explained her experience,

I felt I could help other people that were working in their office all the time. I could see it was difficult for them. For what I've seen the public health nurses that were more working in an office setting, not doing practical things like vaccination, they were very professional, really, and they would ask. I found we could help them. I felt good. It's an expertise. An experience that you can share, you feel good. I can remember one of the nurses, I didn't know her at all, and we worked often together, but she was not very comfortable with vaccination, and she was such a nice woman. I was happy to help her. It creates connections with people. (I#19)

While these participants volunteered to help those that were unfamiliar with vaccination, some nurses were also identified to have competency in other specific areas. For example, there were immunizers who had experience providing care to pregnant women, children, and babies. These individuals were periodically requested to assist their coworkers that were having challenges vaccinating these client groups. One immunizer explained,

We knew that there were certain people that were more comfortable with and better at [particular client groups]. There were nurses there who were with the immunization program, and the school vaccination program [and] this is what they do, right? So, I know

that there were sometimes nurses who may not have been as comfortable vaccinating children, or working with the adolescents and things like that, that they were guided towards the staff with more experience. (I#11)

Interestingly, one immunizer described how she was singled out for one specific non-nursing skill. She described how her abilities helped her fellow colleagues,

I did have another role in the clinic for some time. It's kind of funny but I was sort of doing technical support. I think it came about because as my colleagues got to know me, it was learned that there were some staff who were not necessarily comfortable with the technology that we were using. So our supervisor asked me if I would be willing to take some time. I think it might've even sometimes been like a whole shift or larger part of a shift that I would spend helping people manage the technology that we were using. (I#13)

By addressing challenges with the computer system, this participant was able to help her colleagues be more efficient in vaccinating clients. She felt that while this competency was not necessarily nursing vaccination-skill related, it benefited the overall clinic. As a result, this immunizer experienced satisfaction with this portion of her deployment experience.

As supervisors valued their fellow supervisors and immunizing staff, immunizer participants valued their supervisors. Most immunizers identified that their clinic supervisor was a key professional support in the clinics. These individuals were thought to be available and approachable when needed by the nursing staff. Particularly, when immunizers had specific questions on vaccination protocols and they were unsure if they should proceed with a client. For example, participants felt that they could utilize their supervisors as a resource if a client presented with an allergy and they were unsure whether that person should be vaccinated.

In addition to being helpful with clinical issues, some participants felt that their supervisors truly understood the immunizers' professional needs. This was evident when supervisors advocated for their nurses' wellbeing. An immunizer participant explained,

The supervisor we had, she was very much trying to close the clinic as close to the end time as possible because as far as she was concerned, working the nurses too hard made

for tired nurses, made for the increased chance of errors. So again, putting client safety at risk. So, I have to say that feeling supported by the supervisor was amazing! I heard stories, from my colleagues about what their experiences were like. Mine was completely different to that, I had a great experience with the supervisors, they were very supportive, very much advocates on our behalf. (I#6)

Further, a clinic supervisor's attitude could help set the tone for the clinics. Often, immunizers felt that the clinic's supervisor could enhance the working environment by maintaining a positive demeanour despite any real, or perceived clinic challenges. As one immunizer described a particularly hectic day where multiple adverse client reactions occurred,

I looked over and the supervisors were helping out, they were taking the blood pressures, they were smiling and laughing, keeping everybody up, making sure we were going for breaks, and saying 'Jeez! I hope nobody else goes!' and that was great! But I know that there are certain supervisors that if that had happened with them it just would've been [bad]. (I#11)

Only one immunizer reported having significant issues with her supervisor. She felt that this person was unresponsive to constructive feedback. She explained the impact she perceived this had on the clinics,

For my experience, I wasn't happy with my supervisor, at our clinic because she just didn't know how to run a clinic. So there was a lot of chaos and confusion and it was mad right? I get they were supervisors that ran programs at head office but it's [important to] be able to sit there and say 'Ok, I'm out of my element here. Let me take somebody that has a bit more knowledge to run it, or to get their input or their help'. It was very territorial, and it wasn't a time to be territorial. One of [my colleagues] that I work with is more of a senior, I mean she had been doing flu clinics for probably 20 years, very seasoned...and [the supervisor] just wasn't listening to this person, and I normally responded well with this person 'cause she ran a great clinic! [When] I worked another at [X], that was where one of my other [H1N1] flu clinics were, and that one was [with] a flu clinic supervisor and oh my god! It was so smooth, and so great, and it was the way we run our clinics! Yeah, from our supervisor, it was more of a public thing because a lot of public attention was given at this one clinic, and the supervisor liked that. It was just like 'that's not why we're here, it's not a contest!' You know what, you can take all the credit, I don't want the credit, I just want to run an efficient clinic where nobody gets injured, everybody's safe and our clients get the attention they require [with]

professionalism. I think that having inefficient people leading doesn't help calmness, right? (I#21)

Despite occasional challenges, working collaboratively with others was an integral part of participants' H1N1/09 mass vaccination experiences. Further, the relationships that developed were some of the most positive things to occur for participants. For some, it made working in the clinics more pleasurable, and even more meaningful. As one last immunizer articulated,

We had a purpose, you know? So there's nothing more uniting for a group of nurses than to have a purpose. Especially those of us who were 100% deployed to this. It was like we got to be, because it was generally the same group of nurses who worked every day together, and we had the same supervisors of the clinic and stuff, we got very, very close and we became a well-oiled machine within days. So, it went very well. (I#18)

Getting through the day. Participants understood why the population was fearful of contracting the H1N1/09 virus. As such, every effort was made to make the clinics more efficient to cut down on clients' wait-times and ensure the public received the vaccine. To accomplish this, many supervisors added more hours to their already long days. One supervisor explained,

The other supervisor and myself would go much earlier than clinic start time to just get organized 'cause it was just so overwhelming and you felt this huge responsibility on your shoulders to make sure that things ran smoothly as a supervisor. We'd go early and we'd try to brainstorm about 'Ok is there something we can do differently today to make the day go better?' (S#2)

Despite the overtime required of most clinic supervisors, one participant was able to continue to work in her pre-response role while embarking on her supervisor duties. This was her decision and she did not feel pressured by the agency to do so. Another supervisor saw benefit in the extra time her role required as she was able to use some of her additional hours towards a Masters' graduate course she was simultaneously pursuing.

Other resources were also available to help participants work effectively throughout the days in the clinics. One resource that was used often and that was appreciated by participants

was the availability of a Medical Officer of Health (MOH) or an Associate Medical Officer of Health (AMOH). If for any reason, participants faced clinical challenges, there was always a MOH or AMOH reachable by phone to answer questions. For immunizers and supervisors alike, this was very reassuring, especially when they were not sure how to proceed with a particular client dilemma. For example, if a client with a particularly obscure allergy should be vaccinated.

Participants' familiarity with their colleagues also contributed to the implementation of effective communication between staff in the clinics. This was important as most participants felt that communication between supervisors and immunizers was an integral component of clinics' functioning. The majority of participants thought that this was done well during the response and continually enhanced the PHNs' ability to work in the clinics. One immunizer described one way that communication occurred,

We did like a mini team meeting, like a huddle, at the beginning of the clinic before we opened the doors. This was to talk about changes that had happened in the recommendations or the vaccines that we were using, or the process that we were using. We would also be told who was our lead nurse that day and who was our adverse events nurse. (I#13)

One supervisor emphasized the importance of having all clinic staff attend these meetings. She explained,

I hated the fact that the admin staff would meet and the clinical staff would meet [separately]. It just didn't [work], they had to work together! And I didn't want 2 separate meetings, I was in charge of the overall clinic, so we all met together, and as a result, we were more cohesive. (S#7)

In particular, it was important for all individuals to be aware of the information, at the same time, that may impact clinical operations. For example, if supervisors were notified by management of a colour change to the consent form, both registration personnel and immunizers would have to be made aware of this to perform competently in their clinic roles.

Most participants felt these meetings were sufficient in nature for issues to be adequately communicated between staff. However, supervisors recognized that they were a resource for their immunizers and they wanted these nurses to feel comfortable in approaching them with issues during the day. Break periods became a good opportunity for supervisors and immunizers to discuss H1N1/09 updates, clinical operations, and staff concerns more informally.

Fortunately, as the clinics went on past those beginning hectic days, the majority of participants reported that they were encouraged by their supervisor and charge nurses to take their scheduled breaks. Some participants voiced the absolute necessity of these two 15 minutes and one half hour breaks in getting through the day. One immunizer explained,

We all took our breaks and I had no qualms about taking them, 'cause you don't perform well if you don't! Even if it's only getting out of the room for five minutes, it's just you got to get away from it, you know? (I#20)

Although breaks passed quickly, many participants reported that the mealtime catering provided by the agency really helped to maximize the time in their break periods. With this service, employees were provided with complimentary sandwiches, cookies, and coffee when it was their scheduled dinnertime. While these food options sometimes became tiresome for participants as the weeks went on, they were nonetheless grateful for the free food. As one immunizer explained,

In the clinics I worked, we had food brought in. That was really nice because boy! When you had your break, you just (snoozing sound) were exhausted! So, it was nice, especially not having to be running home and that! (I#23)

When the deployment began to impact some participants on a more personal level, for example if they became tired or upset by a client encounter, they reminded themselves that the mass clinics would only be open for a limited time. Participants had worked in previous public

health emergencies and these past experiences helped them to realize that while the pandemic response was daunting, it could be managed. One supervisor elaborated,

It didn't affect me. I just knew it was part of my job and as they say, it's not my first rodeo, it was probably the third time I had done something like this in my career. So you knew it wasn't going to last forever. It was just an adjustment for a short period of time. (S#7)

However, this realization was not enough for one supervisor. She recognized that the only way she could cope in her role, in particular with challenging members of the public, was to change her demeanour. She explained,

Over time, when I was in the position to deal with [challenging individuals] in the clinic, sometimes you just get a little bit hardened. I mean that in a way where you almost have to know what your response is going to be. For me that would come across as being hardened because I think I'm a people person and I'm very kind of a softy and everybody's individual story to me is important. I'll cry at every movie, that kind of person. So you would just have to go 'Ok, this is more of the same that I've heard' so you just become a little bit hardened, but I don't mean that in a mean way. I just mean it that you would have to know, ok, this is going to be my response and this is how I am going to handle these kinds of situations and you almost have to have it at least scripted in your head. For me, that's how I would have to deal with it. You didn't want to fall apart in front of people. You had to be in control and you had to be the supervisor. You'd take some heat, and you'd be understanding and you'd empathise with people but you'd have to be able to justify why something, either at the clinic was happening, or why they couldn't be immunized. (S#2)

When participants returned home after their clinic workdays they were supported by their spouses, family, and friends. The ability to confide their daily experiences with these individuals contributed to participants' personal ability to manage their professional roles. One immunizer explained,

Well my husband would ask, 'how was the clinic' and he would more often than not get an ear full but you know, that was my way of, I guess, debriefing what was going on. Oh yeah, he was a good support system. (I#4)

For some supervisors, knowing that their loved ones supported their professional endeavours helped them to focus on the clinics, even once they returned home from work. For example, spouses sometimes completed chores and took care of household tasks that participants had been responsible for prior to the deployment. However, participants' normal coping mechanisms for managing stress were impacted due to clinics being continuously scheduled in the evenings. For example, some participants reported the inability to continue with their normal exercise activities. Others had less time with family and friends, and missed special occasions as a result of clinics. One supervisor described,

I worked different hours, so it affected my family life a little bit because my kids were in school and I would be gone before they went to school and so when I got home they were already in bed. (S#12)

As a result, some participants found the continuous evening shifts to be challenging despite their increased comfort in their clinic roles. This was particularly distressing for one participant whose child contracted the H1N1 virus. Further, she and some other participants felt that their personal sacrifices by continuously working evening shifts were not noticed, or appreciated, by their managers. In particular, when they felt pressure to 'vaccinate more' at the clinics.

Nonetheless, most participants felt that engaging in different hours and doing overtime was their professional obligation to ensure clinics were effective and met the needs of clients. For supervisors in particular, this experience was attributable to the fact that they were assigned to the supervisor role. One supervisor, in fact, felt that she 'lived in a tunnel' to accomplish the agency's massive goal. She explained,

I felt like I lived in a tunnel. Your clinic started around two o'clock. The teleconference was every day at eleven. So you'd leave to go to the clinic at one o'clock, but I was coming in here maybe ten thirtyish, taking the call at eleven, working through until I head off to the clinic around one or one thirty. Then you'd work the clinic until eight or eight thirty whenever the last person left. The first few weeks it was later than that for sure! [After work] you'd go home, you'd sit down you'd deprogram or whatever for half an

hour. Then you'd go to bed. Get up, get ready, do it again. So it was just this tunnel, get up, go to the clinic, do whatever work and then leave and then go home. The day was full and it just seemed that this was just a little shuffle you did. (S#9)

Other participants identified that their own personal characteristics were some of their biggest resources that helped them function in the clinics, even during the most challenging times. One supervisor explained,

You're putting in those long hours and it's stress from the time you walk in the door. I never knew what I was going to have to deal with that day and it was coming at me from all sides. You draw on stuff you never knew you had, and I felt that for some reason I got the strength to do it. (S#10)

Many also realized, and reminded themselves, that these long and intense days would only be for a short period. Indeed, they considered working in the H1N1/09 clinics was a 'tremendous growing experience'.

Reflecting back and looking forward. While PHNs encountered challenges and considered the H1N1/09 clinics to be at times 'insane', the majority of participants had positive memories of working in the response. Many participants felt that it was a 'great experience' that they 'enjoyed'. One supervisor called it 'one of the most amazing experiences of my life'.

Another immunizer explained why she 'loved' working in the response,

I learned a lot, I developed relationships with colleagues [and] I felt connected to my community. That was a big thing for me! I really enjoyed having that face-to face with clients in my community, which is something that we don't always get a lot of in public health. So there were a lot of positives for me. (I#13)

Other participants also discussed how having interactions with clients were a positive element of working in the mass vaccination clinics. Particularly, for those whose positions are primarily administrative and that keep them working mostly in the office setting. One supervisor elaborated on how working in these clinics made her feel like a 'real nurse',

It's a little difficult because I hadn't been a clinical nurse for some time before this happened. I had been an [X] nurse for six years and then after that I was a [X], so it wasn't hands on at all. I was not (a) clinical hands-on nurse so being in the clinics gave me an opportunity to feel like a nurse again. I remember my kids when they were growing up saying 'well you're not really a nurse' because at that time they said 'you sit behind a desk, you're not really a nurse'. So it actually made me feel like a 'nurse' again and not just a planner. It kind of grounded me again, and it made me feel, took me back, to the sort of hands-on Nightingale (nursing). It felt good, that my experiences there I wouldn't normally get to have in my job. (S#1)

Some participants were not only happy to have direct client contact, but also to be exposed to different client populations. This is because the majority of PHNs usually work with a specific client population, for example, new parents or school-aged children. One immunizer described,

The people who came in were great. It was a really interesting cross-section. We got everybody from everywhere and it was kind of nice because (before) I had worked with a very different demographic than I work with now. So it was nice to work with the elderly again, and with just a broad range of the population again for a couple of weeks that was nice. I enjoyed that. (I#8)

Participants explained that most of the agency's PHNs work in specific departments and consequently tend to work in 'silos'. However, by being deployed into the H1N1/09 clinics, participants were able to have a 'shared experience' with other public health staff that they did not previously know. Also, the mass clinics provided a great opportunity for nurses to learn about the agency's other different departments and how they function. One immunizer elaborated,

Over the clinics the same people chose the same clinics, so you realize after a certain amount of time that you are kind of working with the same people. So you do develop relationships with those people, you know? You're taking breaks and eating dinner with them in the back room, or whatever, so you do build relationships with those new people. I mean for me, I was new to the whole organization, pretty much, so it was a good opportunity to 'oh, you work for early years, what's that about?' or 'oh, you work for chronic diseases, what's that about?' and 'oh you're on the tobacco team, what's that like?' (I#4)

Through these, and other interpersonal interactions, participants felt that they learned which of their colleagues they could count on in a difficult situation. At times, some participants were surprised by the PHNs they felt 'rose to the occasion' in the clinics. One supervisor elaborated,

I think you learned things about individuals. Qualities, whether it's personal or work environment qualities, where you kind of go, you know, that person really surprised me! I kind of had this opinion of them, and that's changed now. Like they either really came through, they had a really good work ethic, and they were very supportive or helpful or whatever it was. I think you just got a different appreciation for different individuals. Sometimes it was the opposite, it was like 'Oh my goodness! I'm not sure I can work with that person'. But at the end of the day, you met new people and you just had sort of a different appreciation for everybody and also different disciplines. (S#2)

For the majority of participants, the experience of working with others 'together' was the most positive thing about being in the clinics. This collaboration and cooperation provided participants with a sense of meaning, and a feeling that by working in the response, they were part of something significant. The following immunizer articulated,

Those of us who've talked about it since felt you were part of something bigger that had the potential to be a state of the art protocol for upcoming events. In the end, I don't think there was one of us who didn't enjoy, or who said 'I would never do that again'. I'd be surprised. [It was] exhausting! Exhausting! But it's an exhilarating exhausting 'cause you really felt like you were doing something or, at least I did. I felt I was part of something that was quite a bit bigger than myself and that was something this city hadn't done before. So yeah, it was great. Would I do it again? Yes in a heartbeat. Yep, yep, yep. Yep! I loved it! I thought it was great! I know not everybody felt that way but I did! I thought it was a high and a couple of us felt that way. We said afterward 'ah, sure we'd do it again!' (I#20)

Looking back, some participants felt that only other employees who worked during H1N1/09 could understand the professional and personal impact of the deployment experience. As such, many have remained in contact with their colleagues they met in the clinics. A few continue to

regularly schedule get-togethers for individuals to “catch up”, to re-connect, and to discuss how the experience has influenced their careers.

Other participants discussed how they learned about themselves. While some participants initially felt underprepared entering the clinics, a few discovered that they had personal characteristics that made them capable of performing in their clinic roles. As a result, many participants developed confidence in their leadership abilities, and some have since sought out different supervisor positions within the agency.

Overall, many felt that the clinics were a success because of the high vaccination uptake amongst citizens that ultimately contributed to the decreased transmission of the H1N1/09 virus. Participants also felt that this experience had the potential to inform more effective future emergency responses, and highly recommended learning from this experience. The following supervisor elaborated,

To me [it] was really a success, and better to have something like H1N1, while it was terrible, [it] wasn't a catastrophe. It wasn't a Spanish Flu and it helped us to recognize the weaknesses of what we were going to be doing and how we could do it better if we had to. So it was almost like a trial run. I mean it's hard to conceive. I think that the experience of going through that where it wasn't a high mortality, high morbidity event, there was a little bit of a breather in the middle of the waves, helped us. I mean, it could have been so much worse, and I kept thinking that. It could've been so much worse. (S#1)

Others felt that the H1N1/09 clinics highlighted the importance of public health activities, and the roles of the PHN. One immunizer elaborated,

It was, it brought us all together as a group, we were united in a particular cause and we had an opportunity to have the visibility that public health so rarely does. Like because a lot of the work that we do is either one on one or is in the background, and it's not news worthy, but this was a time where it was like you kind of proudly stood up and said 'I'm a public health nurse!' and so from that perspective it, it was amazing. (I#18)

As a result of working in the response clinics, some participants appreciated their normal agency positions more when they returned from the deployment. They felt like they could 'take a breath', as they were no longer required to maintain the high intensity that was necessary in the clinics. The following immunizer explained,

It was good. I almost felt like it was a big relief to be back in my comfort zone. Just the noise level, you know, no hockey pucks hitting the window. I didn't have to worry about adverse events, and it just felt like going back to normal as well which was really nice, I really enjoyed getting back to normal, back to [my] routine. Yeah, and to my regular job because I really enjoyed what I [do]. (I#16)

This was particularly evident for participants who personally considered their regular jobs to be less intense than their mass clinic assignments. Only a few participants mentioned feeling fatigued and needing a short period of time off before returning to their pre-deployment roles. However, once these individuals were able to take this time, they were ready to once again work.

The agency implemented a series of 'debriefing' focus group sessions in the month following the closure of the clinics. These debriefing sessions were conducted to obtain staff reactions about the H1N1/09 response, to allow nurses to share about their experiences as they transitioned back into their regular roles, and for managers to obtain recommendations for future pandemic planning. Although many participants had positive feelings about their experience, many identified concerns and made suggestions for future mass vaccination clinics in these groups. While participants who shared in the debriefing sessions were hopeful their voices were heard, they were unsure if the agency took action based on these debriefing sessions. The following supervisor explained,

Hopefully, you know this doesn't happen again, but hopefully next time the comments will be taken or something. We did a survey, but where did those comments go? I don't know if I ever saw something that came out of it, but we won't know until another pandemic comes. Oh 'look at all these great suggestions' but you know what, they won't be put into place until something else like this happens. (S#5)

Participants have, however, noticed some agency changes that have already been implemented in preparation of the next mass vaccination response. For example, PHNs are now required to review training modules that are updated yearly for the seasonal flu and its corresponding vaccination. Many participants also found that guidelines, particularly around vaccination protocols, are more detailed in these new modules. For example, the modules clearly discuss how to vaccinate a client, and the 'no-restraint' policy for a client refusing the vaccination.

Also, all PHNs are now required to attend one or two of the scheduled immunization clinics during the regular flu season in order to practice administering vaccinations. The following immunizer described,

They're very careful to make sure that every year, nurses do the clinics to make sure they're keeping up their skills. No, ifs, ands, or buts. I guess that was one of the things that must have been identified was that a lot of staff said they just didn't feel comfortable. So now, every year we have to do the refresher clinics and things. (I#11)

Participants welcomed these agency changes as they provide an opportunity to practice skills and gain clinical competency, giving them 'practical confidence'. For others, attending these clinics is seen as a break from their normal positions, and feels like 'nothing' in comparison to what they experienced while working during H1N1/09.

The agency also now expects its casual nurses to schedule more shifts for the regular vaccination programs. As a result, some casual nurses are unable to attend this increased number of clinics due to other professional commitments. One casual nurse immunizer participant perceived that the agency is doing this in an attempt to use more of its regular full-time nurses from other departments to work in the clinics. In this way, regular full-time PHNs will be more prepared, and thus, competent in case of another pandemic response. Regardless, the majority of participants feel there are noticeable, and beneficial, changes in PHN mass vaccination training.

Chapter Summary

A background and description of the H1N1/09 mass vaccination clinics was presented. Following this, three overarching themes were identified to describe clinic supervisors' and front-line nurses' experiences working during the response. The first theme '*Anticipating an Emergency*' illustrated participants' experiences learning about the H1N1/09 response and how they became prepared to take on their mass vaccination clinic roles. Most participants, while recognizing that a response was 'imminent', received very little formal notice regarding the deployment start date and what their corresponding assignments would be. As a result, many supervisors felt they were unprepared to work in the clinics. Immunizers, however, were more comfortable, but attributed this preparedness to other professional experiences. For example, some participants discussed having recently worked in a hospital, or having just completed their nursing education.

The second theme '*Surviving the Chaos*' presented the clinical challenges participants encountered in their H1N1/09 deployment roles, in particular, during the initial stressful days of the response. The busy clinic environments were described, and participants' experiences dealing with the masses of citizens were detailed. Of particular concern, some clients became aggressive with participants when they refused to vaccinate them because they were not members of a priority population. Additionally, participants dealt with clinics' logistical concerns, for example the time-consuming computer system and problematic clinic set-ups. Participants were frustrated that management continued to pressure PHNs to vaccinate more individuals, quicker, despite these ongoing challenges.

Lastly, the theme '*Persevering Over Time*' described the strategies participants used to manage clinical challenges. Often, this was once the beginning chaotic days of the response had

passed and individuals were more comfortable in their roles. By working together with nursing and non-nursing staff, participants used professional strategies and personal supports to effectively implement a mass vaccination response. Professional strategies included the ability to contact an MOH when challenging decisions were presented. Personal supports included the presence of interpersonal relationships outside of working hours, for example, a supportive spouse. Participants generally felt positive about the H1N1/09 response and the agency has since implemented new training procedures in anticipation of a future pandemic. PHNs are hopeful that a future mass vaccination response will benefit from this most recent pandemic experience.

Chapter Six- Findings Part Two

In this chapter, a thematic description of the study's overall findings is presented. According to Thorne (2008), a thematic description is the highest level of analytical abstraction, whereby latent patterns in the collected data are uncovered. The participants' thematic summary, consisting of the 'in-situ' interviews, was examined in relation to the significant concepts identified in the pandemic planning documents, the 'external sources'. Also, a concurrent discussion of how the findings are situated within the Foucauldian Knowledge-Power-Resistance framework is integrated. First, to promote understanding of this thematic description, the purpose of the four examined pandemic documents is presented below.

Explanation of Pandemic Planning Documents

The first document, the 'Influenza Pandemic Service Continuity Plan' was published in January 2006. It was drafted by the agency to maintain core critical community public health services in the event of a pandemic influenza. However, it focuses on elements that pertain to the continuity of regular ongoing services, and does not address elements relating to a pandemic response. It is unclear who actually wrote the document. However, the agency's Medical Officer of Health (MOH), the Associate Medical Officer of Health (AMOH), and three other public health managers signed off on the document.

The second document reviewed was June 2006's 'Influenza Pandemic Preparation and Response Plan'. The goal of this plan was to ensure the agency would be prepared to effectively lead, coordinate, and respond to an influenza pandemic. Four objectives were outlined in the plan: 1) To minimize the spread of the influenza virus; 2) To minimize societal and economic disruption; 3) To reduce the severity of illness; and lastly, 4) To decrease the number of deaths

among the city's residents. Authors of this document were not listed, however, the MOH and four other public health managers approved this plan.

The third document analyzed was November 2008's 'Interagency Influenza Pandemic Plan'. The goal of this document was to identify all of the city functions that would need to be carried out during a pandemic influenza. It also identified who would perform these roles. With a specific focus on local preparedness, this plan was created with the goal of minimizing societal disruption, serious illness, and death. It was drafted with the expectation that each of the city's involved agencies would individually determine how to accomplish components of the plan that were relevant to their organization. The city's Interagency Influenza Pandemic Plan Committee drafted this document. Individuals on this committee included the MOH, the city's managers of Emergency Management and community health services, and representatives from the city's Police, Paramedic and Fire Services. There were also other representatives from the public health agency including an emergency preparedness health specialist, a laboratory official, and the acting manager of evidence, preparedness, and information. Lastly, key personnel from the city's major hospital in intensive care, infectious diseases, emergency preparedness, and patient safety contributed to this plan.

The last document was October 2009's 'Mass Immunization Clinic Plan'. It outlined the agency's plans for pandemic flu vaccine delivery based on a model that was built on the agency's annual seasonal influenza immunization format. The objectives of the document were:

- 1) To provide seasonal and H1N1 influenza immunization for all residents in order of priority based on the recommendations approved by the Canadian Immunization Committee; 2) To store, distribute, allocate and administer vaccine safely, securely, efficiently, and appropriately with minimal wastage; and lastly, 3) To monitor safety, effectiveness, and coverage of the

immunization program. While the purpose of this document is clear, the individuals who drafted, and approved, the document are not identified.

Thematic Description

The thematic description (Figure 3) illustrates the overarching issues, identified collectively for all participants regardless of whether if they were assigned to the role of 'supervisor' or 'immunizer'. These themes include '*The Necessity of Knowledge*' and '*Essential Supports in Protecting the Population*', each consisting of two sub-themes.

Figure 3: Thematic description schematic.

This figure illustrates the overall findings of the study's thematic description. Review of both the participants' interviews and the pandemic planning documents identified two overall themes, each with two corresponding sub-themes.

The Necessity of Knowledge

The necessity of knowledge is a broad theme that describes participants' need for information to adequately perform their assigned pandemic roles. It illustrates the importance of management communicating the disciplinary knowledge utilized to provide the basis for the overall mass vaccination clinics. It consists of two sub-themes, *'The Importance of Notice and Reasoning'* and *'The Right Instruction at the Right Time'*.

The importance of notice and reasoning. As was presented in the participants' thematic summary, supervisors and immunizers alike were given very little notice of the deployment and their subsequent pandemic roles. This is notable as the agency's planning documents did highlight the need for timely communication of ongoing developments to all employees. For example, June 2006's 'Influenza Pandemic Preparation and Response Plan' first addressed that staff would need to be informed of a potential pandemic flu during its surveillance period and before the implementation of a response. The following passage explained,

During the Pandemic Alert Period, [the agency] will need to decide on a course of action regarding the content, timing and means of releasing information to staff during a pandemic period. This will be accomplished by communicating the course of action to staff. During the Pandemic Period, [the agency] will need to provide staff with accurate, up-to-date and timely information about the pandemic by preparing information and key messages. (June2006)

Similarly, November 2008's 'Interagency Influenza Pandemic Plan' also stressed 'accurate timely communication... to all levels of staff'. While H1N1/09 was not yet declared a pandemic at the time this plan was published in 2008, the document was drafted in anticipation of a future pandemic flu.

Communication was essential because all of the agency's staff would be impacted by the implementation of a pandemic response. This was identified in January 2006's 'Influenza Pandemic Service Continuity Plan', "...in the event of an influenza pandemic it is assumed that

all levels of staff would have a role to play. Staff would either be involved in services aimed at maintaining core critical services or assist with pandemic response". In the above excerpts, it is assumed that 'all levels of staff' was meant to include the agency's front-line employees. In particular the PHNs who would be immunizing in, and also supervising the pandemic response mass vaccination clinics.

Participants wanted updates of ongoing pandemic response planning, as this would help them to prepare for the professional disruption that would accompany the implementation of the clinics. To become clinic supervisors and immunizers, participants left behind their regular workloads and ongoing community commitments. The planning documents had pre-emptively recognized the impact that the suspension of non-critical programs would have on the agency and its municipal partners. January 2006's 'Pandemic Service Continuity Plan' elaborated,

Some [agency] programs have developed mutual aid/assistance agreements with their partners in order to collaborate on the provision of services. If program services are suspended during an influenza pandemic, this may impact not only the programs that are suspended, but could also affect the programs and services that are dependent upon each other. (Jan2006)

Despite the agency's acknowledgment that regular programs' staffing would be impacted by a pandemic response, some participants maintained that these concerns were not adequately planned for when PHNs were deployed into the H1N1/09 mass vaccination clinics. One immunizer, who worked on a 'non-essential' team, articulated how staffing issues affected herself and her colleagues,

We're on a very small team. At the time, there were 3 RNs and then my supervisor, and one of the RNs was off on mat leave. So it was just going to be myself, or my colleague, that was going to be deployed. So, because we deal with client files I had to dump all of my files onto my colleague, who was running the show basically for 2 months while I was off vaccinating and my supervisor was deployed to supervise various clinics. My one co-worker had to bear the brunt of all the work, all the client files, and I was off doing H1N1. I had just started on this team and then there's no [warning],

‘You’re going to go and do this vaccination clinic’. So I mean, because of the nature of the work that we do, having client files open and doing interventions, I can’t just drop everything. I have to close my file, document that I’m passing it over to my co-worker because I’m going to work in another area or whatever. So it’s not as easy as just drop everything and come and do this other thing! And that definitely was not heard. (I#4)

Although issues occurred for participants who regularly worked for programs that were deemed ‘non-essential’, the pandemic documents continually articulated the necessity of maintaining staffing for essential services. The agency termed these activities ‘core critical services’ based on Public Safety and Emergency Preparedness Canada’s (2003) ‘A Guide to Business Continuity Planning’ definition, “...core critical services are defined as services that must be delivered to ensure survival, avoid causing injury, and meet legal or other obligations of an organization”. Using this definition, January 2006’s ‘Pandemic Service Continuity Plan’ described how the agency chose what services would be deemed ‘critical’ during a pandemic,

Although health promotion and disease prevention initiatives are integral to the mandate of [the agency], it was felt that suspending these programs for a short period of time would not impact short-term health outcomes of [X] residents. Those [agency] services, whose suspension for any length of time, would cause unacceptable short-term health impacts, were subsequently identified as [agency] core critical services. (Jan2006)

However, no specific plans to maintain an adequate number of employees for essential services were presented. Instead, the documents often stated that strategy development was ‘in progress’. This is evident in an excerpt from June 2006’s ‘Influenza Pandemic Preparation and Response Plan’, “...[agency] staffing has been analyzed to determine the minimum number of staff required to maintain the core critical services across the branch throughout an influenza pandemic. Plans are also underway to identify alternative sources of staffing”.

Despite ‘plans being underway’, participants felt that the rationale for choosing which staff members would deploy, and who would remain behind to run the ‘essential services’ was vague. Further, it is unclear why the pandemic plans maintained a heavy emphasis on ensuring

trained 'core critical services' staff, when the majority of PHNs were required to deploy into the H1N1/09 mass clinics.

Once mass vaccination clinic roles were identified, PHNs were required to respond 'quickly' and 'efficiently' into their new deployment assignments. This was highlighted as a primary objective in January 2006's 'Influenza Pandemic Service Continuity Plan', "...in order for [the agency] to respond quickly and efficiently to an influenza pandemic, all levels of staff must be aware of their roles and responsibilities and the process of suspension of services". However, many participants, particularly supervisors, felt that they did not respond as 'efficiently' as they could have because they were given insufficient notice about the response and did not have time to prepare for their pandemic roles.

When examining this component of communication within the Foucauldian Knowledge-Power-Resistance framework, if managers had communicated the knowledge that provided the rationale for decisions about mass vaccination plans, participants' may have experienced a smoother transition into the clinics. Specifically, PHNs' pandemic knowledge about the potential timeframe would have increased, and this would have allowed participants time to review, and train, for their pandemic roles, to act in accordance with the discourse guiding the clinics. This communication could have occurred through personal conversations, meetings, or email. Unfortunately, this was not the case for most participants as many were notified that they were to deploy into newly assigned roles just days before the response.

Interestingly, despite PHNs instrumental role in the pandemic response, supervisor and immunizer responsibilities were only first identified in the last published pandemic document, October 2009's 'Mass Immunization Clinic Plan'. Three different supervisory positions were anticipated with different responsibilities. As illustrated in the following excerpt,

[The] **Logistics Manager** (Administrative Coordinator) co-ordinates with the supply and transportation team to ensure the operation of an inventory system for all necessary clinic supplies; ensures that all necessary clinic supplies are available in sufficient quantities during clinic operation; ensures that a system of distribution is maintained at appropriate locations throughout the clinic; ensures that sufficient vaccine is available and that the cold chain is maintained through proper handling storage and delivery; ensures that staff is scheduled to receive vaccines from the delivery company at the end daily at the end of the [clinic]; ensures that staff are trained and follow policy and procedures re maintaining cold chain; medication is stored in a secure manner at the clinic site and that unused amounts are returned and accounted for. [The] **Staffing Coordinator** Co-ordinates the recruitment and the hiring of nursing and non-nursing personnel; ensures orientation for all clinic assigned staff on the clinic site set up and operations paper documents to complete for pay; ensures that all staff has completed the orientation process with the training modules; contacts staff to report for work at the clinics; establishes a schedule system for all clinic staff; schedules clinic staff. [The] **Logistics Co-coordinator** orientates and supervises inventory clerks, runners, data clerks and IT support (Oct2009)

While there may have been original plans for three people to be assigned to these separate positions, this study's supervisor participants felt that they were the people responsible for the majority of these tasks. This was regardless of whether or not the agency had actually assigned individuals to the roles of logistics manager, staffing coordinator, and logistics coordinator. For example, most supervisors felt responsible for ensuring the competency of the external agency nurses who arrived at the clinics. Participants also felt responsible for managing crowd control.

One supervisor explained,

[I] really felt that as a public health nurse supervising an immunization clinic, [crowd control] should not have [been] put on the nurses' shoulders. The crowd control, you know? They always want to talk to the person in charge! The person in charge happens to be the nurse. It truly was too much to put on, I feel, the supervisors given the size of the clinics, and the scope, and the hysteria of what was going on in the public, putting that piece on the nurse. There should have been, I think another body, another person, who really managed that. Management tried to respond and implement different strategies, like they did the criteria of what population are we immunizing today, the wrist bands, getting security guards, and having people up front, like the health inspectors, to identify and kind of deal with some of the crap at the front, but it really wasn't enough because at the end of the day, they want to talk to somebody in charge. (S#2)

When faced with their clinic responsibilities, many participants wanted to know the rationale as to why they were chosen for the deployment. For example, all participants who were assigned to be supervisors had no prior background in vaccination, and only a few had any supervisory experience at all. This appeared contradictory to what was planned for in November 2008's 'Interagency Influenza Pandemic Plan',

Health care [institutions] will also need to critically evaluate their activities and placement of providers to ensure that staff with critical competencies and skills are appropriately placed where they are needed most, and to ensure that staff are reassigned when appropriate to meet changing needs and priorities. (Nov2008)

Within this document, city officials had pre-emptively identified the necessity of employees having the experience to function in their assigned roles. It can be assumed that managers highlighted this because they understood the importance of having appropriately qualified individuals in certain positions. However, it was felt by many participants that they did not have the 'critical competencies and skills' to function in the clinics. As a result, these individuals often experienced stress in their roles, especially in the beginning days of the response.

It is unclear as to why roles were assigned in this manner, as this was incongruent with the city's original plans. Particularly as October 2009's 'Mass Immunization Clinic Plan' addressed that supervisors should be involved in the planning of clinics, "...clinic supervisors must be identified early in the planning stage in order for them to be involved in the clinic logistics". It appears that the agency's objective was to have clinical staff involved in response planning because these same individuals were expected to implement the elements of the clinics. However, only one supervisor interviewed actually participated in pandemic response planning. She attributed this directly to her regular agency role in emergency planning. Another supervisor explained why she felt other PHNs were not involved in the clinic planning processes,

I didn't think there was time for front-line nurses to be heard, there was no time. There were people here around the clock, and we felt like we were around the clock too. No, I don't think they had time to listen to us, I don't think we had time to talk. There was no 'Well what do you think we should do?' or 'Is there anything else that you need that can help you?' There was none of that, no!!! There was no time for consultation. They may think they consulted, but they didn't. (S#5)

Participants wanting to be involved in the planning process and informed of decision making aligns with this study's conceptual framework. Managers and other higher-ups in the agency's IMS, as a result of the traditional authority inherent in their positions, were the individuals who planned the clinics. As such, they made the decisions about who would enter into what pandemic response role and when clinic operations would begin. It was their specific knowledge of the discipline's discourse that guided the planning decisions. It was also their choice to exercise disciplinary power as to when to inform staff of a pandemic response, and the types of training to offer individuals to prepare for the clinics. Subsequently, it was not that participants lacked nursing disciplinary knowledge. Rather, participants' experiences were impacted by their lack of awareness of the specific knowledge management utilized for certain clinic decisions.

Indeed, participants had knowledge and were well experienced in their own areas of practice. For example, there were actually participants (five of the twenty-three) who worked as nurses in the agency's regular seasonal flu and school-aged immunization programs. They were very familiar with clinics, and how to implement mechanisms to ensure a successful vaccination campaign. Interestingly, all of these individuals identified as being a 'front-line immunizer' in the H1N1/09 response, and not a supervisor. One participant who knew these regular vaccination nurses and their program managers well was particularly disconcerted to learn these individuals were not involved in response planning. She explained,

I'll be clear it's my perception but I think this amongst ourselves this was a big issue that was discussed regularly amongst front-line staff. They (management) were making decisions without having ever stepped into a clinic before, and although we appreciate that they are the upper management and are required to make business decision and finance the clinics and such, they took the expertise away from the people that do this on a daily basis. I really think when you take things away from the people that do this day in and day out, which is the whole point of practicing, basically for a response, you're going to lose an incredible wealth of knowledge, and those people that had that expertise, the supervisors of these clinics that do this day-in, day-out, the seasonal influenza clinics, even the school immunization clinics which are mass clinics, there's 2 supervisors, one supervisor each for that, they weren't involved in the planning of these clinics. (I#14)

This participant believed that casual immunization nurses held an 'incredible wealth of knowledge' that could have informed vaccination planning. This was thought to be a beneficial resource that could have greatly ameliorated the clinics' functioning, and helped the organization meet its goal. However, due to their regular positions lacking traditional authority, this knowledge was not utilized to inform the clinic planning process.

In a similar situation, one immunizer who had a difficult experience with her clinic supervisor, felt that the regular immunization nurses' suggestions were not heard in her clinic directly. She explained the impact of not having these experienced individuals in lead clinic roles,

It was just like they're not letting the people with experience, who run clinics, manage them. So it was a little bit chaotic... Just the inexperience of taking people that are 'office' colleagues and putting them into this, it wasn't fair to them either, you know? As nurses you need to know when to sit there and say 'I am not confident right now. I need all hands on deck, how do [we] run a smooth clinic?' I can be the supervisor, but then delegate to people you know? [The H1N1 supervisor was] being rude to this one person who was always a [regular] clinic supervisor, always! She's the one that taught me so much and she was [a] great team leader, making everybody, 'Let's be efficient, here we are, here are our numbers, I need you to go on break' and being just that person and runs a smooth clinic, to be spoken to like 'You're just a casual nurse' you know, it was just the rudeness of it and it was just like 'You're an office nurse who has no idea how to be front-line'. I think it was just like what nurses do to each other, and it was a prime

example that had happened at a time where we don't need it to happen, we need it to be efficient running smoothly. (I#21)

This participant recognized that these regular immunization nurses' had a lower hierarchical agency position with less authoritative power due to being just 'casual nurses'. As such, she felt that her supervisor did not listen to these immunization nurses' suggestions because she considered their knowledge to be less valuable. Specifically, the participant deduced that her supervisor considered these casual nurses' knowledge to be of lesser quality than that of full-time nurses who worked in other non-vaccination related agency departments.

When examined within the Knowledge-Power-Resistance framework, this specific clinic supervisor was 'resisting' the PHNs' suggestions, particularly those from nurses who worked in the agency's regular vaccination programs. Through this resistance, these vaccination nurses' knowledge was not well utilized. This was upsetting for the participant as she felt that these regular vaccination nurses, turned H1N1/09 immunizers, had substantial experiential knowledge that could have helped guide clinic operations. Because this participant did not agree with the supervisor negating these experienced nurses' feedback, she resisted the supervisor in other ways in the clinic. While the participant did not refuse to work outright, she did not respect the supervisor's methods and voiced this amongst her colleagues.

It is difficult to determine if having front-line nurses involved in pandemic planning would have changed overall clinic outcomes. However, nurses having awareness of the knowledge that guided the clinic decisions may have contributed to participants experiencing less anxiety and stress in their role. This appears to be particularly true for supervisors, as this role seemed to have many different, and often unfamiliar responsibilities.

Supervisors were responsible for overseeing clinic operations, and thus, were placed into a position of traditional authority within the clinic structure. As a result, these individuals held a

position of authority comparable to the agency's managers. This is because as clinic supervisors, they had corresponding degrees of 'power' that they could exercise over the immunizing staff and the public. They also obtained information from daily meetings with the agency's managers to increase their own knowledge regarding the pandemic response. However, the notable key difference between the managers and clinic supervisors is that the managers planned the clinics, and were aware of the particular discourse that guided the response before the clinics even opened. Supervisors did not have access to information that was not shared with them. For example, supervisors did not know why managers were not supporting them in their attempts to vaccinate only priority populations. As such, participants' clinic experiences were impacted by the ways managers in positions of authority exercised their power. Specifically, when they did not inform front-line staff of the rationale for certain clinic decisions.

The right instruction at the right time. Above and beyond the need for ongoing pandemic planning information, participants discussed the necessity of receiving H1N1/09 flu and vaccination training. PHNs considered this to be an integral component of deployment preparation, because it would provide staff with H1N1/09 specific information to adequately function in their deployment roles. Prior to the pandemic declaration, management also identified the need for agency wide employee training. The following taken from the earlier published June 2006's 'Influenza Pandemic Preparation and Response Plan' illustrated,

To ensure staff preparedness, staff are expected to be familiar with all emergency preparedness plans and materials, and will be provided with training in the following areas: The [Agency] Emergency Plan; The [Agency] Influenza Pandemic Service Continuity Plan; The [Agency] Pandemic Response Plan; Public information materials, including the [Agency] Influenza Pandemic campaign materials. (June2006)

Later in this document, the need for the 'clear definition of roles to be developed' and to 'provide training to all staff regarding their roles' is emphasized (June2006). However, despite this

objective, it is only within the last published document, October 2009's 'Mass Immunization Clinic Plan', that staff roles are first mentioned. Also, it is only in that document that the agency's employees are assigned to mass vaccination roles "...[the agency] will deploy staff for the following roles: immunizers [will be] nurses; administrative staff [will be] managers and supervisors; clerical support staff [will be] program assistants and clerical clerks" (Oct2009).

PHNs did act as front-line immunizers; however, administrative staff did not serve as the clinics' supervisors. Instead, all participants who identified as supervisors were PHNs. They also reported that the other clinics' supervisors were also nurses. One participant explained how she felt supervisors were assigned,

[At] the very beginning, me and the other nurses, just regular nurses, on the [X] team, we all kind of heard through the grapevine that it was only people from the [X] team who had [been] asked to be supervisors. So the fixed clinics all of them, were being supervised by [X] team staff. So we were like 'What's going on, I just got asked!' and '[X] just asked me'. Like, why did [X] single out this one team? I mean, I guess there were a lot, at the time, I don't want to say senior nurses, but nurses with a lot of experience, except for me, so, they picked all [of] them. (S#5)

As such, the assignment of supervisors did not appear to correspond with the agency's original plans. From both the interviews and document review, it is uncertain why this group of PHNs from one specific department were chosen to be mass clinic supervisors, as other agency departments also had senior nurses.

Participants, supervisors and immunizers alike, emphasized that providing mass vaccination training would have helped PHNs ease into their pandemic deployment roles and responsibilities. However, this type of training was not addressed in the earlier published documents. Instead, educating employees about infection control practices was stressed. This was highlighted in January 2006's 'Influenza Pandemic Service Continuity Plan', "...[agency] management [are to] ensure that training for all staff on infection control measures is provided".

This document continues to reiterate that front-line nurses were expected to be sure to attend this training. However, there is no explanation as to what these 'infection control' educational sessions would encompass, or if any mass vaccination training would also be included.

'Cross-program' training was also often discussed in the first published documents. Plans were outlined for employees to be prepared to work in essential services. This was to ensure that individuals who were not deployed to the mass vaccination clinics could be reassigned to maintain established core critical services. January 2006's 'Influenza Pandemic Service Continuity Plan' described,

[Agency] management and supervisors [are to] ensure that [the] identification and [to provide] training of replacement staff for core critical services...Concerns were expressed that staff may be unable to maintain standards of professional accountability. Reduced staffing and pandemic service demands could create situations where staff are carrying an increased workload, have decreased support and are working in unfamiliar service areas. (Jan2006)

Officials once again identified the importance of this training later that year in June 2006's 'Influenza Pandemic Service Continuity Plan', "...in the event of absenteeism and subsequent staff shortages, staff from less critical area(s) will be deployed to these core critical services. These identified deployable staff will require training in these new roles before an influenza pandemic occurs". However, this mentioned training was for ongoing 'essential' public health services, and was separate to pandemic response activities. Thus, they do not include orientation regarding elements unique to mass vaccination programs.

All of the participants in this study were deployed into the H1N1/09 mass vaccination clinics. As such, they were not trained to maintain 'core critical services' as described in the above document excerpts. Although participants had this specific experience, they did not report knowing if any of their colleagues had received this type of training. Instead, when the deployment occurred, a small number of employees who were already established on teams

remained behind to continue providing critical services. These 'non-deployed' individuals did not require any 'cross-program' training because they were already familiar with their own department's regular roles and responsibilities.

Despite the fact that some of the individuals' co-workers were retained in their departments to maintain the workload, some participants still experienced concern when they left their team to enter into their pandemic response roles. One immunizer explained,

We're busy all the time, like all the time. So when you go around taking a regular full-time staff person out of the rotation, it's going to have an effect on the caseloads of all of the other nurses. My manager was very sensitive to that and letting me know that there was going to be backfill and things like that, so I didn't feel bad about being away and worrying about what was going on with the team. I was still able to help out. [But] I had a caseload. We have short-term and long-term clients, so the short-term weren't an issue. I took the 2 or 3 days of next scheduled visits and things that I could finish up. But my long-term clients were more of an issue because I had to have time to get the files transferred over to team members to cover during my absence, because our long-term clients if they're 'long-term', we should be seeing them at least once every 2 to 3 weeks. So some of my clients would've had to be seen 2 or 3 times during the time that I was away. So, because I was going to be away for that long, they needed to be assigned to other team members to cover. I mean I had to call my clients, make sure that they knew the files were going to be covered for a short period of time, give reports to the nurses who were going to be covering...It just happened very quickly and I found that a little bit stressful. It got done, but you know, if I had a larger caseload and if there had not been the capacity on my team and they needed to go (get nurses from) different teams, it could have taken much longer to figure out. (I#11)

Notably, this participant was not upset about her clinic deployment. She was not resistant to her newly assigned role, and was happy to have a change. Instead, this individual appeared to be stressed with her assignment notice and her quick entry into the clinics. The deployment began suddenly, and the participant found it challenging to transfer all her case files to her colleagues.

This participant's experience of entering into the clinics corresponds with this study's Knowledge-Power-Resistance framework. This was because she was impacted by her perceived lack of timely information regarding pandemic planning decisions, and how management

exercised their power in providing limited notice to staff. After the declaration of H1N1/09, the agency's pandemic planners were merely waiting to obtain the approved vaccine to implement mass vaccination clinics. While it would be impossible for planners to predict the clinics' exact start date, managers had knowledge regarding expected timelines that could have been shared with nursing staff.

Managers and pandemic planners' ability to learn about the vaccine's production was directly a result of their normal authoritative position within the agency. Specifically, these individuals' regular roles, many as senior managers, were in positions that were 'higher-up' in the organization than front-line staff. As a result, this afforded them with the opportunity to have access to information about the H1N1/09 vaccine's production from the national public health agencies. Front-line PHNs, however, did not have this same access, as a result of their traditionally less authoritative positions. They typically would not be involved with, or impacted by, such connections in their regular daily duties. When examined in relation to this study's conceptual framework, it was this information (that managers had access to) that provided the basis for the specific *knowledge* of the *discourse* that guided the planning of an expected start date for the mass vaccination clinics.

Had managers and planners exercised power by sharing their knowledge of this information in a prompt manner, nurses could have then independently made the choice to prepare for the deployment into their H1N1/09 clinic roles. This is not to say that all nurses would have decided to use additional time in this manner. However, PHNs would have had the ability to decide for themselves.

Also, by providing nurses with an anticipated timeframe, participants' knowledge of ongoing pandemic developments would increase, and thus contribute to nurses' ability to

exercise more power in their work and relationships. For example, front-line nurses would better understand why the clinics opened when they did, how choices were made, and what that then meant for their own position. This could be despite the fact that many of these individuals felt there was no option but to enter into the pandemic response. By being informed of pandemic planning, PHNs may have felt that they were at the very least, respected by management. This in turn would potentially contribute to PHNs having minimal displays of resistance. It also could limit any potential nurse resistance feared by managers about a mass vaccination response.

Interestingly, the following preparations were purposed in January 2006's pandemic document 'Influenza Pandemic Service Continuity Plan',

Advantage should be taken of opportunities to test plan[s] that arise from outbreaks of comparable disease, for example, during regular influenza season or other vaccination campaigns. Following these exercises the plan will need to be revised based on these experiences. (Jan2006)

It can be derived that planners intended to utilize lessons from similar front-line influenza campaigns to guide the development of pandemic plans. Despite this objective, the documents did not outline strategies to ensure that regular immunization nurses' experiences would inform the discourse that would be utilized for the mass clinics. For participants, this was thought to contribute to the disorganization of the response in the beginning days. The following immunizer elaborated,

I think it's unfortunately part of it. There's different levels of management and different levels of where the staff are and those that are sitting you know, for lack of a better term, in the ivory tower, don't necessarily really know what's going on, on the ground, and the feedback from the ground isn't listened to, isn't implemented, isn't taken seriously for a multitude of reasons, I'm sure. But to the lowly public health nurse that's being told to do A, B, and C when you're asked to provide feedback, and you give feedback and then nothing's changed in the future, it's kind of like 'So why were you asking for my feedback if you're not gonna do anything about it'. (I#4)

A few specific mass vaccination clinics details were mentioned in June 2006's 'Influenza Pandemic Preparation and Response Plan'. However, this description was quite brief and did not reference elements that would relate specifically to front-line nursing needs. For example, there were no plans for how to notify staff of pandemic developments, nor any mention of training opportunities. The following outlined the limited extent of mass vaccination clinic planning at that time,

[Agency] vaccination clinics will organize and manage mass vaccination clinics when influenza vaccine becomes available. Public health staff will be quickly deployed to clinic sites to efficiently manage, vaccinate and collect data on large numbers of clients and provide necessary follow-up when indicated. (June 2006)

Clinics themselves were not described, and an explanation as to how overall clinics would potentially impact agency staff was not given. While it is presented that staff will be 'quickly deployed' to 'efficiently...vaccinate' it is unclear from this document how PHNs would be prepared to do this in different clinic environments to meet the organization's goal. In fact, there is only a minimal description of any pandemic training that was to be provided to employees in this document. It is explained and placed within an appendix in June 2006's 'Influenza Pandemic Preparation and Response Plan'. The following is the excerpt from this appendix,

Train all [agency] PHNs to work in vaccination clinics. Offer training opportunities for PHNs not currently working in vaccination clinics to attend an information session and clinic day. Consider making this training mandatory, as response to current initiative is low. (June 2006)

Indeed, specific training activities for PHNs are only identified in the last published document, October 2009's 'Mass Immunization Clinic Plan. It was asserted that training would be mandatory for all staff. Also, the emphasis was on training for front-line immunizers. The following described the training that would be implemented,

Upon the recommendation of [X] (medical officer of health), in preparation for [pandemic] H1N1 immunization delivery, all nursing staff is required to undergo vaccine delivery training comprised of self-study online modules and a hands-on practicum. All training is to be completed by October 15th, 2009. Self Study training modules are: consent and documentation; vaccine storage and handling; vaccine emergencies. [Once pandemic] H1N1 [vaccine is] available from PHAC [there will be]: hands-on practicum giving injections at school clinics (1 day); [X] (computer system) 3 hours training to begin after October 14, 2009; modules in preparation [of pandemic] H1N1 vaccine (unavailable until the vaccine is available); clinic site set up and operation. (Oct2009)

While it was deemed 'mandatory', the findings revealed that the majority of participants did not finish the training. Mass vaccination clinics began October 26th, 2009, nine days after the training was supposed to be completed by nursing staff. Although some participants completed a portion, many did not have the time to do all of the training before the clinics opened. For others, it was because they were not given all of the necessary training components. One immunizer articulated the impact this had on her experience,

I'm a nurse, I like to go in prepared, right? I'm not just going to go in 'willy-nilly' and try things out! [It's] not how I work. I like to go in prepared, and finding [out] that training [was] on that day when everyone was already a little stressed, it's a new circumstance, you're in a new environment, it's different procedures, you have to learn this computer system all of that added on! [Then] 'Oh, by the way let's not forget this last little bit of training that you need to do'. I just don't think it was very well done, and I think it would've been nice to have had it all prior to starting a clinic! Some nurses, it had been many, many, many, years since they've given vaccinations or needles and weren't necessarily comfortable in doing that. Prior to going to the clinic, we did have sort of on site training, in that I believe the majority of us went to school immunizations clinics just to get a couple [of] needles under our belt, to get the process under our belt a little bit. But that was a very small piece of it, like it was like a morning before H1N1 that was part of the training. It was kind of like an observational slash hands on, you watch them do it, and then you gave a few. [But] it's a different, different environment too I find when you're in schools. (I#6)

Interestingly, it is only in the last published document, October 2009's 'Mass Immunization Clinic Plan' that the expectations of 'nurse immunizer' are clearly delineated,

Nurse Immunizer(s) prepares the vaccine and ensures that all necessary equipment is present. Sets up their Immunization Station. Monitors cold chain for the vaccine. Loads syringes as required. Immunizes clients according to [agency] policies and procedures. Signs the sample signature form. Is aware of the location of emergency table and ensures that an adrenaline kit is readily available. Reviews the client form with the client. Reviews the consent form with the client, including the client's medical history and allergies. Asks the client the appropriate screening/assessment questions. Confirms the client (or parent or legal guardian if applicable) signed consent form. Selects the appropriate vaccine to administer. Administers the vaccine to the client. Documents all pertinent information (name of vaccine, lot number, date dose, site, time, comments and signature) on the consent form. Records any reactions following administration of the vaccine. Advises the client to remain at the clinic for fifteen minutes in the designated waiting area. Observe vaccine recipients for immediate reaction or complications. Provides care for clients who are feeling unwell until the float nurse can take over the care and documents on the Nursing Record. Assists other staff and assume other roles as required. Consults the clinic supervisor as required. Completes documentation on the consent form noting the date, time, vaccine, lot number, dose and the injection site as required if using paper system. Completes the immunization given form and gives to the client as required if using paper system. Notes the date and time on each opened multi-dose vial, which will not be used up by the end of the clinic. (Oct2009)

If this description had been developed and communicated in earlier pandemic planning documents, training could have been potentially developed based on these established expectations. As a result, participants may have had a different experience entering into the pandemic response.

Essential Supports in Protecting the Population

This second and final theme of this thematic description illustrates the supports participants needed in order to physically and mentally function during the deployment. This is separate to the already heavily emphasized need for pandemic information. It includes the material and human resources, as well as the interpersonal relationships that assisted the nurses' in vaccinating the population. It is explained in two sub-themes '*The Crucial Elements to Do the Job*' and '*Back-up From Colleagues and Higher-ups*'.

The crucial elements to do the job. In order to efficiently work in vaccination clinics, participants needed to have access to the proper material resources. The most important resource was the specific H1N1/09 pandemic flu vaccine. This is because without this vaccination, mass clinics would be unable to open and maintain their operations. This point was first presented in June 2006's 'Influenza Pandemic Preparation and Response Plan', and was further explained in November 2008's 'Interagency Influenza Pandemic Plan',

[The agency] will receive vaccine from the [X] when available and will organize and manage mass vaccination clinics when influenza vaccine becomes available. This activity includes the ability to have public health staff quickly deployed to clinic sites to efficiently manage, vaccinate and collect data on large numbers of clients and provide necessary follow-up when indicated. [The agency] will distribute vaccine to health care institutions. (Nov2008)

H1N1/09 vaccinations were not stockpiled awaiting a pandemic declaration. This was because the public had never before encountered the new H1N1/09 virus. A vaccine first had to be developed, approved, and distributed to the large number of public health units across the country. Agency officials were aware of this lengthy process and had anticipated that vaccine production would take some time. This was identified in November 2008's 'Interagency Influenza Pandemic Plan', "...a vaccine will not be available for at least four to six months after the virus is identified, so it will likely not be available for the first wave". In Canada, this was the case as there was no vaccine available during the first H1N1/09 flu wave that occurred between April 12 and August 29, 2009 (PHAC, 2010).

Pandemic planners, aware of a potentially long wait for an appropriate vaccine, presented suggestions for non-pharmacological interventions in response to influenza outbreak. June 2006's 'Influenza Pandemic Preparation and Response Plan' described one strategy in detail,

The MOH is responsible for issuing quarantine orders or confinement orders if necessary under the HPPA. Quarantine may be instituted when the pandemic influenza virus first enters [X]. Once community spread is established, the focus will be on other

infection control measures. When a referral of a case of pandemic influenza is received from a health care agency, staff will actively do contact tracing and call all contacts. These contacts will be ordered to go into quarantine for the period of time recommended by the [X]. Alternately, a passive approach to quarantine may be utilized as cases become more widespread. [The agency] may issue a voluntary quarantine notice to the community recommending that anyone who has been in contact with a case of pandemic influenza, quarantine themselves and report to [the agency] through an identified phone line. Quarantine will be implemented according to the directives issued from the [X]. (June2006)

Beyond quarantine, November 2008's 'Interagency Influenza Pandemic Plan' identified other methods to help minimize the spread of pandemic influenza,

[The agency] has mandated responsibilities for Inter-pandemic and Pandemic Period surveillance and for implementation of public health measures, which are non-medical interventions used to reduce the spread of disease. They include but are not limited to: public education on individual infection prevention and control measures, social distancing and Influenza care; support for travel restrictions; case management; contact management; institutional and community-based infection prevention and control. (Nov2008)

However, participants were not trained on these non-pharmacological measures. Nor were they instructed to implement them to reduce H1N1/09 transmission. This may have been because the flu, during its first wave, was less virulent than the agency had originally anticipated.

Nonetheless, participants did discuss their own personal emphasis on continuing to maintain strict hand hygiene practices during this time.

Although the agency was waiting for an H1N1/09 vaccination to be developed, other overall clinic operations that were not dependent on the vaccine's ingredients could have been planned. However, such plans were not evident in the earlier pandemic documents. For example, plans could have been established to ensure adequate and appropriate space for clinics. However, despite the importance of this component to successful vaccination delivery, this point was only addressed in the very last published pandemic document. October 2009's 'Mass Immunization Clinic Plan' began by outlining how many clinic sites would be opened,

[The agency] will immunize vaccines at six fixed clinic sites and one mobile clinic to ensure adequate geographic coverage. In addition to delivering vaccine at its own clinics, [the agency] will also distribute it to alternative delivery sites where organizations will immunize their clients and staff e.g. Hospitals, [X] and correctional facilities. Alternate delivery sites must qualify according to [X] requirements. (Oct2009)

It then went on to detail what these clinics should ensure,

Clinic sites are chosen to ensure public accessibility by public transit and the availability of parking facilities. The facility will have secure areas in which to store clinic equipment and computers in addition to defibrillators, first aid kits and provide ambulance accessibility. The site will be wheelchair accessible and will have adequate air circulation and lighting. (Oct2009)

Regardless, as revealed in the thematic summary of participants' interviews, some PHNs experienced clinic concerns with accessibility and lighting. Later within this same document, extensive suggestions were proposed for alternative delivery sites,

Recommended vaccine delivery agents could include: Primary care providers (i.e., family physicians, community health centres, family health teams, and aboriginal health access centres); Public health-organized clinics [X] will contract with one nursing agency dedicated to arrange vaccine delivery and administration to clients in their homes who are not able to access public or primary care clinics; Health care facilities (i.e., hospitals can administer vaccine to patients and staff, long-term care homes can administer vaccine to residents and staff, renal dialysis clinics can administer vaccine to patients and staff); Health services at universities and colleges; Correctional facilities for inmates and staff. (Oct 2009)

It is assumed that these recommendations were put forth with the intention of decreasing the volume of citizens who attended the agency's mass vaccination clinics. However, participants were not aware of any alternative delivery mechanisms. They felt that the mass clinics were the only place citizens could get vaccinated. Ironically, a few participants proposed offering multiple vaccination sites in future pandemic responses, similar to those described in October 2009's 'Mass Immunization Clinic Plan'.

In addition to clinic sites, it was important to plan how PHNs' time would be utilized. It was essential that PHNs, in their roles, were provided with an overall schedule that allowed them to function efficiently and safely in their jobs. However, the issue of nursing schedules and corresponding work hours was only addressed in the last published document, October 2009's 'Mass Immunization Clinic Plan', "...days and hours of operation: seven days per week, weekdays from 1400 to 2100; weekends from 0830-1530". This description was very brief, and did not explain why these specific hours were chosen or how they would impact nurses.

It was planners located within the Incident Management System (IMS), a military-like command structure, who made decisions regarding H1N1/09 clinics including their hours of operation. June 2006's 'Influenza Pandemic Preparation and Response Plan' explained this IMS structure,

The Incident Management System (IMS) is an international emergency protocol adopted by Emergency Measures [X] as the operational framework for emergency management for the [X] government, and will be implemented by [agency] and the City of [X] during an influenza pandemic. The IMS will be activated once a health emergency is declared. This system provides the basic command structure and functions required to manage an emergency situation effectively. (June2006)

November 2008's 'Interagency Influenza Pandemic Plan' further elaborated on how this IMS structure works,

Decision-Making Process (in) the Incident Management System, which is being promoted provincially and nationally as the best system for coordinated decision-making, recognizes that every incident must have one person with overall responsibility and the authority for the emergency response. As indicated in [X], local public health units are responsible for local management of an influenza pandemic. As such, [the agency] has overall responsibility and authority for the local pandemic strategy and response. The MOH (or the AMOH as alternate) has the lead role. During a pandemic, [the agency's] Service Command Centre (SCC) will be established as the public health decision centre. In an influenza pandemic, the MOH will ensure that the decision centres are coordinated. (Nov2008)

By working in this structure, managers and pandemic planners made mass vaccination clinic decisions that ultimately shaped PHNs' experiences in their pandemic roles. One immunizer described how the decision surrounding clinics' hours impacted her,

Yeah, I felt more powerless than understanding, to be honest, in the sense that I didn't really feel like I had, like we had a choice, you know? Like, I understand that families can't necessarily come during, between 8 and 4, so I understand that we didn't work 8 to 4 every day, like I get that, but it (was) late. It was late! The thing is I can't recall if physicians had the vaccine stock for H1N1, I can't 100% recall if they did or not. But the thing is I feel we were very accommodating because if it's really a priority for you, and for your family not to get sick, and you're really concerned, or (if) something is going on with your child, you'll make that appointment at the physician's office, and you'll go and that's just it, that's the reality of it, right? (I#16)

Within the very first sentence of this quote, the participant expressed how she perceived herself to be '*powerless*' in her role as a front-line immunizer. When examined through the Knowledge-Power-Resistance conceptual framework, this nurse's '*powerless*' feeling, and subsequent experience, potentially transpired as a result of a few different factors.

First, this immunizer felt she did not have 'a choice' but to participate in the clinics and the hours that they ran. This was a sentiment also shared by other participants and was illustrated in the previously presented thematic summary. This perceived 'lack of choice' might have in fact been heightened due to the agency implementing the IMS. Participants were not involved in the IMS, and therefore not engaged in planning the clinics. Instead, they were more so 'notified' of their pandemic roles in a one way, top-down communication from management and pandemic planners within the IMS.

For example, this participant could not understand why the clinics had to be the same evening hours every day. It seems that this is because she was unaware of the knowledge used to make the decision regarding the clinics' hours. She further explained,

So why are we bending over backwards? I just felt like 7 o'clock would have been reasonable to me. Yeah, end at 7 instead of 9, or 9:30. I do believe there may have been different hours at different clinics. I just don't remember that. I get that they have probably established, I mean, public health has been doing this for a long time, so they probably have determined that within these hours, is when you're going to get the most people, I'm assuming. I just, to get time off was challenging, as well, you know? So missing birthdays or (whatever). I mean I've done shift work before, and that was the main reason I quit hospital work! It was because I just didn't enjoy the shift work anymore! I get why it needs to happen but yeah, if you wanted to take like a vacation day, you couldn't just take a vacation day because you wanted to celebrate your mom's birthday with her, you know what I mean? (I#16)

The participant realized that the agency had established emergency responses for quite some time. However, she was never actually informed of what knowledge, or discourse, provided managers' rationale for deciding the clinics' hours of operation. This is evident through her comments that she was 'assuming' that the agency had 'probably established' and 'probably have determined' the time periods that were more beneficial for the public.

Within the Knowledge-Power-Resistance conceptual framework, the participant's feelings of 'powerlessness' could arise, and continue, from not being directly informed of the *knowledge* planners used for mass vaccination decisions. Specifically, by planners not presenting PHNs with a clear explanation for clinics' scheduled hours, this participant could not fully understand management's actions. Within the framework, this participant's 'powerless' experience of working shifts may have differed if she felt informed from the beginning. An increase in her understanding of the clinics' operations potentially could have contributed to her exercising more power in her professional role, and personal life. This would be despite any initial or ongoing dissatisfaction the participant may have had with the hours.

Conversely, by allowing nurses' the opportunity to share their own rationale regarding what constitutes appropriate clinics hours, managers may have also gained knowledge. In particular, they may have developed a better understanding as to what PHNs need to best

function during a deployment. Further, within this study's framework, this PHN involvement could have helped the agency meet its mass vaccination goal. This would be because these nurses had knowledge that could potentially have enhanced the discipline's discourse on mass vaccination clinic planning and contributed to a more effective response.

Also by consulting front-line staff, managers could have learned about issues that could have contributed to any staff resistance toward the mass vaccination response. Resistance is conceptualized to be a natural component and outcome in response to power. However, the agency could develop strategies to manage resistance by pre-emptively learning about nurses' deployment concerns. For example, nurses could have refused to work, or purposefully performed less efficiently in their roles if they did not agree with clinics' hours. By managers becoming aware of this, they could have effectively planned for PHNs' reactions by providing scheduling accommodations.

This is illustrated in the above 'powerless' immunizer case, as she left a position as a hospital nurse due to her dislike of shift work. While she was aware that emergency situations would come up in public health, she considered them to be a rare occurrence. This participant was not saying that she did not want to work any different hours. Instead, she wanted to see if a compromise was possible, especially as PHNs are used to working a certain schedule. This is evident when she presented the option that clinics close at 7pm instead of 9pm. Nonetheless, this immunizer did not express any blatant resistance. Instead, she expressed her pride and overall positive emotions regarding her personal contribution to the response.

Beyond clinics' hours, other participants' concerns included the physical materials, and the way in which they were organized in the clinics. For example, some immunizers felt that the

vaccination workstations were problematically set up. These workspaces would not only compromise client safety, but that of the nurses themselves. One immunizer explained,

[X], they had these little metal chairs with the plastic? Some of them were broken, and you know, this is what we had to sit on! So, I mean I know we can't control what's available, right? 'Cause we go into the community but just allowing for some of that, like knowing that the nurses are not set-up the best that they can be...Maintaining the nurses' safety as well, cause I mean you could end up with chronic injuries, right? Neck strain and shoulder strain and making sure that they have (the) set-up, things set-up in such a way that it's going to be a safe environment for us to be in. (I#11)

As was discussed in the thematic summary, one participant severely injured herself due to an outreach clinic's set-up. However, there were no plans identified for the physical set-up of the clinics' nursing workstations in any of the reviewed pandemic documents. Nor was there a discussion of how these workspaces would impact nurses and their ability to effectively immunize.

Despite a lack of evident planning for the immunizers' workspace, the agency was aware that there would be issues with the other required supplies, including human resources. In particular, ensuring an adequate supply of nurse immunizers was emphasized. November 2008's 'Interagency Influenza Pandemic Plan' illustrated,

An influenza pandemic will place a severe strain on human and financial resources within the health care system and the community as a whole. Although it is expected that the province will be responsible for funding local health care services, human resources, supplies and treatments will be limited. It will be important to plan for continuity of operations and for pandemic response. (Nov2008)

This was a very important point because if there were not enough competent immunizers, then the amount of vaccine and other necessary equipment to immunize, i.e. syringes, alcohol pads, refrigeration to maintain the cold chain, would be irrelevant. November 2008 'Interagency Influenza Pandemic Plan' goes on to describe what could further contribute to a bigger strain on

human resources, "...one of the biggest challenges in a local pandemic response will be meeting the demand for health human resources...to deal with possible high [staff] absenteeism rates".

June 2006's 'Influenza Pandemic Preparation and Response Plan' also discussed the potential high absenteeism that could arise due to nurses themselves, or their loved ones, becoming sick with the pandemic flu. In particular, once staff members entered into the clinics and were exposed to masses of citizens. As such, strategies were planned to ensure adequate staffing to meet the mass vaccination clinics' needs,

Avenues for Creating Surge Capacity including: [agency] staff working overtime; Retired health care workers: some divisions are actively creating and maintaining lists of retirees who may be able to assist during an emergency; Ex-[agency] staff: trained professional staff may have left [agency] for other jobs, but may be willing to return during an emergency; Professionals and volunteers who have recovered from this influenza illness and who are now immune, may be able to provide front-line services without the fear of getting ill. Nursing students: collaborative planning has already begun with [X] and [X] regarding how nursing students can support [agency] during an influenza pandemic. The [agency] is investigating whether [agency] will have access to both Nursing and Medical students. (June2006)

However, despite these objectives, many participants felt that planning for human resources in the clinics was lacking. No participant mentioned the use of retired, or ex-agency employees, nor did they comment on the presence of nursing students. Instead, increased nurse immunizers were obtained by hiring temporary external agency staff. These were individuals who did not normally work with the public health agency. The hiring of these external nurses presented different types of problems. One supervisor described,

So my first question to them (external agency nurses) was always, 'have you even received an orientation to what it's like to work in a clinic? Do you even have a license? So, I did have a few people where it was an issue, so I had to send them back here to public health, and at one point we did put a system in place so that, before they even showed up at a clinic they were expected to go through I think it was a 2 hour orientation checking on who are the people that are coming in. So, that was put in place, but not from the get-go. At the beginning it was like people would show up and you didn't know what

you had to really verify everything in terms of what you were getting. So, that was a challenge. (S#10)

Participants were astounded that the agency was bringing in external nurses when there were many casual nurses who work in the agency's own regular vaccination programs. Some participants knew these nurses were available to work and could not understand why they were not contacted for clinic shifts. One immunizer, who was one of these regular casual immunization nurses described,

At the very beginning they didn't use the casual nursing staff who did the school clinics and the flu clinics. There was this sort of hoard of people (external agency nurses) that showed up, and these 2 (clinic) supervisors had never set foot in a flu clinic or anything else. Then when I looked at the rest of the bodies working, I didn't know any of them! So there were none of the casual people coming to that clinic. As it turned out, one person was scheduled and she came, it just wasn't on that list and another person dropped in and I said 'Great! Put your purse away! Get working!' They weren't asked! We weren't privy to the information that the health department was using to gather these teams together. I mean it was just done sort of without consulting us in any way. I think if they had of consulted the casual staff...now they may have consulted the 2 supervisors of the flu clinics, I'm sure they did, but if they'd consulted some of the casual staff, I think things would've gone a little bit more smoothly. (I#20)

This participant perceived that it was because of a direct lack of consulting with the front-line staff that the organization's casual immunization-trained nurses were not originally scheduled to be immunizers.

This same immunizer also said she 'was sure' that the two regular supervisors from the regular vaccination clinics had to have been consulted during H1N1/09 mass vaccination clinic planning. However, this comment did not mean she knew for a fact that these individuals were involved. Instead, she was personally deducing through her own reasoning that it only made sense to involve these individuals in planning. This was in order to ensure clinics were informed by front-line expertise. It did not mean that these nurses were involved, and in fact these key individuals were not.

When examined through the Knowledge-Power-Resistance Framework, the absence of these immunization nurses impacted clinics' operations in two ways. One, a large amount of knowledgeable nurses remained an untapped immunizer resource, especially during those first crucial days of the response when crowds were massive. Secondly, clinic operational decisions did not have the opportunity to be based on these nurses' expertise from regularly participating in immunization clinics. Interestingly, there was no mention of using these specific immunization nurses in the pandemic documents.

A possible explanation for why individuals within the IMS planning structure did not include these specific causal immunization nurses was because H1N1/09 was a pandemic response that was much larger in magnitude than the agency's regular vaccination clinics. However, this does not negate these regular immunizers' and supervisors' expertise. They are very *knowledgeable* of what is essential to successful vaccination clinics and their overall operations. The following immunizer articulated how a lack of expertise in planning impacted the clinics,

I'll be clear it's my perception but I think this, amongst ourselves was a big issue that was discussed regularly amongst front-line staff, that (management) were making decisions without having ever stepped into a clinic before and, and although we appreciate that they are the upper management and are required to make business decisions and finance the clinics and such, they took the expertise away from the people that do this on a daily basis...I really think when you take things away from the people that do this day in and day out, which is the whole point of practicing basically, for a (emergency) response, you're going to lose an incredible wealth of knowledge...Those people that had that expertise, the supervisors of these clinics that do this day-in, day-out, the seasonal influenza clinics, even the school immunization clinics which are mass clinics, there's two supervisors, one supervisor each for that, they weren't involved in the planning of these clinics! They know who is a good lead, who can take on a mass clinic and not crumble under the pressure, they know who is the best to assign to adverse events, they know who should be leading the reception and they work with these casual staff. They go through that just for every single clinic on the regular schedule. So, yeah, (to not be) consulted at all. I don't know! I don't know how you go to another program randomly

and pick out someone else to run something when other people do this as their job every year. I still don't understand. When you do that, when you take expertise away, you're going to break down communication, you're going to break down efficiencies, and that's exactly what happened. (I#14)

The non-usage of these specific nurses' expertise, specifically their *knowledge* that was based on vaccination, not only had a direct impact on the nurses themselves, but on the overall outcomes of the campaign for the community. As the following immunizer described,

I think we all felt it, from that immunization (nurses), the whole group of us, I think our supervisors felt bad because they put us in situations as casual nurses where we weren't utilized appropriately. They felt bad, and I'm like 'don't apologize to me' it's just we didn't serve the public really well, we didn't serve each other well, we could've made it very more efficient for all of us, as nurses. It (can be) great and I think we all panicked. It's still a flu clinic, when you come down to it. It's still an immunization clinic. Just because it's in the media and it's big and scary, it's still a flu clinic. It didn't need to run differently, it's just a flu clinic. (I#21)

Back-up from colleagues and higher-ups. Established professional relationships helped PHNs perform effectively in their deployment roles. One benefit of these connections was that it facilitated the communication of important H1N1/09 information amongst clinic staff. This is important because throughout the response PHNs needed to be informed of any policy developments. Particularly, when these could directly impact their vaccination practice. For example, if changes occurred with vaccine dosing or administration technique for age groups, nurses would have to be notified in order to safely immunize citizens.

PHNs' need for H1N1/09 related updates during the ongoing pandemic clinics had been anticipated and planned for in the last published pandemic document. The following from October 2009's 'Mass Immunization Clinic Plan' described one communication mechanism,

Short staff briefings will be held at the beginning of each shift. The briefing should include updates on the pandemic, information they require and reminders about PPE and infection control practices. Housekeeping staff should also be present at this briefing as they are responsible for proper environmental cleaning of the facility. (Oct2009)

Most participants voiced that these staff meetings did occur. Clinic supervisors were responsible for gathering their front-line staff together to discuss developing issues affecting the clinics' operations. One immunizer described,

Our supervisor would round all of the nurses up and do a kind of a touch down you know, start of the clinic kind of talk. Just letting us know about any changes. There was always a different 'something' that came up in the news, so they would always let us know about that, what was the appropriate way to respond to that, a question that might have come up, and anything else we might need to know like the adverse nurse for that day, the support nurse, who the supervisor was. (Also), to remind us to take our breaks, that kind of thing...(I#15)

When conducting these meetings, one particular supervisor made a point to incorporate all individuals working in the clinic, including IT personnel and administrative employees. This went beyond nurses and the 'housekeeping staff' mentioned in above excerpt from October 2009's 'Mass Immunization Clinic Plan'.

Similar to the morning meetings that were provided for the nurse immunizers, clinic supervisors were also regularly updated by their own higher-ups. Supervisors voiced having a daily mandatory conference call with managers prior to the start of the clinics. During these meetings, supervisors were informed on any information that would impact their own role, their immunizers' duties, or overall clinic functions. One supervisor explained,

We had meetings with the whole management team by telephone before we went into our shift in the clinic every day. So, I would listen in on a teleconference and it included the supervisor from each of the clinics in [X] and our management team. So it was 'Ok, anything that has changed, what can we expect for today' and it was information about ministry communication, federal communication, and anything that was happening locally. So, I felt that that worked really well in the sense that we were always updated as to what was the current situation. (S#10)

It was during these phone calls that supervisors obtained the knowledge that they were able to then disseminate to front-line nursing staff. However, this type of supervisor meeting was not specifically planned for anywhere in the reviewed documents. Instead, general overall internal

communication plans with front-line staff were referenced. This was evident in June 2006's 'Influenza Pandemic Preparation and Response Plan',

During the Pandemic Period, [the agency] will need to provide [agency] staff with accurate, up-to-date and timely information about the pandemic by: Consulting with provincial and national counterparts as well as with local hospitals and other health agencies to develop and deliver consistent messaging; Preparing information and key messages; Preparing information for [agency] staff, which includes occupational health and safety information on protecting staff from the influenza virus; Communicating information to [agency] staff. (June 2006)

Within the Knowledge-Power-Resistance framework, it can be proposed that through these clinic meetings and conference calls, participants were given a scheduled opportunity to gain awareness of any planned operational changes, and the rationale for them. By managers and planners exercising power in this manner, they were providing PHNs with key information to work in their roles to accomplish the organizational goal. Specifically, participants were able to learn about the particular discourse that was shaping how they practiced in the clinics. Communication of this information was positively contributing to the agency's goal of providing the community with herd immunity.

However the dissemination of pandemic information did not just affect PHNs, as these individuals did not work alone in the mass vaccination clinics. Whether nurses were a front-line immunizer or clinic supervisor, they were in constant interaction with multiple non-nursing colleagues. For example, other public health staff members had jobs in clinic administration, and crowd control. How these non-nursing staff performed their roles had the ability to influence participants' experiences working in the clinics. However, only a few brief acknowledgements of these staff were found in the pandemic documents. An excerpt from November 2008's 'Interagency Influenza Pandemic Plan' illustrated, "...the IT Services Branch (will) provide technical support as it relates to both internal (email and intranet) and external communication

channels (such as the City's web site)". October 2009's 'Mass Immunization Clinic Plan' further elaborated on some of the tasks that these individuals would be responsible for,

An [agency IT] staff, knowledgeable with the working of the (computer) system will also be on site at each of the (mass immunization clinics) and outreach clinic for system support. Support staff [will] trouble-shoot and resolve any (computer) system issues. (Oct2009)

The identification of this key group of IT workers is significant as many participants verbalized that the computer program presented one of the biggest challenges in the vaccination clinics. This was especially true in the beginning days of the mass vaccination response. Interestingly, the use of this specific computer system had not been anticipated in the earlier documents. Instead, it is only first introduced in the last published document, October 2009's 'Mass Immunization Clinic Plan'. The following excerpt described why and how this program was to be used,

[The agency] is directed by the [X] to use the [X] Information Immunization System (IIS) as the primary tool for nursing documentation and data collection. It is a web-based computer software program that electronically tracks clients who attend immunization clinics. Through the use of swipe card technology, linked to health card information, new clients are quickly registered, returning clients flagged, clinic movement tracked and immunization record receipt generated. Program abilities include accounting for multi-dose series and multiple antigen administration. (Oct2009)

If participants experienced issues with data inputting for one client, it could slow down the entire vaccination process. This would contribute to increased client line-up congestion in the already busy clinics. As such, it was very beneficial that these IT individuals were assigned to provide nurses with technological support. One participant explained,

When they came in with the computer, we had to register everything, so this took (a long time) and they had technicians around us. They were really good to give us support. That's what I found anyway. At the place I was, there was always a technician. At the beginning of course, when you open your computer and all that, we had to write the age of the kid and that, but then once you get used to it, and if you made a mistake, you forgot to put something, there was always somebody, a technician you could ask 'Come

and help me' and so we had good support. Because at the beginning computers were (hard)! 'What will I do with this' and 'What will we do with that', you know? But no, they gave us a lot of good support. (I#19)

Another participant further described how quickly the IT personnel could tend to computer program concerns,

I think (the computers caused problems) a couple of times, there was some sort of glitch with them where they weren't working but, but like I said IT was on site, like at all times! So they would like, if there was a problem, they would jump in and fix it immediately. (I#18)

These technologically savvy individuals were able to provide PHNs support when they were having system issues and helped to expedite the trouble shooting process. This allowed participants to promptly return to the main nursing priority of providing mass vaccinations in a timely manner.

Participants also often mentioned the beneficial presence, and involvement, of the city's 'Parks and Recreation' staff. These employees were brought in to help manage the massive crowds of people who showed up at the clinics. However, despite the significance Parks and Recreation staff played in the clinics, the use of these employees was not mentioned anywhere in the pandemic documents. Instead, there was a description provided as to how the city overall will be protected during a pandemic outbreak. November 2008's 'Interagency Influenza Pandemic Plan' briefly explained, "...[X] Police Service will keep the peace and order within the City of [X], By-law and Regulatory Services will provide personnel to support police officers under the direction of the [X] Police Services".

Clinic security itself was only described in the last document, October 2009's 'Mass Immunization Clinic Plan', "...security provides crowd control and ensures order at the clinic entrance and exit, directs traffic and parking, manages any conflict, contacts police as required after discussion with the clinic supervisor, [and] ensures that all staff wears identification

badges". From the documents, there was no preliminary plans evident that Parks and Recreation staff would be providing mass vaccination clinic security. Thus, it can be inferred that recreational department workers were not originally planned to be conducting crowd control. This could also explain why these employees were only introduced days after the response had already began.

Lastly, as presented in the thematic summary, mass clinics were crowded, citizens were anxious, and PHNs were very busy. As a result, many participants experienced stress. However, the planning of psychological resources to personally assist nursing staff was only described in one document, June 2006's 'Influenza Pandemic Preparation and Response Plan'. The following illustrated,

All programs will need to consider ways to provide psychological support for their staff. City Employee Assistance Program (EAP) and Occupational Health and Safety services may not be able to keep up with a potential surge in demand related to staff experiencing family member loss, the stress of coping with ill family members and the financial pressures that may arise. As part of business continuity planning, senior staff have been advised to examine what actions can be taken internally to build emotionally supportive work environments in anticipation of similar strains on the system. The city of [X] has many [X] trained professionals who are part of a Basic Crisis Response Team. These staff members have received extensive training in providing crisis intervention to large groups of traumatized people. The role of [X] trained [agency] staff in an influenza pandemic is undefined at this time. (June2006)

Despite pandemic planners' original intention to ensure that senior staff members 'build emotionally supportive work environments', some participants verbalized unsupportive managers. For example, participants discussed a lack of managerial support when they attempted to maintain the agency's pre-established priority populations for vaccinations. This is contradictory to October 2009's 'Mass Immunization Clinic Plan' that described the priority populations,

The priority groups, as determined by [X], are as follow: People under the age of 65 with existing health conditions (such as heart and lung illnesses and compromised Immune systems); Pregnant women; Children aged six months to five years; Health care workers involved in pandemic response; Essential workers; Household contacts and care providers of high-risk individuals and those who cannot be immunized, i.e. infants less than six months of age or people with weakened immune systems...The local strategy must be able to manage immunizations for recommended groups when the vaccine is in limited supply and then enable equitable access when in greater supply. (Oct2009)

One supervisor explained the impact that not feeling supported had on her while maintaining these populations,

So at the end of the day, when you're giving your report, you might say 'Oh well, you know, just so FYI, there was somebody who shoved a phone in my face and said I'm going to hear from their doctor because I refused to give them the vaccine. You just need to know that in case this gets reported and somebody does actually complain'. So you would tell (management) scenarios like that and then you'd get feedback 'Well, you know, you could of immunized...' and we're like 'well I need clarity about who I'm immunizing and who I'm not!' I know sometimes there are clinical judgements but what came down to population-based decisions about who we're immunizing, to me that was supposed to be pretty clear, and the reason you gave us those guidelines is because you're afraid you're going to run (out). You know the vaccine is coming, but you're afraid you're going to run out if you don't sort of prioritize populations! So things like that weighed heavy on me afterwards because I felt, you know, I can't be in a position to make those decisions and feel like I've caused this great panic in this one family, because they're so concerned for their (family member who didn't receive the vaccine)...I think for issues like that, I didn't really feel supported. (S#2)

In addition, many participants felt that managers contributed to the stressful work environment by consistently pressuring staff to work harder. Participants, immunizers and supervisors alike, thought that the pressure from managers to vaccinate more clients at a faster rate was not necessarily based on front-line nursing knowledge. In particular, as every nurse is a unique entity, every client brings their own personality to the nurses, and every human interaction would be contextually based. However, nowhere within the four reviewed pandemic documents is this human element evident, nor is nursing's signature holistic approach to care addressed.

When examined within the Knowledge-Power-Resistance framework, some managers and pandemic planners lack of consideration for the nature of nurses' knowledge and practice ultimately impacted how they viewed PHNs' ability to vaccinate. Specifically, these individuals felt that nurses should be able to immunize more citizens faster. This caused some participants to become upset because while they understood the agency's goal was to provide timely herd immunity, they felt it should not be at the expense of both the nurses' and clients' safety. As one immunizer articulated,

We had a visit from the assistant MOH at the time and she was very anxious that she didn't think we were doing enough, fast enough. I was trying to explain to her that you can't go faster, I mean we're really moving at a fairly good pace compared to all of the other clinics on the first night, we actually did more than everybody. I said to her you can't move any faster because you've got to question and take your time with little kids, you don't want something to go wrong, like that's the last thing you want is either a med error or something drastic to happen. (I#20)

However, unlike managers, fellow nurses were thought to understand the routine and challenges that were encountered working in the clinics daily. Consequently, participants verbalized that the majority of their psychological support came from these nursing colleagues. For example, supervisors found comfort in having a co-supervisor or assistant supervisor present during the response. While maybe not with the intention of providing supervisors with psychological support, the additional supervisor role was planned for in October 2009's 'Mass Immunization Clinic Plan', "...each clinic supervisor should also have a backup staff member available in the event of emergencies".

The majority of participants appreciated their coworkers and felt that their clinic experience was positively affected by their presence. While the pandemic response presented its own set of challenges, the following immunizer described the experience of working with her colleagues,

It was a good group. I felt we were very cohesive, the teamwork just made the job easier, enjoying the people you were working with, knowing that we'd help each other out, knowing that you weren't kind of standing alone, so in that regard, I have to say that it was a really good experience! Yeah, it was nice in that regard. (I#6)

Chapter Summary

This chapter first provided a description of the four pandemic planning documents that were reviewed. This was done to provide the reader with the context of these 'external' data sources. Concepts identified in the 'external' pandemic documents were analyzed in relation to the Foucauldian Knowledge-Power-Resistance framework, and the findings from the 'in-situ' participant interviews. This was done to demonstrate linkages in the phenomenon for both supervisors and immunizers. The resulting thematic description illustrated the participants' experiences working in the H1N1/09 mass vaccination clinics in two themes.

The first theme, *'The Necessity of Knowledge'* used two sub-themes to describe participants' need for information to adequately perform in their assigned pandemic roles. Within the Knowledge-Power-Resistance framework, this information would substantially contribute to front-line PHNs' knowledge to work in the clinics. In *'The Importance of Notice and Reasoning'* it was discussed how the majority of participants received little notice regarding their pandemic role. Conversely, the importance of timely notification to 'all levels of staff' regarding a deployment was identified in the pandemic documents. Further, the sub-theme *'The Right Instruction at The Right Time'* illustrated that participants also needed adequate training to function in their mass vaccination roles. While the documents mentioned training, it was often the importance of 'cross-program' training. This was to ensure that the agency's essential services, not related to vaccination clinics, would remain adequately staffed.

The second and last theme *'Essential Supports in Protecting the Population'* illustrated the supports and resources participants needed in order to function in their pandemic roles. In the

sub-theme '*The Crucial Elements to Do the Job*' it was highlighted that the agency had recognized that it would take time to secure a vaccine for the pandemic. However, many participants were dissatisfied as they thought that planning for other non-vaccine elements was lacking. Lastly, in '*Back-up From Colleagues and Higher-ups*' the importance of participants' professional relationships was explained. The presence of supportive colleagues helped participants to exercise power and to work more effectively in their clinic roles. However, these supports were only briefly identified in the pandemic documents. In contrast, many participants identified a lack of upper managerial support, in particular when attempting to maintain priority populations and nursing standards of practice. This was despite the necessity of supportive environments being outlined in one pandemic document.

Chapter Seven- Discussion

In this chapter, the two overall themes in the thematic description *The Necessity of Knowledge* and *Essential Supports in Protecting the Population* will be analyzed within the context of the existing literature. Further, additional linkages and interpretations through the lens of the Foucauldian Power-Knowledge-Resistance Framework will be presented. Lastly, this chapter will highlight some of the study's strengths and limitations.

Revisiting The Necessity of Knowledge

A major theme that underlies the participants' H1N1/09 experiences is identified in the thematic description's '*The Necessity for Knowledge*'. Fitting within the Foucauldian Knowledge-Power-Resistance Framework, PHNs were knowledgeable of the public health discourse that informed their regular nursing roles within the agency. What participants were not familiar with was the specific discourse that provided the basis for the planning of the mass vaccination clinics, and seemingly for their roles and responsibilities.

The Importance of Notice and Reasoning

Before H1N1/09 (sub-type A) was declared a pandemic in June 2009, public health organizations recognized that it was simply a matter of time before a new pandemic influenza would develop (Bishop, 2007; Kotalik, 2005; Larson, 2007; O'Connor, 2009; Pascoe, 2006). Regulatory bodies were aware that the delivery of mass vaccinations through local public health units would be required in order to protect the population from pandemic flus (Ellingson, 2005; Johnson, Bone, & Predy, 2005). However because these influenzas are new viruses, vaccines could not be stockpiled, and agencies had to wait until the flu was encountered before a vaccination could be produced (Eastwood et al., 2006; Kotalik, 2005; Osterhaus & Oxford, 2006).

The Canadian government had contracts in place with pharmaceutical companies to ensure the mass production of vaccine when a pandemic occurred (PHAC, 2012). It took these organizations approximately four months to isolate the virus, and develop an appropriate vaccination (PHAC, 2012). Prior to H1N1/09, this time period was anticipated in order to produce the mass quantities of vaccine that would be needed to protect the population (Bennett & Carney, 2010; Low & McGeer, 2010; Wu & Cowling, 2011). Municipal public health agencies across the country were developing plans for a mass vaccination response while this process was ongoing (Low & McGeer, 2010; Rosella et al., 2013). It was not a question if mass vaccination clinics would be implemented, but when, and this was dependent on the availability of an appropriate vaccine. Indeed, in the years before H1N1/09, policy documents had been drafted to prepare public health agencies in the event of a pandemic mass vaccination response (Binns et al., 2010; Johnson et al., 2005; Kotalik, 2005; Syed et al., 2010).

Despite public health agencies' awareness of the need for of an efficient and timely pandemic response (Devereaux, 2015; Johnson et al., 2005), this study's findings revealed that participants had very little notice about the mass vaccination deployment from their organization. Some voiced receiving only a day or two notice about the response prior to the clinics opening. During this time, PHNs were expected to complete their regular work, and move into their pandemic roles. It is unclear why participants received such little notice, as Canadian public health units, upon securing a vaccine, had approximately two weeks to finish organizing their mass vaccination clinics (Low & McGeer, 2010). While two weeks is not an overly long time, it is more than the one or two days given to most of the participants in this study.

When PHNs entered into the clinics, their colleagues were left to handle their roles and responsibilities. The majority of participants were deployed, and felt they did not have a choice

but to enter the clinics. However, there were a few participants who volunteered, including PHNs from larger departments with more staff, to become immunizers. These volunteers' departments were responsible for providing 'essential core services', external to pandemic response activities that helped to maintain the community's overall health. Other organizations similarly utilized staff for the maintenance of 'essential core functions' to ensure the population's other health needs during an emergency response (Johnson et al., 2005).

When examined through the lens of the Foucauldian Knowledge-Power-Resistance framework, it is evident that the exercise of *power* may have influenced the 'deployed' versus the 'volunteer' participants' experiences of entering the clinics. PHNs were in positions of lesser organizational authority compared to agency managers and planners located within the IMS. However, they simultaneously existed in a power relationship with these individuals. Managers exercised power by notifying the 'deployed' PHNs about their clinic roles. This could have potentially contributed to participants feeling they were unable to resist their supervisor or immunizer assignment.

Further, as this study's findings revealed, some participants felt a sense of professional responsibility and obligation to work in the mass vaccination clinics to maintain the population's health. This could have potentially enhanced participants' feelings that they could not refuse to work in the response. Indeed similar findings were identified in Long's (2013) study of Manitoban PHNs. It was found that despite personal safety concerns, urban participants might have continued to work in mass vaccination clinics because 'it was their job' and 'ethical duty' (Long, 2013, p.134).

Conversely, those participants who 'volunteered' exercised power over their own professional lives by making the decision to enter into the clinics. Indeed, those individuals who

chose to be immunizers voiced that the experience was a 'nice change' and a 'break' from their normal agency roles. While those that were 'deployed' often voiced frustration with management's expectations, 'volunteer' participants seemed to experience less stress. This appears to be because the volunteers recognized that their caseload would be dispersed amongst their remaining 'essential services' colleagues in their larger departments, or because they were casual employees with no other public health responsibilities.

The lack of notice regarding the anticipated deployment timeframe also made it difficult for PHNs to individually prepare for their pandemic assignments. When H1N1/09 occurred, participants had knowledge and were competent in their own practice area. However, many participants did not feel knowledgeable about vaccinations, the supervisor role, or the pandemic virus itself. This finding contrasts with the agency's pandemic documents outlining the need for individuals to be appropriately suited for their pandemic assignments. It also raises important questions regarding pandemic preparation and decisions about role assignments during the deployment. Indeed, a question asked by many participants, particularly supervisors, was why they (and not others better suited to the role) were chosen.

The literature supports that not all nurses will be prepared for pandemic roles because nurses will have varying degrees of clinical abilities and skills prior to the implementation of an emergency response (Binns et al., 2010; Johnstone & Turale, 2014). In public health specifically, this is understandable as there is a diversity of nursing roles within the discipline, and PHNs work in multiple departments to protect the health of the community (CPHA, 2010). Subsequently, PHNs should provide response services that are consistent with their own speciality that they are currently practicing (Jakeway, LaRosa, Cary, & Schoenfisch, 2008). However, this may not be possible because nurses may be required to practice in different roles

during an emergency response (Jakeway et al., 2008). As such, re-fresher training in unfamiliar areas should be provided to nursing staff in case of a potential pandemic mass vaccination response.

Using Foucault's conceptualization of *knowledge*, it is proposed that all PHNs have knowledge of the public health discourse as they work within the discipline. However, individuals' awareness of the discourse will change over time by regularly using particular elements of disciplinary knowledge more frequently for their daily work (Foucault, 1970). As a result, PHNs will have different areas of expertise that corresponds with their speciality area, and will be more familiar with certain parts of the discourse compared to others. As shown in this study, this was the case for the majority of supervisor participants who did not have experience in mass vaccinations, or in supervisor roles.

Immunizers were generally more comfortable than supervisors in their deployment assignment. In line with the proposed framework, they attributed this to having the recent clinical opportunity to learn some of the *knowledge* and skills that would be necessary for working in the mass clinics. This background unofficial H1N1/09 'training' allowed these individuals to more competently practice in their pandemic roles, and work toward the organization's objective of protecting the community's health against H1N1/09. However overall, regardless of response assignment as 'supervisor' or 'immunizer', participants felt they did not have adequate time to access the information they needed to prepare themselves for the deployment.

As public health agencies were waiting for the vaccine's production, pandemic planners could have used this time to consult the PHNs who were going to be 'deployed'. This could have been done in an effort to make these nurses' transition experiences smoother, similar to those of the nurses who volunteered. For example, by giving these individuals information regarding the

impact of the response, deployed PHNs may have had more time to complete, or pause, any ongoing tasks. Thus, participants could exercise a degree of power over their own professional responsibilities and potentially had a different experience of entering the clinics. For example, they could have become better prepared themselves for the skills that would be required of their mass vaccination roles.

The Right Instruction at the Right Time

This study's findings show that participants received minimal formal training for their pandemic roles and responsibilities. This lack of training seemed to further exacerbate participants' feelings of uncertainty regarding their ability to work in the clinics. Supervisor participants were particularly disconcerted as most felt that they were unqualified for a supervisor role prior to the pandemic's declaration.

This finding is unfortunate because literature published before H1N1/09 identified the importance of organizations efficiently implementing pandemic training to ensure all staff were competent in their roles (Balicer, Omer, Barnett, & Everly, 2006; Basta et al., 2009; Ives et al., 2009; Jakeway et al., 2008). Participants in the current study felt that this lack of training jeopardized clients' safety, particularly as there was potential for error resulting from nurses' unfamiliarity with vaccination. Such errors have been identified to include choosing an incorrect vaccine for a patient, dispensing an incorrect dosage, and recording erroneous client documentation during and after the vaccination (Colvard et al., 2014).

Participants also reported feeling stress by being unaware of the responsibilities for their new deployment roles. This was compounded by the study's participants having to deal with the 'chaotic' masses of people who arrived to be vaccinated in the first few weeks. Other studies of health care professionals' H1N1/09 experiences identified that feelings of unpreparedness

contributed to anxiety working during H1N1/09 (Holroyd & McNaught, 2008; Lam & Hung, 2013). Indeed, the literature supports that nurses can experience stress when not adequately prepared to deal with the multiple elements of a chaotic emergency response (Bergeron et al., 2006; Ives et al., 2009; Johnson et al., 2005; McEntire & Myers, 2004; Pearce et al., 2011). However, the implementation of a relevant training program has been found to help equip nurses with the knowledge and applicable skills to competently practice in pandemic scenarios (Ellingson, 2005; Johnstone & Turale, 2014; Lam & Hung, 2013).

‘Just-in-Time’ training programs are one type of training method that can be utilized. These are training programs processes that are implemented right before the emergency response to ensure nursing staff are prepared to perform the skills that they will needed for their pandemic roles (Jakeway et al., 2008). For example, during the H1N1/09 outbreak, public health agencies could have delivered a refresher to PHNs on administering vaccinations, reviewing client anaphylaxis, or demonstrating how to manage an overall clinic. This could occur in those few weeks that public health units were waiting on the vaccine, as these training elements were not dependent on the vaccine’s constituents.

Within the proposed Foucauldian framework, structured training would provide a valuable learning opportunity for both pandemic planners and front-line PHNs. Through observation and assessment of employees’ current skill level, managers could determine those front-line staff that require further instruction on how to effectively meet professional standards and achieve the discipline’s goal. Specifically, based on an initial assessment of these PHNs’ skills, it could have been determined what specific elements of training should be the primary focus for pandemic planners.

Conversely, PHNs could learn about the disciplinary discourse that guides pandemic planning, and how to competently implement disciplinary actions to meet the agency's objective. In essence, by managers' exercising power by implementing training, front-line staff could become more knowledgeable of the discipline's discourse that specifically guided the basis of the mass vaccination planning. It is important to address this as it has been found that health care workers may be less willing to work during a pandemic when they are unfamiliar with their assigned roles, and have a lack of knowledge about response components (Balicer et al., 2006; Basta et al., 2009; Damery et al., 2009; Ives et al., 2009). In turn, managers may have received valuable input from staff regarding clinical elements. This input could contribute to the development of discourse that provides the basis for planning effective mass vaccination clinics.

The lack of training identified by participants in the current study is an issue corroborated by McEntire and Myers (2004) who suggest that a frequent error in emergency response planning is the failure of organizations to plan, and to implement training for front-line staff. The health care agency where the study took place did plan components of pandemic training (identified in October 2009's Mass Immunization Clinic Plan). However, some components of the training may not have been provided to each front-line nurse because the document, with its outlined training plan, was released only a few weeks before the clinics themselves opened.

PHNs were not the only nurses to experience a lack of response training during the H1N1/09 'deployment'. Ratnapalan et al. (2013) in a study conducted at Toronto's Hospital for Sick Children, found that inpatient unit staff nurses were similarly 'deployed' from their regular positions on medical-surgical units, with minimal preparation, into the emergency department. This was despite these individuals not being trained in emergency care (Ratnapalan et al., 2013).

As nurses were not familiar with the emergency department's processes and environment, their usefulness throughout the deployment was considered to be limited (Ratnapalan et al., 2013).

The importance of timely communication and appropriate training is stressed in the literature (Corley et al., 2010; Ives et al., 2009; Johnson et al., 2006; Johnstone & Turale, 2014; Pearce et al., 2009). Through communication, roles can be assigned to nurses that capitalize on their expertise for a pandemic response (Jakeway et al., 2008). For example, by communicating with individuals that regularly work within the school-aged immunization program, pandemic response planners can pre-determine those individuals who are experienced as both supervisors and immunizers for mass vaccination clinics. These individuals will be able to provide insight into the skills and resources that would be required to have effective mass clinics. As was identified by some participants, this is especially true as pandemic mass vaccination clinics are still immunization clinics with similar process, just implemented on a larger scale.

It is difficult to determine why nurses received little notice and training for their H1N1/09 roles. Foucault (1977) proposed that individuals in positions of authority utilize power techniques to ensure individuals are prepared to comply with disciplinary standards to meet an organizational goal. A possible explanation is that management may have felt that the early communication of H1N1/09 information to front-line staff would have caused problems in the implementation of the mass vaccination response.

Planners had organizational positions that give them authority, the legitimate use of power, over employees. As such, within the Foucauldian framework, managers could exercise power techniques, based on the discipline's discourse, to ensure employees were adequately prepared to work towards the organizational goal of providing herd immunity. However, according to Foucault (1979), individuals are expected to practice resistance because it is a

natural, and expected outcome of disciplinary power. Managers and planners might have assumed that the nursing staff would express resistance to the point where they may have refused to participate in the response.

It is unclear what managers' rationale was for not incorporating front-line staff into the planning process. Managers may have felt that they could lose control of the situation by involving PHNs and sharing H1N1/09 planning details with these individuals prior to the clinics actually opening. This could have been of particular concern if they were worried that some nurses had a personal stance against the public health's discourse underlying the use of vaccinations. However, this scenario is unlikely as nurses often experience a strong sense of ethical obligation and duty to work in an emergency crisis, even when high levels of personal risk is present (Corley et al., 2010; Damery et al., 2009; Ives et al., 2009; Lam & Hung, 2013; Selgelid, 2009). Further, PHNs are professionals accountable to their community, their regulatory body, and to themselves. They are also aware of the public health discourse of protecting the population's health prior to entering the profession (Selgelid, 2009).

According to Foucault (1977), power is not owned, but instead exists as a relationship between two or more people, based on an established disciplinary discourse. The occurrence of resistance is a normal and expected response within this power relationship. Specifically in the context of this study, if managers chose to share the discourse regarding the mass clinics with front-line employees through a variety of communication mechanisms, they would have not decreased their own power or changed their position of authority. This is especially evident if managers and pandemic planners in the IMS were afraid that front-line staff would resist the response and their deployment roles.

Instead, they potentially would have allowed their front-line staff to become more informed on the discourse guiding the response. Knowledgeable employees would be present to competently implement the actions necessary for effective clinics. Indeed, this was the participants' experience once they were in the clinics and time passed. No participant overtly refused to work in the deployment. Further, participants voiced that the daily communication of H1N1/09 updates through meetings, and their subsequent increased vaccination knowledge, helped them to become more competent in their roles. Similarly, other studies have found that health care workers felt more comfortable in their roles as they continued to receive more information about the pandemic and response operations (Long, 2013; Ratnapalan et al., 2013). Further studies identified that this continued communication was particularly necessary, as information about the virus was being released quickly, and continually changing during the response (Rebmann & Wagner, 2009; Rosella et al., 2013).

Managers in the community setting could benefit from the involvement of PHNs with immunization knowledge and relevant experience in clinical service delivery to inform future planning discourse. This was evident when the study's participants shared recommendations with their managers during daily phone meetings regarding clinical concerns. Further, PHNs' awareness of external agencies and their established relationships with community partners could benefit the overall mass clinics' operations. For example, Parks and Recreation staff were brought in to this study's clinic sites to help manage the masses of clients who arrived to be vaccinated. Through these examples, PHNs contributed to the development of public health discourse regarding effective pandemic planning and ongoing delivery of public health services.

Revisiting Essential Supports for Protecting the Public

'Essential Supports for Protecting the Public' is the second major theme underlying participants' experiences. Participants required the appropriate equipment to effectively perform the disciplinary practices necessary to implement a mass vaccination campaign. Further, they needed the support of others located within the discipline to effectively practice in their clinic roles (i.e. managers, pandemic planners, and their fellow front-line colleagues). This is particularly important, as PHNs did not work alone, but rather were a part of the public health agency that is guided by specific public health discourse.

When a variety of health care delivery systems are used for the vaccination of a population, not just public health agencies, the response is often more effective (Chamberlain et al., 2012; Johnson et al., 2005; Rambhia et al., 2010). Medical clinics, pharmacies, and schools can all be used to supplement mass vaccination clinics (Johnson et al., 2005; Rebmann & Zelicoff, 2012). In fact, pharmacists successfully contributed to mass vaccination programs in a number of U.S. states (Rambhia et al., 2010; Rubin et al., 2014). Municipal partnerships with paramedics, fire, and police services can offer additional human resources in pandemic responses (Johnson et al., 2005).

A few study participants recommended the use of variety of immunization sites to both lighten the clinics' workload and to provide citizens with more vaccination options. However, this did not occur in the agency that served as this study's setting. The Ontario Health Plan for an Influenza Pandemic (OHPIP), which covered this study's context, recommended using only mass vaccination clinics, rather than other primary care methods such as doctors' clinics, to administer the pandemic vaccine (MOHLTC, 2010). The rationale for this approach was to avoid wastage, as it would be difficult for individual health care practitioners to appropriately store and

administer all vaccine before it would need to be discarded (MOHLTC, 2010). As such, the vast majority of vaccinations were administered in clinics. In order for PHNs to meet the organization's goal of immunizing most of the city's population at these sites, supports were essential in the mass vaccination clinics.

The Crucial Elements to do the Job

The literature published prior to H1N1/09 predicted vaccine and equipment shortages as being of primary concern for imminent pandemic responses (Hrehocik, 2008; Kotalik, 2005; Pascoe, 2006; Thomas et al., 2007). This was the case in other H1N1/09 pandemic responses implemented in tertiary care settings (Corley et al., 2010; Rebmann & Wagner, 2009). In Charania and Tsuji's (2011) study of three subarctic Ontario communities, it was found that participants experienced an equipment shortage, and also felt that supplies were delivered late. As a result, it was recommended that because transportation is unpredictable to rural communities, in particular due to potentially hostile weather conditions, (non-vaccine) supplies should be stockpiled before the next pandemic (Charania & Tsuji, 2011). However, for the current study, while there were original concerns regarding a potential vaccine shortage, this was not an issue for participants. PHNs had enough supplies to do their job, particularly the front-line immunizers who were responsible for actually preparing and administering the vaccination.

While the physical locations were less than ideal, participants understood the agency's predicament to obtain adequate space to vaccinate the city's population. The need to ensure sufficient space for mass vaccinations that would allow for hundreds to thousands of individuals to be immunized was also an issue identified within the literature (Hick et al., 2004; Long, 2013; Low & McGeer, 2010; Osterholm, 2001; Rambhia, Watson, Kirk-Sell, Waldhorn, & Toner, 2010). In fact, Hick et al. (2004) suggested public health agencies secure accessible locations

that could be used as mass vaccination clinic sites prior to an actual pandemic influenza declaration. This recommendation was made to ensure such locations would not be required for other pandemic endeavours, for example flu assessment centres, or space to quarantine the sick (Hick et al., 2004).

Indeed, in one American public health agency's mass vaccination response, schools were planned to be the sites for pandemic mass vaccination clinics long before the declaration of H1N1/09 (Jenlink, Kuehnert, & Mazyck, 2010). This was thought to have substantially contributed to the ease of implementing mass vaccination clinics when Pandemic H1N1/09 did occur (Jenlink et al., 2010). For this current study, based on the findings from participant interviews, and the pandemic document review, it is unclear when the mass vaccination clinic sites were chosen and why.

Before H1N1/09, a shortage of nurses was predicted for the first pandemic influenza of the 21st century (Ellingson, 2005; Herman et al., 2006; Hick et al., 2004; Hrehocik, 2008; Larson, 2007; Liu & Liehr, 2009; Marjanovic et al., 2007; O'Connor, 2009; Osterholm, 2001; Trossman, 2009). This was of concern as a need for an increased number of nurses to immunize in mass vaccination clinics was identified (Ellingson, 2005; Hick et al., 2004). This shortage was anticipated to be amplified by nurses themselves becoming sick with the virus, or having to care for their own ill family members (Barr et al., 2008; Damery et al., 2009; Hick et al., 2004; Ives et al., 2009). Indeed, studies of other H1N1/09 pandemic responses highlighted shortages of nurses to work as immunizers (Charania & Tsuji, 2011; Jenlink et al., 2010; Long, 2013). A main recommendation to come out of Charania and Tsuji's (2011) study was to ensure adequate human resources for future pandemic responses.

However, participants in this study did not report having issues securing adequate numbers of front-line immunizers. This seems to be as a result of the agency increasing the number of immunizers by hiring external agency nurses, and utilizing paramedics who did not normally work with the organization. The use of personnel from outside of public health and non-nurses was an approach implemented in several American public health agencies to obtain enough qualified personnel to immunize the public (Gupta, Issac, & Briscoe, 2010; Jenlink et al., 2010; Rambhia et al., 2010). Interestingly, one American public health agency recruited and utilized students and faculty from a nearby nursing school to work in the mass vaccination clinics (Jeslink et al., 2010).

However, in this current study, by increasing immunizers by hiring external agency nurses, PHNs were left questioning these external immunizers' competency to vaccinate. According to participants, there were no standardized procedures to identify external nurses as competent. Often times, supervisors felt compelled to assess the vaccination skills and immunization knowledge of immunizers who were external to the organization out of concern for client safety. Other studies also identified that determining the competency of staff from outside the organization could present similar challenges, for example with the ability to determine nurses' competency in delivering vaccinations (Ansell, Boin, & Keller, 2010; Jakeway et al., 2008; Long, 2013).

It is thought that such challenges occur because most public health agencies' staffing and training policies are aimed at every day health promotion practices, and are not designed with emerging crises in mind (Ansell et al., 2010). This might explain why procedures to determine external nurses' vaccination competency did not seem to be in place for participants in the current study. Indeed, it has been identified that in times of public health crises, care standards

are altered and adapted to allow for the rapid delivery of health care services (Hodge & Courtney, 2010; Johnstone & Turale, 2014). The change in pace required by the agency for mass vaccination planning may have not provided planners with sufficient time to address this issue. Regardless, agencies need to pre-emptively ensure that available human resources are prepared and that they are mobilized quickly (Jakeway et al., 2008; Low & McGeer, 2010). One way this can be done is by having relationships with external staffing agencies whose nurses are proficient to work in pandemic outbreaks.

By having partnerships in place with external agencies prior to an actual pandemic influenza occurrence, it has been found that the time for mobilization of competent human resources can be expedited (Ansell et al., 2010; Jakeway et al., 2010; Johnson et al., 2005). For example, public health agencies can have agreements with external nursing organizations to provide their staff with regularly updated mass vaccination training. In turn, these organizations can commit to lending the public health agency these trained professionals in time of a pandemic flu. Further, documents can be drafted for these external agency nurses certifying that they have completed this training and these can be presented at future mass clinics. Thus, the public health agency's PHNs, particularly those who are assigned to be mass clinic supervisors, would not feel responsible for assessing external hires' abilities.

Regardless, it is not necessarily clear if, or how much, of this outside hiring was actually needed, as the agency had its own group of casual immunization nurses that seemed to not be fully accessed. Participants were knowledgeable of these nurses, and were surprised that they were not utilized as they had the experience to work in mass vaccination roles. Indeed, other organizations identified the necessity of having nurses be proficient in assigned roles while working during H1N1/09. For example, in Scarfone et al.'s (2011) study, participants in an

emergency room used staffing plans, during their own H1N1/09 nursing shortage, to ensure that nurses were qualified for their pandemic assignment. Specifically, they developed strategies to ensure that nurses working were competent in emergency room nursing. These strategies included allowing their own nurses to work overtime, cancelling education days, using individuals who typically work in nonclinical roles, and employing newly hired nurses to work in positions that could easily be supervised (Scarfone et al., 2011).

When examined through the Knowledge-Power-Resistance Framework, participants' experiences were impacted due to a lack of *knowledge* surrounding the decision to hire external agency staff, about these nurses' competency, and why the regular casual nurses were not initially well used. Managers and pandemic planners in their authoritative positions did not exercise power in a way to ensure that the clinic supervisors were informed, and thus knowledgeable, of the external hires' competency to immunize. Specifically, they did not communicate with this study's participants regarding how these external nurses were hired. For example, they did not notify clinic supervisors that outside hires were qualified to immunize as evidenced by these individuals meeting a set of pre-determined hiring criteria.

Instead, it appears the presence of a nurse was deemed sufficient for establishing that externally hired nurses were competent. Yet, the findings from this study indicate that for participants, it was not enough that external nurses were hired. Supervisors had to take the time to ensure nurses were proficient to practice, while immunizers compensated for what external agency nurses could not do, or refused to do. This was directly related to participants having a lack of knowledge, resulting from inadequate communication regarding these individuals' qualifications. This not only shaped the participants' clinic experiences but also had the potential

to impact client outcomes and the clinics' overall safety. In particular, if these external nurses were not safe to practice, despite any on-site coaching that was provided.

It is unclear from both analysis of the interviews and the pandemic documents why the organization hired nurses from external agencies to become H1N1/09 immunizers if casual immunization nurses were available. Some participants perceived that these casual nurses were not initially contacted to be immunizers during the response. While there are multiple administrative benefits to implementing an IMS structure in an emergency (McEntire & Myers, 2004; Ratnapalan et al., 2013), one explanation put forth by participants was that the regular immunization managers were not part of the agency's pandemic planning IMS structure. Subsequently, the individuals in the IMS who were assigned to do clinic staffing were unaware of the valuable resource of the immunization nurses.

When examining the IMS through the lens of Foucault's conceptualizations of *knowledge* and *power*, public health professionals in positions within the IMS structure had knowledge of the agency, and awareness of varying elements of the public health organization's discourse. Individuals used the knowledge that they were most familiar with to plan the components of the response that they were assigned. If these planners were unaware of the immunization program and its body of accessible nurses, they would staff the clinics according to their own knowledge of the agency's employees. This could explain why the casual immunization nurses were not contacted.

Long's (2013) study of urban, rural, and northern Manitoban PHNs' H1N1/09 experiences identified similar findings. Many of the province's urban participants stated that there were not involved in the planning of the mass vaccination clinics (Long, 2013). Instead, they received unidirectional information that was communicated in a 'top-down' manner from

the public health unit's management (Long, 2013). Participants from urban settings in Long's study were upset as they felt they had vast experience in organizing vaccination clinics and could have contributed to a more effectively planned response. Interestingly, participants from rural and northern settings discussed being involved in pandemic planning months to years before H1N1/09 (Long, 2013). During this time, planning documents were created that clearly outlined rural PHNs' pandemic roles with these nurses' involvement (Long, 2013). These documents were then given to staff as a reference, and as a result, participants felt they were well aware of their response roles when Pandemic H1N1/09 occurred (Long, 2013). Indeed Jakeway et al. (2008) recommended that front-line PHNs have access to their own agency's emergency response plans, know where to find these documents, and are familiar with its contents in the event of a pandemic response.

The contrasting experiences of urban and rural/Northern nurses, identified by Long (2013) raises questions as to why the study's urban participants, and participants in the current study (who also worked in a large urban city), were not involved in the mass vaccination pandemic planning. A potential explanation could be that larger cities have 'higher-authority' health professionals present for emergency planning, for example a Medical Officer of Health and their associates. Further, public health agencies in urban areas have larger populations of people that need to be vaccinated. In smaller communities, however, front-line nurses are often allocated more responsibilities to manage smaller groups of people during emergency responses (Charania & Tsuji, 2011; Long, 2013).

Back-up from Colleagues and Higher-ups

Despite the availability of H1N1/09 vaccinations, vaccines were initially limited nationally as they can only be produced once the virus was isolated (Hodge, 2014; Low &

McGeer, 2010). Further, although contracts were in place to acquire pandemic vaccine, production only began after the year's seasonal flu vaccination manufacture was completed (Low & McGeer, 2010). As a result, substantial supplies of vaccine could only be delivered well into the second wave of H1N1/09 (Low & McGeer, 2010). With this, it is generally accepted that the distribution of limited vaccine goes to those 'at-risk' priority populations (Iskander et al., 2013; Nicoll, 2010; Osterhaus & Oxford, 2006; Tam et al., 2005). As such, priority populations were established in an attempt to ensure those individuals at highest risk for contracting the H1N1/09 virus would receive the vaccine first (PHAC, 2010).

Indeed, prioritization of individuals has been shown to be up to 84% more effective than random mass vaccinations in preventing influenza-related morbidity and mortality (Patel, Longini, & Halloran, 2005; Tuite, Fisman, Kwong, & Greer, 2010). However, this approach to the allocation of limited vaccine supply does raise some ethical issues for health care professionals. For example, some may not agree with the knowledge utilized to provide the rationale for the decisions regarding who should be a member of priority populations (Johnstone & Turale, 2014; Kotalik, 2005; Malm et al., 2008; Rebmann & Zelicoff, 2012; Thomas et al., 2007). Further nurses can experience internal conflict, and even ethical distress, when having to uphold priority populations when individuals present themselves with rational reasons for wanting the vaccination (Johnstone & Turale, 2014; Rambhia et al., 2010; Voo & Capps, 2010).

According to the Canadian Nurses Association (CNA), ethical distress can occur "when a decision is made regarding what one believes to be the right course of action, but barriers prevent the nurse from carrying out or completing the action" (2003, p. 3). This study's participants could understand the rationale for maintaining priority populations. However, they could also see why clients were worried, fearful, and sometimes aggressive in their desire to be vaccinated,

despite not being members of a priority population. Other studies have also found that clients became agitated with healthcare workers during infectious diseases outbreaks (Bergeron et al., 2006; Long, 2013; SteelFisher, Blendon, Bekheit, & Lubell, 2010). As a result, participants sometimes felt distress when they tried to maintain these established groups. They further felt responsible, and upset themselves, when they refused to vaccinate these individuals.

Nonetheless, supervisors mainly complied with the policy to vaccinate only at-risk individuals, as there was clear rationale for these priority populations. When examined within the proposed Foucauldian Knowledge-Power-Resistance framework many participants *resisted* the pressure to vaccinate everybody who demanded the vaccine, despite the presence of unsupportive managers and pressuring clients. This was because they understood the discourse behind the rationale for vaccinating priority populations. Also, there was no clear explanation provided as to why managers were being unsupportive in maintaining priority populations.

This lack of organizational support often occurred when participants had already encountered a client who became upset that they could not be immunized. Managers would then notify some clinic supervisors that they could have proceeded with the vaccination of the client who they had already refused to vaccinate. Participants felt these situations were difficult enough as it was, and having inadequate backing from management amplified nurses' frustration. This is unfortunate as it is necessary that nurses are supported in their job, particularly in maintaining priority populations, to ensure those vulnerable groups most at risk for severe illness are immunized (Bergeron et al., 2006; Low & McGeer, 2010; Sander et al., 2010).

Additional studies have reported that other health care workers experienced a lack of managerial support while working during the H1N1/09 response (Honey & Wang, 2012; Long, 2013). Yet, the importance of organizational and psychological support for public health workers

who are working front-line during an emergency response is widely acknowledged as important for staff morale (Balicer et al., 2006; Ives et al., 2009; Lam & Hung, 2013; McEntire & Myers, 2004). For example, managerial support can help ease the emotional burden of working during a health crisis (Bergeron et al., 2006). This is essential as successful pandemic responses are dependant on the attitudes, skills, and efforts of front-line healthcare staff (Kotalik, 2005).

Additionally, this study's participants perceived the inconsistency in maintaining priority populations to be unfair to the clients themselves. This finding was identified in other studies where conflicting messages about 'at-risk' populations added to clients' H1N1/09 fears and their frustrations regarding their eligibility to be vaccinated (Long, 2013; Rambhia et al., 2010). In one particular study, it was found that citizens became more confused when they heard that priority populations were changing in different communities, and they thought they were also applicable to their own city (Rambhia et al., 2010).

In the current study, perhaps one of the biggest sources of confusing messages came directly from the head of the public health agency, the Medical Officer of Health (MOH). Participants were aware that the MOH had openly told the media that nobody would be refused the vaccine if they showed up to the clinics. In the local newspaper it was reported that the MOH had also sent a signed letter home with school children urging parents to get their child vaccinated a week after the mass clinics opened (Laucius, 2009). The rationale behind this action remains unclear, as children were not considered a priority population at that time (PHAC, 2012).

However, beliefs surrounding influenza, vaccination, and priority groups have been found to influence how health care professionals act in a pandemic response (Rosella et al., 2013). Perhaps this is a potential explanation as to why the MOH focused on the typical priority

groups associated with seasonal influenza. Interestingly, a survey of Québec public health physicians found that participants also disagreed with the exclusion of school-aged children from the high-risk priority groups, and similarly felt they should be vaccinated against H1N1/09 (Nhan, Laprise, Douville-Fradet, Macdonald, & Quach, 2012).

The majority of participants felt that their clinical colleagues, other front-line immunizers and supervisors, were the biggest source of professional support during the deployment. For example, if an immunizer was unaware if they should proceed with a vaccination, most felt comfortable approaching their supervisor to find out the information that they needed. Also, participants felt supported because they knew their colleagues could help during difficult situations. Similarly, other studies have identified that one of the greatest resources in implementing an effective emergency response is having directly accessible helpful colleagues (Bergeron et al., 2006; Honey & Wang, 2012; Long, 2013). Further, despite initial challenges with those colleagues that were externally hired, most of this study's participants voiced feeling good about helping their fellow nurses become more at ease in their immunizer roles. Long (2013) found similar findings in that participants perceived training nurses from other health care institutions to be mostly a positive experience during an otherwise stressful period.

When examined through the Foucauldian Knowledge-Power-Resistance Framework, immunizers, as a result of being supported by supervisors, and feeling comfortable to approach these individuals, were able to access the *knowledge* they needed to perform their task of vaccinating clients. These exchanges occurred in daily morning meetings, and during more informal conversations, like those that happened during breaks. In turn, immunizers' professional knowledge increased, and allowed them to exercise *power* in their interactions with the clients and to engage in the therapeutic intervention of vaccinating clients. Similarly, despite feeling

unsupported by managers with regards to maintaining priority populations, supervisors were able to access updated H1N1/09 information from management when changes occurred. As a result, they had up to date knowledge about the response. With this, supervisors could exercise power by sharing this knowledge with their own front-line staff to help improve the clinics overall efficiency and promote positive client outcomes.

Study Strengths and Limitations

As with all research, there were strengths and limitations with the conducted study. The first strength is that, as per Thorne (2008), the research question originated out of the researcher's placement within the discipline. Thus findings are meaningful in the production of nursing knowledge to improve a front-line scenario. Another strength was that the purposive sample of 23 PHNs provided different perspectives of the H1N1/09 deployment. Participants represented a variety of public health programs and had worked in all six fixed clinics and multiple roving sites. Further, by speaking with both front-line immunizers and clinic supervisors, I was able to explore how a participant's experience was influenced by the mass vaccination role that they were assigned.

Another strength of this study was the use of two data collection methods. Semi-structured interviews allowed for participants to openly share about what they felt to be most pertinent regarding their H1N1/09 experience. The subsequent review of the pandemic documents allowed for analysis of another angle of vision into whether the agency had anticipated, and planned for, elements that participants shared as relevant to the mass vaccination clinics. These documents also provided a context of the discipline's discourse that was utilized by the public health agency for planning the mass vaccination response.

Despite having an adequate sample size, a limitation is that this study was only conducted with PHNs who worked in one public health unit in the province of Ontario. There is potential that PHNs working in public health agencies in other cities, provinces, or countries may have had different experiences practicing in the mass vaccination clinics. Further, 22 out of 23 participants that were interviewed were still working with the public health agency following Pandemic H1N1/09. Individuals who have since left the agency may have had different experiences working during the response. I used snowball-sampling technique by asking participants to share the study's information with individuals who have since left the agency and might be interested in participating. However, no former PHNs contacted me and as such, this is a potential direction for future research.

Although interviews provided an opportunity for participants to openly share about their H1N1/09 experiences, there are also limitations with using this data collection method. As interviews began almost four years after the H1N1/09 response, recall may have been an issue. Certainly, participants seemed to have no issue remembering bigger concerns, for example, the lack of substantial training, and the masses of people who attended the clinics. However, it is also possible that due to this time period, PHNs may have forgotten particular elements of the clinics or how these elements impacted their experience. Despite this, interpretive research methodologies propose that a reflective time period following an experience can help an individual to determine what was personally pertinent about the phenomenon (van Manen, 1990).

Another limitation is that I only speak English, and conducted all of the interviews. The agency's employees speak both English and French, and as such, an internal recruitment email was sent to all PHNs in both languages. If any individual requested to participate in French, I

would have obtained a person proficient in French to conduct the interview. However, all participants were comfortable with the interviews in English. Nonetheless, it still must be recognized that when an individual with English as their second language communicates during an interview, there is potential for elements of a participant's experience to get lost in translation (Marshall & While, 1994).

Chapter Eight- Nursing Implications and Conclusion

This study gave PHNs who worked as front-line H1N1/09 immunizers and clinic supervisors the opportunity to discuss their experiences during the agency's mass vaccination response. Findings from this research have implications for PHNs and other health professionals who are responsible for the planning and implementation of future pandemic mass vaccination efforts. This chapter will discuss these implications in relation to the public health nursing discipline in administration, practice, education, and research. Lastly, this chapter will end with a conclusion to this dissertation.

Implications for Administration and Practice

Nurses have many important public health roles in protecting populations by administering mass vaccinations, running overall clinic operations, and maintaining core essential services. As a result there are multiple administrative and practice implications for public health agencies.

Communicate ongoing developments. It is crucial that communication methods are developed, and implemented, to ensure that important pandemic information is disseminated to front-line staff in a timely manner (Corley et al., 2010; Ives et al., 2009; Johnson et al., 2005; Pearce et al., 2009; Ratnapalan et al., 2013). Managers and pandemic planners, as a result of their organizational position, have ongoing access to information surrounding vaccine production and an anticipated timeframe for its completion (MOHLTC, 2010). While it may be difficult to know an exact date for a pandemic deployment, these individuals should share their *knowledge* of this potential timeframe with front-line nurses. This would allow PHNs more time to exercise *power* over their own professional actions, specifically by preparing to enter into clinics.

First, this notice would allow PHNs to finish or pause any ongoing projects, report their workload to the remaining team member(s), and notify community clients and partners of their pending deployment. This is important as the stopping of public health programs can cause stress for both the nurse and community client(s) (Bergeron et al., 2006). Second, it would provide PHNs with time to prepare for their specific clinic roles by reviewing training materials independently. This is especially necessary if official agency training is not offered. Bergeron et al. (2006), found that participants who worked through SARS took it upon themselves to practice the skills they would need in this emergency situation to compensate for a lack of training.

However, reviewing the pandemic documents available to the current study's participants prior to, and at the start of the Pandemic H1N1/09 response provided only a little guidance on nurses' roles and responsibilities. It was not until October 2009's 'Mass Immunization Clinic Plan' released approximately two weeks before the response, that mass vaccination roles were described. Jakeway et al. (2008) point to the necessity that PHNs' roles and responsibilities are clearly outlined in agency documents before a pandemic even develops. This is to ensure staff members are able to access these plans and prepare for their corresponding roles. For example, the assignment of PHNs from particular settings into the mass vaccination roles of 'immunizer' and 'supervisor' could be planned in advance, and outlined in these documents. Thus, nurses would be made aware of where they would be deployed in a mass vaccination response, and the skills they would need in order to provide safe and efficient care. This planning recommendation is feasible as these details are not dependent on the pandemic virus' structure or its corresponding vaccine (Fineberg, 2008).

PHNs tend to have a set work schedule. As a result of a mass vaccination deployment, nurses' personal lives will be impacted by any extended hours and/or changes to this schedule.

Knowing that they are going to be deployed based on a communicated pandemic plan will give PHNs much more prior warning that this is an expectation of their role. A reasonable length of notice before the pandemic response would also allow PHNs to personally prepare for the pending deployment. Although managers and planners may not know the exact start date of the response, they are likely aware of an anticipated vaccine timeline. By communicating this timeframe as soon as possible, PHNs could plan for their personal needs, for example make alternate childcare accommodations, and rearrange specialist appointments. Subsequently, this foreknowledge could potentially mitigate any negative impact that could result for these nurses' personal lives.

Consult front-line staff. It is essential that PHNs, particularly those with vaccination expertise, be involved in pandemic response planning before and after the declaration of a pandemic influenza (Devereaux, 2015). This is to ensure that plans are based on nurses' experience before an emergency even occurs (Knebel, Toomey, & Libby, 2012). PHNs have community partnerships that could be vital in assisting pandemic planners effectively prepare for elements of the response (Jakeway et al., 2008). These partnerships could also help to inform plans that address complex issues at the local, regional, and national level, contributing to a more consistent response amongst public health units (Burkle, 2010; Jakeway et al., 2008). For example, organizations could more efficiently plan for scarce supplies and the training of external human resources (Jakeway et al., 2008).

PHNs working on the front-line who may not be placed in the agency's IMS (or other used planning structure) should be consulted for their knowledge on vaccinations and clinic operations. This is because their experience and knowledge could identify pertinent clinic operational elements that planners without front-line experience might overlook. For example,

crowd control was seemingly not planned for as the current study's participants experienced multiple issues with the initial masses of citizens who showed up to the clinics. Indeed, crowd control is a critical component for mass vaccination clinics that can easily be overlooked during the initial pandemic planning stages (Osterholm, 2001). Front-line staff could inform agency pandemic planners of the importance of addressing this, and other similar issues prior to clinics opening.

Further, to enhance efficiency and safety during mass vaccinations, it is important to involve those PHNs with familiarity of the public health discourse that guides the administration of vaccinations (Long, 2013). For example, nurses who regularly practice in immunization would be familiar with the most efficient way to prepare vaccinations and to set-up clinics. Managers and other planners, upon consultation with these knowledgeable nurses, can then integrate this knowledge into the existing discourse for planning mass vaccination clinics.

Ensure adequate training. Public health agencies need to confirm that their workforce is adequately skilled, and cannot assume that employees are already capable to work in a pandemic (Baker et al., 2005; Hall et al., 2012; Hargan 2008; Ives et al., 2009). For example, a PHN who is scheduled to participate in mass vaccinations may have not immunized in years due to the nature of his/her current position. As such, he/she may feel unprepared to immunize. Training, with a particular focus on clinical skills will allow all nurses, including newer and more senior staff, to become more comfortable and competent to practice in their response roles (Klaiman & Ibrahim, 2010; Kort et al., 2005; Long, 2013). This training should also be informed by the suggestions made from the agency's own immunization nurses to ensure plans are based on expertise (Jakeway et al., 2008).

Upon a pandemic declaration, nurses should expect to be challenged with the increased workload their pandemic roles will demand. This will be as a result of their having to manage their regular duties, while preparing for an expected deployment (Eastwood et al., 2006; Kruk, 2008). Administrators can support nurses' deployment by planning and implementing strategies that encourage nurses to attend pandemic response training (Baack & Alfred, 2013). For example, administrators can schedule for PHNs to attend a regular seasonal vaccination clinic to practice vaccination with regular immunization nurses. Managers should ensure that PHNs' workload is covered while they are attending this training (if conducted during regular work hours). If these clinics occur after the PHNs' regular hours, PHNs should be reimbursed at an agreed upon overtime rate. In turn, nurses should make every effort to attend the training opportunities that are provided.

Another strategy that could help prepare nurses for a mass vaccination response is practice and simulation in pandemic exercises (Eastwood et al., 2006; Ellingson, 2005; McEntire & Myers, 2004). A 'training run' of a mock mass vaccination clinic can help managers and planners identify those individuals who require more vaccination teaching, while also providing a direct opportunity for nurses to practice their skills (Bourgeois et al., 2011; Ellingson, 2005; Jakeway et al., 2010). It can also help identify staff who despite training, are not appropriate for the immunizer or supervisor clinic role, and should be delegated to other pandemic response activities (Colvard et al., 2014). For managers, this can also highlight areas of concern for overall clinic operations that may not have been acknowledged during the original planning stages.

Ensure adequate staffing. In addition to preparing staff for their deployment assignments, public health agencies need to ensure that there is sufficient staff to implement pandemic responses (Kipnis, 2013; Osterholm, 2001). Agencies, like the one examined for this

study, may presently have seasonal and school-aged immunization programs with nurses regularly providing these services. It is essential that whoever is responsible for the staffing of pandemic flu mass vaccination clinics is aware of these programs, and the capabilities of accessible staff members.

One way to ensure this is for public health agencies to draft a human resource list describing all employees' roles prior to an actual public health emergency (McEntire & Myers, 2004). Once a pandemic is declared, individuals responsible for response staffing could refer to this list when scheduling immunizers for the clinics. Potentially, this could decrease the amount of outside hiring that would otherwise be needed in order to increase the number of nurse immunizers. This would also minimize issues surrounding the assessment of external agency nurses' competency.

Finally, it is not only civilians who will develop the flu. Healthcare professionals, including nurses, can become sick. Indeed, it is thought that nurses are susceptible to becoming sick as a result of working longer hours in a stressful emergency situation where they are exposed to a mass number of (potentially infected) citizens (Anderson & Hodge, 2009; Braunack-Mayer et al., 2010; Eastwood et al., 2006). This can contribute to a greater nursing shortage, resulting in less available nurses to administer vaccinations and to provide core essential services (Syed et al., 2010). Thus, once a pandemic is declared, protecting the health of nurses is essential to ensure there is enough staff to meet the needs of the public (Bergeron et al., 2006; Braunack-Mayer et al., 2010). Health care professionals therefore, should be one of the first groups to receive the vaccination once it is available (Osterhaus & Oxford, 2006; PHAC, 2012). Indeed, participants in this study's setting were offered, and encouraged, to receive the vaccine once it was secured and obtained. During the window of vaccine development, other

strategies can be used to protect health care providers from the afflicting virus. For example, anti-virals can be administered prophylactically to nursing staff when symptoms are indicated.

Maintain priority populations. Once mass vaccination clinics open, administrators and pandemic planners need to be aware of the necessity of maintaining priority populations. While decisions surrounding priority populations are challenging, it is of utmost importance that they are maintained, especially during times of limited vaccine. When priority groups change over the course of the pandemic flu, it is important that these new priority populations are also maintained.

Additionally, it is essential that the messages that are communicated to the public about priority populations are clear and consistent (Ansell et al., 2010). This is to ensure that there is minimal confusion surrounding who is a member of existing priority vaccination groups. Front-line workers will also be able to use these messages as support when they are explaining the rationale for establishing priority populations to potentially upset, or anxious, clients present at the mass vaccination clinics.

Management and pandemic planners need to continue to support their front-line PHNs who are working in mass vaccination clinics and maintaining these populations. Specifically, because it has been found that allocating pandemic vaccination to high-risk priority populations is the most effective strategy in minimizing influenza spread and illness severity (Tuite et al., 2010). When considering the high morbidity and mortality rates that can result from the presence of pandemic influenza, this is especially important (Pascoe, 2006; Trossman, 2009). If there is uncertainty about the rationale for priority populations, or any mixed messages from managers and planners, front-line PHNs that are knowledgeable on vaccination discourse are well positioned to advocate that vaccine supply only be administered to 'at-risk' individuals.

Implications for Education

Public health nursing positions have many personal and professional benefits. For some individuals these perceived benefits include regular daytime hours, increased control over workload, and the minimal use of invasive clinical skills (if they feel uncomfortable performing them) (Thurtle, 2005). Nurses and students planning to enter public health should be aware of the potential for role changes during public health emergencies as highlighted in this study and the related literature. Specifically, as found in this study, PHNs that deploy from their regular agency positions during public health emergencies may perceive that they have little ability to exercise *power* over their assigned position, or the hours they will be required to work. The importance of emphasizing this implication became particularly evident as a few participants shared that avoiding direct patient care and disliking shift work were some of the major reasons they entered public health.

Also, nursing education programs should have pandemic outbreak scenarios integrated in their curriculum. For example, lessons can be incorporated on how to perform mass vaccinations and operate immunization clinics, and simulations can be conducted. This recommendation to provide students with a hands-on learning opportunity to practice the skills necessary for pandemic influenzas, and other public health emergency responses is supported by a number of other researchers (Jakeway et al., 2008; Shih, Liao, Chan, Duh, & Gau, 2002; Veenema, 2006).

Nurses who are already practicing in public health need to participate in continuing education programs to ensure that they are prepared in the skills that will be required during a pandemic response (Jakeway et al., 2008). This may mean PHNs participate in any ongoing local and regional training exercises (Burkle, 2010; Jakeway et al., 2008). Also, continued expansions of graduate programs should focus on public health emergency preparedness. Advanced practice

nurses, upon completing these programs, can enter into the workforce, and prepare other front-line nurses for the professional impact of a pandemic outbreak (Veenema, 2006).

The potential impact of a future pandemic influenza needs to be shared with all nurses, including those who are currently working in other nursing specialties. This education is required, as the urgent need for pandemic preparedness across health care sectors seems to have dissipated as a result of H1N1/09's decreased severity (Thomas & Young, 2011). While Pandemic H1N1/09 was less devastating than the other three previously encountered pandemic flus, there is potential for the next pandemic outbreak to be much more severe (Bennett & Carney, 2010; Kipnis, 2013; Wu & Cowling, 2011).

Pandemic mass vaccination clinics may require increased assistance from nurses who are working in other sectors. For example, if PHNs, or their family members contract the pandemic flu, they may be unable to immunize in pandemic responses. Increased numbers of tertiary care nurses and external agency nurses will need to be recruited to become immunizers.

Administrators in both the primary and tertiary care sectors can educate these staff on the unpredictability of pandemic outbreaks, and how this could potentially impact their workplace and roles (Jakeway et al., 2008). Education should be provided to all nurses to ensure that they are prepared to assist in mass vaccination efforts. This can be accomplished by providing annual education on pandemic response procedures and vaccinations to regular staff. This implication was particularly evident when participants found that while external agency nurses were hired to staff the clinics, many were not sufficiently prepared to immunize.

Implications for Research

This study was conducted with one Canadian public health agency. In order for findings to be transferable and to provide a sound basis to inform overall future pandemic planning, more

research needs to be conducted using various methods to inform practice. This research is needed with other PHNs who worked front-line during the H1N1/09 response. Nurses should be recruited from a variety of urban and rural public health agencies in order to learn about these individuals' experiences implementing mass vaccinations in different areas. As was evident when comparing this research with other Canadian studies, the locations of public health agencies can impact the input PHNs had into the planning process, PHN preparedness, and the availability of other staff and necessary resources (Charania & Tsuji, 2011; Long 2013). Further investigation of PHNs' experiences working during the Pandemic H1N1/09 response will allow for a better understanding of a wider range of nurses' experiences that will contribute to the development of knowledge to improve the effectiveness of future responses (Hodge, 2014).

The current study and other research conducted about pandemic emergencies supports the finding that nurses desire to be adequately informed and prepared for their emergency response roles (Charania & Tsuji, 2011; Long, 2013). More research needs to be conducted with front-line nurses specifically on how best to disseminate key information during pandemic outbreaks to ensure nurses are adequately informed about future response roles.

An interesting finding that could be explored further relates to the experiences of the PHNs who were deployed, versus those of the PHNs who volunteered to work in the H1N1/09 mass clinics. Some of the deployed participants in this study expressed guilt about leaving behind their colleagues to handle the public health units' 'core essential services'. Examining the experiences of the volunteer PHNs could highlight strategies that can help the transition of 'deployed' PHNs into these roles.

Beyond conducting studies on front-line nurses themselves, it is pivotal that the public health agencies' managers, and those others that were responsible for pandemic planning are also

targeted for investigation. As was found in this study, PHNs felt uninformed, unprepared, and under-utilized in the IMS structure. Qualitative research can investigate managers' and other planners' perceptions on the planning process and the implementation of the mass clinics. The continued use of the Foucauldian Knowledge-Power-Resistance conceptual framework as a lens, can allow researchers to examine why individuals in positions with organization authority exercised *power* by making planning decisions without consulting their front-line immunization staff. Further, researchers can explore how these planners determined what *knowledge* from the discipline's discourse was best to provide the basis for the planning of the mass vaccination clinics.

Overall, beyond pandemic response planning, the Foucauldian Knowledge-Power-Resistance framework can be applied to research of other nursing phenomena. Knowledge can be developed, and theories can be proposed as to how the concepts of knowledge, power, and resistance impact nurses' experiences in other front-line work situations. Studies can use this framework as a lens to examine nurses' experiences working in situations where they are deployed into emergency responses. For example, the framework can guide the study design and data analysis of an experience where nurses are deployed to work in natural disasters such as hurricanes, or manmade attacks, like terrorist bombings.

Thesis Conclusion

H1N1/09 was the first pandemic influenza encountered in over 40 years. It was also the first pandemic flu ever responded to with mass vaccinations. PHNs, as the largest group of public health professionals, were pivotal in the implementation of H1N1/09 mass vaccinations clinics. With the ongoing threat of pandemic influenza development and other infectious disease outbreaks, there is much that can be learnt by examining the experiences of front-line nurses who

were deployed into the H1N1/09 clinics. Future pandemic mass vaccination planning can be informed by these front-line nurses' experiences and thus clinics can be designed to better meet PHNs' professional needs. Specifically, strategies can be developed that support nurses in their roles, thus improving future mass vaccination clinic effectiveness. This can contribute to increased population immunity, with reduced morbidity and mortality rates, in prospective pandemics.

For this reason, a qualitative interpretive descriptive approach was used to examine the experiences of PHNs' deployed in the H1N1/09 mass vaccination clinics in a large Canadian urban population centre. This methodology was chosen as it allows for patterns of experience to be interpreted within an applied discipline and is thus useful for generating knowledge that can be applied to improve front-line nursing scenarios (Thorne, 2008). A Foucauldian Knowledge-Power-Resistance framework provided a theoretical lens for the research. This framework helped provide PHNs with a voice to discuss their H1N1/09 experiences, and to raise awareness about the issues these nurses encountered throughout the response. By using this methodology and conceptual framework, PHNs were able to openly discuss their experiences working as immunizers and supervisors.

Upon analysis of the interviews, a first level thematic summary was created to describe participants' H1N1/09 experiences, consisting of three overall themes. These experiences included anticipating a pandemic mass vaccination response, surviving the challenges of the chaotic clinics, and developing strategies to persevere in the mass vaccination response over time. The majority of participants received very little notice and preparation for their pandemic roles. This made entering into the clinics particularly challenging, as participants were required to deal with large crowds and other clinical concerns. However, over time, with an increased

familiarity of their clinic responsibilities and the development of professional relationships, participants developed strategies to address challenges.

Beyond participant interviews, pandemic planning documents were another data source that were also analyzed. A second level thematic description, with two themes, was created to identify the disparities between the participant interviews and pandemic documents. The first theme '*The Necessity for Knowledge*' reflected participants' experiences of receiving limited time to prepare for their pandemic roles before entering the H1N1/09 clinics. However, it was not evident through the document review why participants received this limited notice. Indeed, the plans discussed the importance of involving front-line staff in pandemic planning and of informing employees of their roles prior to the response. Interestingly, participants emphasized the lack of specific role training to be of concern, and indeed this issue was only briefly described in one of the pandemic documents.

In the thematic description's second theme '*Essential Supports to Protect the Population*' participants identified that they had the resources they needed to perform in their roles (i.e. supplies and staffing). However, many perceived a lack of support from the agency's management, in particular when they tried to exercise power in their roles, for example when maintaining established vaccination priority populations. This is interesting as the pandemic documents emphasized the need for priority populations. However, the documents did not address how managers could appropriately support front-line staff in clinic operations.

These findings reveal how PHNs' H1N1/09 experiences were shaped by the discipline's knowledge that was used to implement the mass vaccination clinics, and also by the power individuals exercised within the agency's IMS. Specifically, the findings suggest that managers and pandemic planners expected front-line PHNs to 'know' how to function in the mass clinics,

because they were qualified nurses. However, it was revealed that this was not the case for some participants. Many felt that they did not have the clinical, or supervisory experience, for their mass vaccination roles. Nor, were they aware of the certain discourses that guided the pandemic response. This not only impacted the participants' experiences, but may have also impacted the organization's goal of providing herd immunity.

Recognizing the study limitations, the findings have several implications for public health nursing in administration, practice, education, and research. Perhaps most important is the practical recommendation to involve PHNs in future mass vaccination clinic planning. By having these nurses involved, public health's discourse regarding pandemic mass vaccination clinics can be based on front-line nurses' expertise. Nurses' ability to exercise power over their own roles in future mass vaccination clinics could increase, and overall future pandemic responses could more effectively meet the population's immunity needs.

Administrators need to ensure that such procedures are in place for future responses. Educators can disseminate these findings to new and senior nurses alike to help them prepare for future pandemic mass vaccination clinics. As this was one of the first studies into PHNs' H1N1/09 experiences, further research is necessary into other nurses' pandemic experiences. This is important because many public health scholars continue to anticipate that it is not a matter of 'if' there will be another pandemic influenza, but when.

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Appendix A

Pandemic Influenza: An Evolutionary Concept Analysis and Publisher Permission to Re-print

CONCEPT ANALYSIS

Pandemic influenza: an evolutionary concept analysis

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Abstract

Aim. The aim of this paper was to provide a concept analysis of ‘pandemic influenza’.
Background. Pandemic influenza can have a devastating impact as individuals have little to no immunity towards the newly encountered virus. It is a persistent societal threat due to the advancement of multiple technological processes. Nurses work in multiple roles in pandemics. As such, a thorough understanding of the concept and its implications from a nursing perspective is required.

Design. Rodgers’ Evolutionary Method was used to conduct the concept analysis of the term ‘pandemic influenza’.

Data sources. Forty-nine papers were examined from the disciplines of public health, medicine, law, bioethics and healthcare policy. Papers were found from the PubMed, CINAHL and Google Scholar databases all dates up to December 2013. Limits were set to include peer-reviewed, English language articles.

Methods. Identified papers were critically analyzed to explore the concept’s antecedents, attributes and consequences. Surrogate and related terms, and an exemplar, were identified.

Results. Attributes of pandemic include original viral structure, increased human susceptibility, younger vulnerable populations and unpredictable time frames. Antecedents include processes that enable the increased geographical transmission of a newly created influenza. Consequences include higher morbidity and mortality rates and the need for an efficient pandemic response.

Conclusions. This analysis identified the attributes of pandemic influenza through a synthesis of the current pandemic literature. However, no articles were identified as specifically nursing in nature. Therefore, more research is required to examine the impact of a pandemic declaration on the nursing profession.

Keywords: concept analysis, nursing, pandemic influenza, public health emergency, Rodgers’ evolutionary method

Introduction

According to the Public Health Agency of Canada [PHAC] (2008), a pandemic is a new infectious viral strain that has

not yet been encountered by the human population. It spreads quickly and can have devastating consequences as humans have no natural immunity toward the virus (World Health Organization [WHO] 2010). While there have only ever been four influenzas to be declared a ‘pandemic’,

Why is this research needed?

- Due to evolving technological processes that allow for the spread of infectious disease, pandemic influenza is a significant threat that can have a devastating societal impact.
- Nurses are the largest body of front-line health care professional responsible for implementing pandemic responses in both primary and tertiary care settings.
- While a vast amount of literature exists regarding the epidemiological and medical nature of pandemic influenza, the concept is poorly analyzed from a nursing perspective.

What are the key findings?

- Pandemic influenza differs from other infectious outbreaks by four defining attributes. These include original viral structure, increased human susceptibility, younger vulnerable populations and unpredictable time frames.
- Processes that contribute to a new influenza and the mechanisms that allow for increased global viral transmission are the antecedents of pandemic influenza.
- Consequences of pandemic influenza include high morbidity and mortality rates, as well as the need for an effective multi-sectorial response.

How should the findings be used to influence policy/practice/research/education?

- It is essential that nurses are involved in pandemic planning as they are the professionals most often delivering response services.
- As an adequate number of trained nursing staff is essential to conduct an effective pandemic response, research is necessary into the experiences of nurses' working in pandemic scenarios.
- By examining the impact of pandemic influenza on the nursing profession, further conceptual understanding and knowledge development can occur.

future pandemic flu development is a persistent threat. Particularly, this is due to statistically significant advancements in societal technological processes that allow for community-level outbreaks to spread across multiple geographical borders (Bloom *et al.* 2007, Leach *et al.* 2010).

Nurses, the single largest body of healthcare professionals, are directly impacted by the declaration of pandemic influenza, as they are required to implement front-line responses planned by their workplaces (Braunack-Mayer *et al.* 2010). Specifically, nurses are essential for a variety of roles from protecting populations by administering mass immunizations to providing care for infected individuals. However, pandemic plans vary across agencies, organizations, cities or countries. In fact, while general strategies

appear consistent among pandemic planning documents, outbreak responses are affected by the context where they are implemented (Hall *et al.* 2012). Thus, nurses who work in all different types of settings will provide distinctive care dependent on their own specific organizational goals. As such, a thorough understanding about pandemic influenza, from a nursing perspective, has never been so important.

It cannot be denied that definitions for the terms of 'pandemic' and 'influenza' exist. However, to date there has yet to be a guided analysis on the overall construct of 'pandemic influenza'. Indeed, most existing literature about the nature of pandemic flu appears to be medical or epidemiological in nature and as such, there is no existing investigation on nurses' roles working throughout pandemic influenza. It is the purpose of this paper to explore the concept 'pandemic influenza', using Rodger's Evolutionary Method. An analysis of a pandemic flu's attributes, antecedents and consequences will be presented, followed by a discussion of how nurses are impacted by its declaration. This project was conducted with the aim of guiding research that will develop knowledge for the planning of nursing specific interventions in future pandemic responses.

Background

It is the lack of immunity to new viral structures that increases human-to-human transmission among otherwise relatively healthy, younger populations that allows for multiple international communities to become infected with a pandemic flu at unpredictable times (Tam *et al.* 2005, Hargan 2008, Doshi 2009). As a result, pandemic influenza can result in millions of deaths globally (Wu & Cowling 2011), having a more substantial societal impact than the seasonal flu (Nordqvist 2009, Potter & Jennings 2011).

During the most recent pandemic, 2009s pandemic influenza H1N1, mass vaccinations were available to provide populations with herd immunity against the offending virus. Thus, while communities were affected, H1N1 was significantly less catastrophic than the other previously encountered pandemic flus (Suk & Semenza 2011). However, as a result of H1N1's decreased severity, the urgent need for pandemic preparedness seems to have dissipated (Thomas & Young 2011). This is unfortunate, as it is difficult to predict the severity of any future pandemic. Indeed, prospective outbreaks could be very serious and pose a substantial threat to individuals worldwide (Bennett & Carney 2010, Wu & Cowling 2011).

Therefore, governments, public health authorities and healthcare institutions cannot assume that the next pandemic will be similar in virulence to H1N1. Instead, they

must prepare and update pandemic emergency plans for worst-case scenarios (Wu & Cowling 2011). In particular, goals for pandemic planning should aim to protect the population's health, while attempting to reduce potential negative societal impacts (Derpmann 2011, Hall *et al.* 2012).

Due to the global consequences a pandemic influenza can bring, a thorough understanding of the concept 'pandemic' is required. A concept analysis, a systematic process that distinguishes between the inherent and irrelevant attributes of a concept, will allow for just that. While multiple approaches exist to conduct such an examination, this inquiry was conducted using Rodgers' evolutionary method of concept analysis. Rodgers' design was chosen because it offers steps to perform the analysis, while also being a philosophical, inductive method of inquiry (Toftagen & Fagerstorm 2010). Particularly, it is based in an interpretive epistemology that delineates that the significance of a concept can only be understood in a certain context (Weaver & Mitcham 2008). As such, concepts' meanings are dynamic and evolving over time and cannot be clearly defined with identifiable boundaries (Rodgers 2000). Therefore, the results of the conducted concept analysis will not provide a precise definition of 'pandemic', nor will it fully capture how it impacts the nursing profession (Toftagen & Fagerstorm 2010). Instead, it will highlight the potential directions to guide future research to shape nursing practice, in a variety of settings, for future pandemics.

Data sources

Literature was searched from four databases including PubMed, Google Scholar, CINAHL (Cumulative Index to Nursing and Allied Health Literature) and The Cochrane Library. These databases were chosen as pandemics are primarily considered a healthcare issue and as such, these resources would most likely yield pertinent responses. Database limits were set to include only English papers, keywords evident in title/abstract and all peer-reviewed journal articles. Major keywords included 'pandemics', 'public health', 'epidemics' and 'disease outbreaks'. As the first influenza pandemic occurred in 1918, no beginning time frame limit was set for the conducted search. This was to ensure that all possible articles discussing pandemic flu published prior to and including 2013, would be obtained to thoroughly capture the evolving nature of the concept.

PubMed searches yielded an initial response of 2466 articles, a massive number. Therefore, further subheadings were used to include pandemic classification, history, ethics, legislation and prevention/control. Following this, a much more manageable 92 articles were obtained. All of these

articles' abstracts were then read to understand what the paper generally addressed. It was found that of the 92, only 39 were relevant for the purposes of this analysis. CINAHL was searched in a similar manner, to yield 87 results, of which 12 were not repeats of the original PubMed searches and relevant to the purpose of the concept analysis. Subsequent searches of Google Scholar only yielded seven new articles, all of which were applicable, while The Cochrane Library did not provide any systematic reviews regarding pandemic influenza. Lastly, an ancestral search was performed of these 58 articles by seeking out references noted in the papers' citations. Eight additional articles were found as a result of this exploration.

Once all pertinent articles were obtained, the author read each of the 66 papers carefully to identify important key elements of the concept. As Rodgers (2000) recommends that 20% of overall articles found are chosen for review, the author exceeded this by examining all of the applicable papers. On this appraisal, the final sample comprised of 49 papers from the disciplines of public health (31), medicine (7), law (5), bioethics (3) and healthcare policy (3). Despite multiple search attempts, there were no articles found discussing the concept specific to the nursing discipline. The author assumes that this is because nurses' who are addressing pandemics and subsequent preparedness work as public health professionals. Indeed, this further shows the need for the conducted concept analysis from a clearly identified nursing perspective.

Any element of the papers that made reference to a pandemic's attributes, antecedents, consequences, surrogate and related terms was then transcribed onto designated data collection sheets grouping each of these specific elements together. This helped with the ease of the concept analysis as these categorizations allowed the author to see the key similarities as discussed in the articles about the nature of pandemics.

Results

Attributes

Through this analysis process, four defining attributes have been prevalent in describing and explaining the concept of pandemic influenza. It is these characteristics that separate a pandemic virus from a seasonal endemic, or epidemic flu. These attributes include original viral structure, increased human susceptibility, younger vulnerable populations and unpredictable time frames.

Original viral structure

When compared with yearly seasonal flu, pandemic influenza has a substantially larger impact on individuals, countries and

the overall global population. This is because pandemic influenza is composed of a novel viral sub-type that international communities have never encountered (Viboud *et al.* 2006, PHAC 2008, Doshi 2009). Its viral structure is an original genetic re-assortment of a mammalian influenza A virus with that of another mammalian, or avian viral strain (Louie *et al.* 2009, Miller *et al.* 2009). For this new complex to be created, two concurrent influenzas must be living in an animal host and undergo *antigenic shift* (Huston 2004). This re-assortment of the flu's Hemagglutinin and Neuraminidase surface glycoproteins results in the creation of an original virus (Huston 2004, Miller *et al.* 2009).

Unlike yearly seasonal influenza, pandemic flu does not develop as a mutation of an already established virus (Potter & Jennings 2011). As such, individuals' immunity resulting from exposure to prior influenza outbreaks is insufficient to combat a pandemic. Specifically, this is because individuals are lacking the H1 antibody against a new circulating virus, the most important factor in defining immunity against influenza (Potter & Jennings 2011).

Increased human susceptibility

It is the lack of personal immunity that contributes to the increased human-to-human transmission that is characteristic of the severity of illness associated with pandemic influenza (Viboud *et al.* 2006, Doshi 2009). Pandemic flu, has a higher reproductive number than seasonal influenza epidemics (Miller *et al.* 2009). The 'reproductive number' references the average estimate of secondary cases of confirmed influenza that develop as a result of an exposure to a single viral infection (Miller *et al.* 2009). Although during seasonal flu outbreaks, some individuals may have a varying degree of immunity towards the affecting viruses (Viboud *et al.* 2006), this is practically non-existent during a pandemic. Subsequently, individuals are not only more highly susceptible to contracting the virus but also of exposing and thus infecting more people in many different places (Tam *et al.* 2005, Viboud *et al.* 2006, Gabriel & Webb 2013). It is this wide geographical reach, whereby individuals in different countries are infected with the same influenza simultaneously, that is distinctive to a pandemic virus (Tam *et al.* 2005, Hargan 2008, Nordqvist 2009, Iskander *et al.* 2013).

Younger vulnerable populations

Perhaps one of the most intriguing characteristics of pandemic influenza is the untraditional population that is the most vulnerable of contracting the flu. Unlike seasonal epidemics where the targeted populations often appear to be the very young and the very old, this has not been seen in

the four prior pandemic influenzas (Bennett & Carney 2010). Instead, there has been a marked increase in the morbidity, mortality and potential years of life lost in younger aged groups (Miller *et al.* 2009, Suk & Semenza 2011, Velasco *et al.* 2012, Iskander *et al.* 2013).

Interestingly, older adults appear to be relatively unaffected by pandemic flu when compared with other age groups (Miller *et al.* 2009). This is potentially because some older individuals may have immunity towards newly emerging pandemic flu viruses. While the structural pandemic sub-type is hypothesized to be original in nature, some contemplate that these new viruses may be similar to flu strains encountered by communities many years ago (Nordqvist 2009). As such, older individuals may have had the opportunity to be exposed to past comparable epidemics and/or pandemics and thus may have a partially developed personal immunity towards the new flu variety.

Unpredictable time frames

In the literature, pandemic influenza is heavily characterized as being fundamentally unpredictable (Gabriel & Webb 2013, Kiltz *et al.* 2013). Unlike seasonal influenza, pandemic flu is not a yearly occurrence. Rather, it only develops and spreads under certain unique conditions. This characteristic is not associated with, nor is it dependent on time. In fact, the four influenza pandemics, the Spanish flu of 1918, the Asian flu of 1957, the Hong Kong flu of 1968 and Pandemic H1N1 of 2009, emerged randomly without a specific time period pattern between their developments (Pratt 2009). As such, it is very difficult to determine when the next pandemic flu will arise (Drake *et al.* 2012).

Perhaps even more challenging is to estimate the timing of the virulent 'waves', the 2-3 month periods of the year when the pandemic virus is most infectious (Hargan 2008, Kipnis 2013). These waves, a unique characteristic of each individual pandemic virus, cause outbreaks to last longer than other influenza periods, with more years of increased mortality (Morrow 2007, Miller *et al.* 2009). Despite being aware of the nature of these infectious pandemic episodes, it is almost impossible to predict the viral incidence rate, morbidity burden and overall mortality associated with any pandemic (Drake *et al.* 2012, Gabriel & Webb 2013, Kiltz *et al.* 2013).

Surrogate terms

Surrogate terms are terms used to express the concept in other words (Rodgers 2000). The only term that was used interchangeably with pandemic influenza is public health emergency.

Related concepts

According to Rodgers (2000) related concepts are those terms that are connected to the specified concept, but have different defining attributes. Concepts that were related to pandemic influenza included epidemic influenza, infectious disease and disease outbreak.

Antecedents

For influenza to reach 'pandemic' status, the above-discussed characteristics must be met. However, antecedents, those phenomena that precede a concept (Rodgers 2000) must occur prior to the development of the attributes. Pandemic influenza's antecedents include the processes that contribute to the creation of a new influenza and that influence the increased geographical span of influenza transmission.

The facilitation of influenza development and pandemic global infectiousness occur as a result of multiple biological, social, ecological and technological advances of the past century (Bloom *et al.* 2007). In particular, expanding global agricultural practices are often discussed as providing opportunities for antigenic shift (Bloom *et al.* 2007, Miller *et al.* 2009, Suk & Semenza 2011, Gabriel & Webb 2013). This is as these processes increase the potential for the mixing of human, swine and avian flu mutations in different animal hosts (Suk & Semenza 2011).

However, merely the development of a new flu virus is not enough to proclaim a 'pandemic'. Even when a new virus is capable of spreading from animals to humans, the influenza is deemed only to have 'pandemic potential' (Velasco *et al.* 2012). Prior to international transmission of a pandemic virus, local community-level influenza spreading must first begin. Human-to-human infection occurs as a result of individuals' social interactions and the virulence of the influenza (Miller *et al.* 2009). Specifically, a person must be in contact with an already infected human and have an inadequate immune resistance against the offending virus.

Once this occurs and multiple persons have become afflicted, there is statistically significant potential for human-to-human transmission of novel influenza to individuals living in other regions. The literature discusses this as a particularly increasing concern with pandemic virus emergence today as a result of the numerous international trade and travel routes currently existing (Bennett & Carney 2010, Suk & Semenza 2011, Gabriel & Webb 2013). It is only then that global pandemic confirmation can occur. According to the WHO, a pandemic is declared when

sustained human-to-human transmission of a new flu virus causes community-level outbreaks in at least three countries in two WHO (2014) regions. As such, a flu virus is not determined to be pandemic based on its illness severity, but rather its degree of infectious viral spread (Kendal & MacDonald 2010, Iskander *et al.* 2013).

Consequences

According to Rodgers (2000) consequences are the results of the concept in practice. The current literature discusses consequences of the past four influenza pandemics and also the predicted outcomes of a potential new pandemic. These consequences include high rates of morbidity and mortality and subsequently, the need for an efficient multi-sectorial pandemic response.

As a result of increased human susceptibility, there are higher rates of morbidity and mortality associated with pandemic influenza than seasonal viruses (Hargan 2008, Potter & Jennings 2011). However, these rates are not static for each individual flu and as such, it is difficult to determine the exact impact of future pandemics. For example, approximately 50 million people died as a result of the Spanish Flu (Osterhaus & Oxford 2006), while comparatively two million and 500,000 people died of the Asian Flu and the Hong Kong Flu, respectively (Ghendon 1994). At present, it is estimated that as many as 579,000 fatalities resulted from the most recent 2009 Pandemic H1N1 (Dawood *et al.* 2012).

While H1N1 had a relatively smaller number of deaths when compared with the three prior pandemics, the potential of another deadly outbreak is a real opportunity often discussed in the literature (Bennett & Carney 2010, Syed *et al.* 2010, Thomas & Young 2011, Kipnis 2013). With these lurking viruses, it is anticipated individuals will contract the illness at different times with varying severity due to the pandemic's unpredictable viral waves occurring over many months (Kipnis 2013). As such, healthcare facilities will receive a surge of infectious patients requiring care at irregular times (Kamoie *et al.* 2008). These patients are predicted to be quite ill, requiring more intensive care with many using respiratory support (Kamoie *et al.* 2008).

Both public health and tertiary medical personnel can use the knowledge gained from the first pandemic waves to develop interventions to promote infection control in successive and possibly devastating waves (Miller *et al.* 2009). In particular, the inter-wave duration would allow time for the development and production of biological strategies such as mass vaccinations (Miller *et al.* 2009). These immunizations are pivotal to an efficient pandemic response as

they are the primary tool to help minimize influenza transmission, morbidity and overall mortality rates (Tam *et al.* 2005, Drake *et al.* 2012). However, due to the novel nature of pandemic influenza, a vaccine first needs to be developed in response to the offending virus. It is anticipated that vaccine production will take approximately 4–6 months on the initial pandemic encounter and virus isolation (Osterhaus & Oxford 2006, Bennett & Carney 2010, Wu & Cowling 2011).

Multiple pandemic preparedness plans highlight the need for stockpiled antiviral medications that should be administered to healthcare professionals and other priority populations who display symptoms of pandemic influenza (Tam *et al.* 2005, Osterhaus & Oxford 2006, Nicoll 2010, Iskander *et al.* 2013). It is essential that these antivirals be administered in the first 48 hours of presenting flu symptoms (Tam *et al.* 2005, Hargan 2008). Furthermore, antivirals can also be used as targeted prophylaxis and are predicted to reduce influenza transmission while awaiting vaccine production (Wu & Cowling 2011).

In addition, non-pharmacological measures are discussed as measures that can also be implemented in an effort to decrease influenza transmission while awaiting the debut of an appropriate vaccine. These include cough etiquette strategies, social distancing and isolation procedures; all of which can be taught through public health education sessions (Bennett & Carney 2010, Kipnis 2013). It has been discussed that the implementation of both pharmacological and non-pharmacological is more effective and cost-efficient in reducing human-to-human transmission, particularly when limited resources are available (Velasco *et al.* 2012).

Exemplar

According to Rodgers' (2000), the presentation of an example of the analyzed concept from literature will help to promote the understanding of the identified concept in an appropriate context. Since at present, there have been four declared pandemic influenzas, a case does not need to be constructed by the author. Instead, pandemic H1N1 fits the attributes, antecedents and consequences as presented in this paper.

Discussion

Once an epidemic flu is declared to be pandemic, decisions regarding both primary and tertiary care responses need to be made efficiently and effectively. It is likely that arrangements will be planned while information is still being discovered regarding the new illness itself (Rosella *et al.*

2013). While this is not ideal, it is essential that arrangements are rational and justifiable in an attempt to avoid increased distress for both the public and the professionals that are responsible for any component of the pandemic response (De Ville 2007).

Nurses are notably the key healthcare providers protecting populations and providing treatment to clients in front-line pandemic scenarios (Osterhaus & Oxford 2006). It is essential that they are included in the planning of pandemic responses, particularly those strategies that they are expected to implement in different settings (Kort *et al.* 2005). This is to ensure nurses have adequate knowledge about the pandemic itself and any changes that could potentially affect their professional practice. Furthermore, using nurses' expertise for the planning of front-line activities increases the likelihood of informed strategies and an overall more efficient response (Klaiman & Ibrahim 2010).

While the importance of nurses' input into pandemic preparation cannot be negated, it is not enough to have their involvement in developing a pandemic response. Healthcare organizations, in both primary and tertiary care settings, need to ensure that there is sufficient staff to implement pandemic responses once plans are completed (Osterholm 2001, Kipnis 2013). Furthermore, such institutions need to confirm that their workforce is adequately skilled and be careful not to assume that employees are already capable to work in a pandemic (Baker *et al.* 2005, Hargan 2008, Hall *et al.* 2012). For example, a public health nurse who is scheduled to participate in mass immunizations may have not vaccinated in years due to the nature of her current position. As such, the nurse may feel unprepared to immunize. Access to education and skill refreshing opportunities for all individuals, including newer and more senior staff, will allow employees to become more comfortable and competent to practice in response roles (Klaiman & Ibrahim 2010).

Having healthcare practitioners exercise planned strategies is the one method to ensure their proficiency prior to the response (Eastwood *et al.* 2006). A 'training run' of a pandemic response can help identify those individuals who require further teaching regarding particular components of the pandemic response, while also providing a direct opportunity for nurses to practice their skills. Furthermore, it can also highlight areas of concern that may not have been acknowledged during the original planning stages. The issue with this, however, is that nurses' normal work does not halt due to presence of a pandemic. As such, nurses should expect to be challenged as a result of the increased workload their pandemic roles will demand and the subsequent managing of multiple duties (Eastwood *et al.* 2006, Kruk 2008).

Last, it is not only civilians who will develop the flu. Amplified professional and personal stressors, along with increased viral exposure as a result of treating sick patients can contribute to healthcare professionals, including nurses, becoming sick (Eastwood *et al.* 2006, Anderson & Hodge 2009, Braunack-Mayer *et al.* 2010). Consequently, as a result of healthcare providers themselves contracting influenza, there may be an even greater lack of human resources available to care for the anticipated patient influxes (Syed *et al.* 2010). As such, once a pandemic is declared, attempts to mitigate a human resource shortage are essential by protecting the health of all medical and nursing staff (Braunack-Mayer *et al.* 2010). Ideally, this protection would be provided in the form of healthcare professionals' mass immunizations (Osterhaus & Oxford 2006). However, during the window of vaccine development, other plans must be in place to protect healthcare providers from the afflicting virus.

Theoretical implications

Throughout this concept analysis' data collection and analysis stages, there was a clear lack of theoretical discussion evident in the articles reviewed. However, the results of this study have direct conceptual disciplinary implications. In particular, this is evident when examining the consequence of the need for a timely effective front-line response. As discussed, nurses are key to implementing pandemic responses in a variety of institutions and thus, should actively be involved in pandemic preparation (Osterhaus & Oxford 2006, Braunack-Mayer *et al.* 2010). However, as very little was found to be presented regarding nurses' pandemic planning participation, it is essential to examine how power in workplaces affects emergency responses that are delivered.

According to Foucault's conceptualization of power, power is considered positive when it produces specific desired effects (Holmes & Gastaldo 2002). Individuals in traditional positions of power, for example management and employers, decide an institution's specific program outcomes. In the case of a health emergency, such as a pandemic, this would most likely be the decision to implement a timely outbreak response to protect the population's health. Employers and managers have access to the information that will guide the rationale for important response decisions as a result of the corresponding traditional authority inherent in their positions. In Foucault's concept of power, it is the awareness of this specific information that guides the decision-making process that increases knowledge and subsequently perceived power. This is regardless of the information being 'right' or 'not'. As such,

managers are more knowledgeable regarding decision-making process and thus have more power in their response roles. Particularly, they would be seemingly more 'powerful' than the front-line workers who may not be aware of the knowledge that guided the decision-making process.

Although all nurses may not be involved in the planning processes, it is essential they are made privy to the rationale that will have an impact on their pandemic professional roles. This will allow front-line staff to become more informed and will increase front-line workers knowledge, overall feelings of power and perceived confidence to run a successful response program. As such, research of future pandemics is essential to explore nurses' involvement in pandemic preparations and further, what these individuals experienced during pandemics. That is, do these individuals feel that they are informed and prepared and thus powerful as a result of their own contributions and personal preparation? Exploring this topic will ameliorate responses, specifically by developing knowledge to address issues that will have a specific disciplinary impact in future outbreaks.

Limitations

Limitations of this concept analysis are noted in the processes of data collection and data analysis. During database searching, non-English articles were omitted. This may have limited the scope of the analysis by neglecting elements about pandemics described by other non-English speaking scholars. Furthermore, conceptual analysis was limited as the author independently reviewed all of the articles to establish the critical components of the concept. If another reviewer participated in this concept analysis, perhaps additional and/or different elements of 'pandemic' would have been identified. In addition, alternative discussion could have been presented about the impact of pandemic on the nursing profession. Lastly, while the author is a nurse and this paper aimed to uncover specific pandemic professional implications, no articles were identified to be clearly 'nursing' in perspective. Instead, the author had to read the articles to find mention of nurses as front-line professionals and had to make the inference that healthcare providers discussed in some of the papers included RN.

Conclusions

This paper presented a conceptual analysis of the term 'pandemic influenza' and discussed its subsequent impact on nurses. Its attributes, antecedents and consequences were identified, while surrogate and related terms, and an exemplar, were mentioned.

Presently, a vast amount of literature exists about the medical and epidemiological nature of pandemics and their societal impact. However, currently little is available about how pandemics' attributes affect nurses' professional roles and their personal lives. This is unfortunate as nurses are imperative to the delivery of front-line responses, a direct consequence of a pandemic influenza. While management and employers make key decisions about outbreak control, it is essential to have nurses' input into the plans that they themselves will be implementing. Regardless of the basis of planning decisions, the mere action of providing front-line workers with access to this knowledge will increase their self-perceived power and enhanced ability to work in response efforts.

This analysis has highlighted the need for future research aimed at examining the impact a declared pandemic has on the nursing discipline. Specifically, investigations exploring nurses' professional and personal experiences working in a variety of pandemic responses are encouraged. This will allow for the knowledge development necessary to inform future pandemic planning that specifically meets the needs of nurses to implement efficient pandemic responses that contribute to improved population outcomes.

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No conflict of interest has been declared by the author.

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All authors have agreed on the final version and meet at least one of the following criteria [recommended by the IC- MJE (http://www.icmje.org/ethical_1author.html)]:

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Appendix B

Researcher's Institutional Ethics Approval Certificate

File Number: h08-10-10

Date (mm/dd/yyyy): 09/27/2013

Université d'Ottawa

Bureau d'éthique et d'intégrité de la recherche

University of Ottawa

Office of Research Ethics and Integrity

Ethics Approval Notice

Health Sciences and Science REB

Principal Investigator / Supervisor / Co-investigator(s) / Student(s)

<u>First Name</u>	<u>Last Name</u>	<u>Affiliation</u>	<u>Role</u>
Christine	McPherson	Health Sciences / Nursing	Supervisor
Alana Renee	Devereaux	Health Sciences / Nursing	Student Researcher

File Number: H08-10-10

Type of Project: PhD Thesis

Title: Public Health Nurses' Experiences during the 2009 H1N1 Deployment

Approval Date (mm/dd/yyyy)	Expiry Date (mm/dd/yyyy)	Approval Type
09/27/2013	09/26/2014	Ia

(Ia: Approval, Ib: Approval for initial stage only)

Special Conditions / Comments:

As of September 27th, 2013: Ottawa Public Health REB approval received and full approval granted. All recruitment and data collection may begin.

Appendix C

Participant Recruitment Email (English)

The below message is sent on behalf of University of Ottawa, Doctorate in Nursing (PhD) candidate, Alana Devereaux. If you are interested in knowing more about the research study described below, please contact Alana Devereaux directly. The sender of this message has no affiliation with the research study and will not be made aware of employees that do or do not agree to participate.

Hello,

My name is **Alana Devereaux** and I am a PhD in Nursing candidate working under the supervision of **Dr. Christine McPherson, PhD, Associate Professor** in the **School of Nursing, Faculty of Health Sciences** at the University of Ottawa. The reason that I am contacting you is that we are conducting a study to examine public health nurses' experiences providing mass vaccinations during the 2009 H1N1 pandemic. Sharing your experiences will help raise awareness of the specific personal needs of nurses' and inform future pandemic mass response planning.

We are currently seeking volunteers who were "deployed" to the H1N1 vaccination clinics for a minimum of two weeks, and have been employed as a Registered Nurse (RN) at [REDACTED] for at least one year.

Participation in this study involves a face-to-face interview with the researcher (Alana Devereaux). However, a telephone interview can be arranged if requested. The interview is expected to take between 45-60 minutes; however, this may vary depending on the information provided. During this interview, participants will be asked to share their experiences providing mass vaccinations to the public.

Data collected from participants will be used in a doctoral thesis, and may potentially be published. If you are interested and would like to know more, please contact me at the below contact information:

Alana Devereaux, BN, RN, PhD candidate
[REDACTED]

Thank you for taking the time to consider this proposal.

Sincerely,

Alana Devereaux

Appendix D

Participant Recruitment Email (French)

Courriel de recrutement à envoyer aux infirmières et infirmiers autorisés de [REDACTED]
[REDACTED]

Le message qui suit est envoyé au nom d'Alana Devereaux, étudiante au programme de Doctorat en Sciences infirmières, de l'Université d'Ottawa. Pour obtenir plus de renseignements sur le projet de recherche énoncé ci-dessous, veuillez communiquer directement avec Alana Devereaux. L'expéditeur de ce message n'est aucunement lié au projet de recherche et ne sera pas informé des employés qui choisissent ou non d'y participer.

Bonjour,

Je m'appelle **Alana Devereaux** et je suis étudiante au programme de Doctorat en Sciences infirmières, sous la supervision de Madame **Christine McPherson, Ph.D., professeure adjointe à l'École des sciences infirmières de la Faculté des sciences de la santé** de l'Université d'Ottawa. Voici pourquoi je m'adresse à vous : nous réalisons en ce moment une étude dont le but est d'examiner les expériences des infirmières et infirmiers en santé publique qui ont été affectés au programme de vaccination massive contre la pandémie de grippe H1N1. Grâce au partage de vos expériences, nous pourrions mieux comprendre les besoins particuliers des infirmières et infirmiers et contribuer à la planification de l'ensemble des mesures à prendre en cas de nouvelle pandémie.

Nous sommes actuellement à la recherche de volontaires qui ont été « déployés » dans les cliniques de vaccination contre la grippe H1N1 pendant au moins deux semaines et qui sont infirmières ou infirmiers autorisés (IA) à [REDACTED] depuis un an au moins.

La participation à cette étude comporte une rencontre individuelle avec la chercheuse (Alana Devereaux), mais il est aussi possible d'organiser une entrevue téléphonique au besoin. La rencontre ou l'entrevue téléphonique devrait durer entre 45 et 60 minutes, selon l'information fournie. Au cours de cette entrevue, les participantes et participants seront invités à faire part de leurs expériences de vaccination massive auprès du grand public.

Les données recueillies auprès des participants seront utilisées dans le cadre d'une thèse de doctorat et pourraient être publiées. Si ce projet vous intéresse et que vous souhaitez en connaître davantage, n'hésitez pas à communiquer avec moi. Voici mes coordonnées :

Alana Devereaux, B.Sc. (Sc.Inf.), IA, étudiante Ph.D.
[REDACTED]

Merci de consacrer du temps à cette proposition. Sincères salutations,

Alana Devereaux

Appendix E

Informed Consent/Information Letter (English)

Public Health Nurses' Lived Experiences during the 2009 H1N1 Deployment

Principal Investigator: Alana Devereaux, RN, BN, PhD candidate, School of Nursing, Faculty of Health Sciences, University of Ottawa. [REDACTED] Email: [REDACTED]

Thesis Supervisor: Dr. Christine McPherson, RN, PhD, Associate Professor, School of Nursing, Faculty of Health Sciences, University of Ottawa, 451 Smyth Road, Ottawa, Ontario, K1H 8M5. [REDACTED] Email: [REDACTED]

Invitation to Participate: I am invited to participate in the above mentioned research study conducted by Alana Devereaux, and supervisor, Dr. Christine McPherson. This research study is part of the principal investigator's Doctorate in Philosophy in Nursing (PhD) program.

Purpose of the Study: The purpose of the study is to explore nurses' experiences during the H1N1 response. The goal is to discover useful information to improve future pandemic vaccination responses. It will also help ensure that nurses' professional and personal needs are addressed appropriately in future pandemic plans.

Participation: My participation will consist of one 60 minute face-to-face interview with the Principal Investigator, Alana Devereaux. During this interview, I will be asked about my personal experiences of the H1N1 Response. The interview will be scheduled at a time and place of my convenience. I understand that the interview will be audio recorded to allow the researchers to transcribe the interview and to facilitate analysis. I understand that I will be given the opportunity to review my interview transcript, if I so desire.

Risks: My participation in this study will entail that I discuss my personal experiences, thoughts, and feelings regarding the H1N1 response. This may cause me to feel stress or anxiety as I explore my experiences. I have received assurances from the researcher that every effort will be made to minimize these risks. I will not be asked to discuss things that I do not feel comfortable talking about. If I become upset during the interview and I wish to stop, I will not be required to finish the interview or will be given the option to continue at a later date. If I need emotional support following the interview, I am aware that I can contact the researchers, or my agency's Employee Assistance Program (EAP).

Benefits: My participation in this study will allow me an opportunity to discuss and explore my experiences as a deployed in the H1N1 Response. Sharing these experiences will help raise awareness of the specific needs of nurses' and inform future pandemic mass response planning.

Confidentiality and anonymity: I have received assurances from the researchers that the data collected will remain strictly confidential. I understand that the contents will be used only for learning about nurses' experiences during the H1N1 Response. My confidentiality will be protected. My personal experiences will not be shared with anybody and will only be known to the principal researcher, Alana Devereaux, and thesis supervisor, Dr. Christine McPherson.

My **Anonymity** will be protected. My name or other identifying characteristics will not be attached to the transcribed data or any subsequent reports. I will be assigned a pseudonym and any verbatim quotes will be quoted using this pseudonym.

Conservation of data: The data collected on digital audio recorder and in the researcher's notes will be kept in a locked cabinet that only the principal investigator and thesis supervisor will be able to access (this cabinet is located in the thesis supervisor's locked office). Electronic notes will be secured in a

password safe file on the principal investigator's computer. The only other person who is able to review the data on request is the project supervisor, Dr. Christine McPherson. Data will be stored for five years in this manner. At this point, the electronic data will be completely erased and manual notes will be destroyed by paper shredding.

Voluntary Participation: I am under no obligation to participate. If I choose to participate, I can withdraw from the study at any time and/or refuse to answer any questions, without suffering any negative consequences. If I choose to withdraw, all data gathered until the time of withdrawal will immediately be destroyed following the interview and will not be shared with anyone.

Acceptance: I, *(Name of participant)*, agree to participate in the above research study conducted by Principal Investigator, **Alana Devereaux** of the **Faculty of Health Sciences, School of Nursing, University of Ottawa**, whose research is under the supervision of **Dr. Christine McPherson**.

If I have any questions about the study, I may contact the Principal Investigator or her thesis supervisor.

If I have any questions regarding the ethical conduct of this study, I may contact the Office of Research Ethics and Integrity, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room154, Ottawa, ON, K1N 6N5. Tel.: (613) 562-5387 Email: ethics@uottawa.ca

There are two copies of the consent form, one of which is mine to keep.

Participant's signature: *(Signature)*

Date: *(Date)*

Researcher's signature: *(Signature)*

Date: *(Date)*

Appendix F

Informed Consent/Information Letter (French)

Expériences vécues par les infirmières et infirmiers en santé publique dans le cadre des mesures prises pour lutter contre la grippe H1N1 en 2009

Chercheuse principale : Alana Devereaux, IA, B.Sc. (Sc.Inf.), étudiante de programme de Doctorat en Sciences infirmières (Sc. Inf.), École des sciences infirmières, Faculté des sciences de la santé, Université d'Ottawa. Tél.: [REDACTED] adresse courriel: [REDACTED]

Superviseure de thèse: Christine McPherson, Ph.D., IA, professeure adjointe, École des sciences infirmières, Faculté des sciences de la santé, Université d'Ottawa, 451, chemin Smyth, Ottawa (Ontario) K1H 8M5. Tél. : [REDACTED]. Adresse courriel [REDACTED]

Invitation à participer : on m'invite à participer au projet de recherche susmentionné dirigé par Alana Devereaux et la superviseure Christine McPherson, Ph.D. Ce projet est réalisé dans le cadre de doctorat de philosophie, Sciences infirmières (Ph.D.), entreprise par la chercheuse principale.

But du projet : il s'agit d'analyser les expériences vécues par les infirmières et infirmiers dans le cadre des mesures prises pour faire face à la grippe H1N1, et ce, afin de recueillir des données qui pourraient améliorer le programme de vaccination en cas de nouvelle pandémie. Le projet vise aussi à veiller à ce que les plans qui seront élaborés en cas de nouvelle pandémie tiennent compte des besoins professionnels et personnels des infirmières et infirmiers.

Participation : elle consiste en une rencontre individuelle d'une durée de 60 minutes avec la chercheuse principale, Alana Devereaux. Au cours de cette entrevue, je répondrai à des questions sur les expériences que j'ai vécues dans le cadre des mesures prises pour faire face à la grippe H1N1. L'entrevue se déroulera à la date et à l'endroit que j'aurai choisis. Je comprends que l'entrevue sera enregistrée sur bande audio pour permettre aux chercheuses de transcrire l'entrevue et d'en faciliter ainsi l'analyse. Je comprends que j'aurai l'occasion de réviser mon entrevue si je le desire.

Risques : je devrai, dans le cadre de ce projet, partager mes expériences, mes pensées et mes émotions à l'égard des mesures prises pour faire face à la grippe H1N1. En faisant part de mes expériences, je pourrais ressentir du stress ou de l'anxiété ; cependant, la chercheuse m'a assuré(e) qu'elle ferait tout son possible pour réduire ces risques au minimum. On ne me demandera pas de parler de ce qui me rend inconfortable. Si je me sens mal à l'aise au cours de l'entrevue et souhaite y mettre fin, je ne serai pas tenu(e) de terminer l'entrevue ou alors on me permettra de poursuivre l'entrevue ultérieurement. Si j'ai besoin d'aide sur le plan émotif à la fin de la rencontre, je sais que je peux communiquer avec les chercheuses ou avec le programme d'aide aux employés (PAE) de l'organisation dont je fais partie.

Avantages : j'aurai, dans le cadre de ce projet, l'occasion de discuter des expériences que j'ai vécues à titre d'infirmière et d'infirmier de la santé publique affectés au programme de lutte contre la grippe H1N1. Grâce au partage de ces expériences, les besoins particuliers des infirmières et infirmiers seront mieux compris et pris en considération dans la planification de l'ensemble des mesures à prendre en cas de nouvelle pandémie.

Confidentialité et anonymat : Les chercheuses m'ont assuré(e) que les données recueillies demeureront strictement confidentielles. Je comprends que ces données ne serviront qu'à connaître les expériences vécues par les infirmières et les infirmiers dans le cadre des mesures prises pour faire face à la grippe

H1N1. La confidentialité de mes données sera assurée. Les données relatives à mes expériences personnelles ne seront partagées avec personne d'autre que la chercheuse principale, Alana Devereaux, et la superviseure de thèse, Christine McPherson, Ph.D.

Mon anonymat sera protégé. Mon nom ou toute autre caractéristique personnelle ne figurera pas sur les données transcrites ou sur tout rapport ultérieur. On m'attribuera un pseudonyme et mes propos seront cités sous ce pseudonyme.

Conservation des données : les données recueillies par la chercheuse au moyen d'enregistrement sur bande audio et de notes manuelles seront conservées dans une armoire verrouillée à laquelle seules la chercheuse principale et la superviseure de thèse auront accès (l'armoire se trouve dans le bureau fermé à clé de la superviseure de thèse). Quant aux notes électroniques, elles seront conservées dans un fichier protégé par mot de passe dans l'ordinateur de la chercheuse principale. La seule autre personne qui sera autorisée à revoir les données sur demande est la superviseure du projet, Christine McPherson, Ph.D. Les données seront conservées dans ce format pendant cinq ans, après quoi les données électroniques seront entièrement effacées et les notes manuelles seront détruites par déchiqueteuse.

Participation volontaire : rien ne m'oblige à participer à ce projet. Si je choisis de le faire, je peux me retirer en tout temps et/ou refuser de répondre à toute question, et ce, sans subir de conséquences. Si je décide de me retirer du projet, toutes les données recueillies jusqu'au moment du retrait seront immédiatement détruites après l'entrevue et elles ne seront partagées avec aucune autre personne.

Acceptation : Je, (*Nom de la participante ou du participant*), accepte de participer au projet de recherche susmentionné réalisé par la chercheuse principale, **Alana Devereaux** de la **Faculté des sciences de la santé, École des sciences infirmières, Université d'Ottawa**, et supervisé par **Christine McPherson, Ph.D.**

Si j'ai des questions au sujet du projet de recherche, je peux m'adresser à la chercheuse principale ou à sa superviseure.

Si j'ai des questions en matière de déontologie relativement à ce projet, je peux m'adresser le Bureau d'éthique et d'intégrité de la recherche, Université d'Ottawa, Pavillon Tabaret, 550, rue Cumberland, pièce 154, Ottawa (Ontario), K1N 6N5 Tél. : 613-562-5387. Courriel : ethique@uOttawa.ca

Le formulaire de consentement est rempli en deux exemplaires dont l'un m'est remis.

Signature de la participante ou du participant :

Date :

Signature de la chercheuse :

Date :

Appendix G

Participant Demographic Questions

- 1) How many years have you been practicing as a Registered Nurse?
- 2) What is your educational level?
- 3) How long have you worked in public health?
- 4) How long have you worked at [REDACTED]?
- 5) How long were you working at [REDACTED] prior to the 2009 H1N1 response?
- 6) What was your role prior to the H1N1 clinic deployment?
- 7) What was/is your role since the H1N1 clinic deployment?
- 8) How long were you deployed to the mass vaccination clinics?
- 9) How many clinics did you work in?
- 10) What was your role in the H1N1/09 mass vaccination clinics, immunizer or supervisor?

Appendix H

Participant Interview Guide

Interview Guide- Participant # _____

_How did you learn about the pandemic influenza mass vaccination response?

- 1) How were you assigned your H1N1/09 mass vaccination clinic role?**
- 2) Can you take me through your usual workday in the vaccination clinic?** Probe: What were your responsibilities/tasks etc...?
- 3) Can you describe how information was communicated between managers and front-line staff? Between you and your colleagues working at the clinics?**

Probe: Did you feel adequately informed to perform your role? Did you feel consistency was evident amongst clinics and operations?

- 4) What were some nursing specific issues that you have since identified from the response? Do you have any recommendations to address these in future mass pandemic mass vaccination efforts/emergency plans?**

Probe: Do you feel nursing needs/issues were adequately addressed? If not, how do you recommend those being addressed in the future? Would you be open to assist planning responses in the future?

Appendix I

Data Analysis Codes for Supervisor Participant Transcripts

The following is the supervisors' topical survey code list. The overall codes are bolded, with corresponding sub-codes listed.

Challenges in clinic operations

Issues with nursing equipment and vaccines

Issues with paperwork

Issues with physical environment

Issues with technology

Professional supports available

Strategies to address challenges

Crowd experiences and perceptions

Challenges with decision making about who gets the vaccine

Public information

Daily routine

General clinic atmosphere

Feelings about the H1N1 response itself

Feelings about staff and how they were affected

Feelings of organizational preparedness

Perceived lack of consistency

Perceived lack of organization

Feelings of personal preparedness (or lack thereof)

Issues with actually giving the needle

Being informed and ongoing changes

Consulted in planning

Discussion of past (non-H1N1) experiences

H1N1 vaccine knowledge specifics

Notice of their supervisor role

Role discomfort

How the supervisor was affected

How they personally managed

Long hours

Personal life impacted

Professional life impacted

Issues with Staffing

Challenging staff encounters

Immunizer communication

Unfortunate incidents

Utilizing their staff

Perceptions of agency and management post-response

Feelings of appreciation by agency

Post H1N1 agency changes

Reflections

Lessons learned from H1N1

Positive experiences had

Recommendations for future responses

Thoughts of agency 'during'

How nursing needs were addressed by the agency

Major frustrations with management

Organizational strategies implemented

Perceived pressures from management

Appendix J

Data Analysis Codes for Immunizer Participant Transcripts

The following is the immunizers' topical survey code list. The overall codes are bolded, with corresponding sub-codes listed.

'Getting through' the response

Daily workplace coping

Personal life supports

Personal practice

Professional supports

Things implemented to help nurses professionally

'Higher-up' experiences

Ability to take breaks

Communication of issues with/from management

Consultation perceptions

Frustrations with management/ implemented processes

Getting time off

Overall thoughts about how the agency handled the response

Perceptions of management planning

Perceptions of supervisors

Unappreciated by management

Becoming an immunizer

Feelings of preparedness to be an immunizer

Leaving normal duties to vaccinate

Notice of H1N1 and the deployment

Thoughts on immunization

Training frustrations and challenges

Challenges

Changes in clinics' pace overtime
Daily discomforts
Elements that impeded vaccination speed
Issues with supplies
Issues with technology
Long hours
Perceived clinic inconsistencies
Pressures from non-management
Staffing and scheduling clinic issues

Ongoing work in the clinics

Daily routine
Feeling informed during the clinics
General clinic atmosphere
Personal life impacted
Personal preferences
Physical environments and clinic locations

Past health-care experiences**Reflections**

Agency changes since H1N1
Feelings about being deployed and the deployment itself
H1N1- impact me or my career
Openness to helping plan
Positive professional experiences
Recommendations for future responses

Return to pre-deployment role

Working with clients

Client adverse reactions

Clients doing anything for vaccine

Crowd and client experiences and perceptions

Experiences actually giving the needle

How client vaccine decisions were made

Initiatives taken to get the population immunized

Personal safety

Working with others

'Working together' to get through

Ability to help colleagues in the clinic

Colleague experiences

Disciplines worked with, and other roles, in the clinic

Non-OPH staff experiences

Staff being well utilized