What influences Registered Nurses to have the influenza vaccine?

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What Influences Registered Nurses to have the Influenza Vaccine?

Influenza is a viral infection that can be spread from person to person by coming into contact with infected persons or objects that have been contaminated with the virus. The infection begins and the virus replicates in the ciliated columnar epithelial cells of the upper and lower respiratory tract with incubation ranging from one day to a week.

Influenza vaccination of health care workers has been identified as the primary method of preventing influenza transmission to at-risk groups that, by virtue of illness, congregate in and around hospitals. Annual vaccination is also attributed to the reduction in upper respiratory tract infection, in physician visits and in sick days off work for staff.

The aim of this research was to explore what influences Registered Nurses to have the annual influenza vaccine. The research design for this thesis was a quantitative, cross-sectional survey, utilizing a questionnaire as the data collection tool. The sample group for this study was randomly selected from four hospital wards and two community settings. The questionnaire was used to explore the attitudes of Registered Nurses working for a local District Health Board, both in the hospital and community, to the annual influenza vaccine program. Twenty five percent of the 224 nurses working in these six areas responded.

Findings from this study show that 43 (77%) of the nurses state that they found the District Health Board vaccination program effective in reminding them to be vaccinated, but only 22 were vaccinated in 2006, 20 in 2007, and 16 in 2008. The results also highlight the fact that 35 (63%) of the respondents indicated that they sometimes work when they are sick as they do not wish to let their colleagues down, and 18 (32%) sometimes work when they are sick as they do not want to let their patients down.
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CHAPTER ONE - INTRODUCTION

1.0 Introduction

The impetus for commencing this study came from the low rate of influenza vaccination uptake among New Zealand health care workers (HCW). In 2006, a local District Health Board (DHB) also showed low rates of the influenza vaccine by health care professionals (HCP). Only 187 (17%) out of the 1077 nurses employed had the vaccine, and 101 (73%) out of the 139 doctors employed had the vaccine (Calder, 2007). A review of the literature also supports these trends, both nationally and internationally.

Nurses in particular do not readily access the influenza vaccine, and the barriers that prevent annual vaccination have been explored in the literature. Up-to-date information, education programs and a collaborative approach to delivering the influenza vaccine are recognized as factors that help to lift awareness and stimulate vaccine uptake (Christini, Shutt & Byers, 2007).

From this information and the supporting literature, the basis for this study was developed. The rates of vaccination among HCWs remain low and, despite outbreaks of influenza each year, there is still resistance from HCWs to have the influenza vaccine annually. The role of the HCW to promote and educate their patients about the annual influenza vaccination is highlighted in the literature, as is the importance of consistency in the message (Willis & Wortley, 2007).

This chapter will briefly discuss the history of influenza and the impact of pandemics on the world. The aims of the research and the question for this study will be discussed, as will the researcher’s interest in this subject, having been stimulated to question why RNs do not readily have the influenza vaccine. The overall structure of the thesis will also be summarized.

1.1 Influenza History

Influenza can be traced back to the 15th century in Italy, where the first recorded epidemic was identified and named influenza, “influence of the stars” which reflects a medieval belief that some illnesses came from the heavens (Centers for Disease Control & Prevention, 2007b p. 235). There have been influenza pandemics throughout history that have devastated populations and left millions dead. There were records of pandemics of influenza in the 19th
and 20th centuries, the “Spanish influenza” being responsible for causing millions of deaths worldwide (Centers for Disease Control and Prevention, 2007b, p. 235).

Rice (2005) discusses the impact of the 1918 influenza pandemic in New Zealand and painted a very grim picture of New Zealanders coming home from World War One, many bringing the virus with them. He asks “Why did this influenza kill mostly young adults in the prime of life, aged between 25 and 45 and why did it kill more men than women?” In the age of air travel, “the world is a viral village and experts in the World Health Organisation influenza surveillance network rightly warn that a pandemic as potentially lethal as that of 1918 could spread around the globe within days” (Rice, 2005, p. 12).

1.2 Influenza Infection

There are three types of influenza virus that may affect the upper and lower respiratory tracts and that are identified as A, B and C. The viruses that predominantly circulate in New Zealand (NZ) each influenza season are A and B (Ministry of Health, 2006). The influenza vaccine offered each year in NZ has usually been developed from the strains that have been in circulation in the Northern hemisphere’s previous winter (New Zealand National Influenza Strategy Group, 2008a).

1.3 Background

R. Meech (2008) circulated a questionnaire to 1512 DHB HCWs who had declined to have the influenza vaccine in 2000. The 434 questionnaires that were returned equated to a 29% return rate. The questionnaire looked at staff attitudes to influenza infection and vaccination, and why they did not access the influenza vaccine. The questionnaire revealed that the participants had: a lack of trust in the vaccine; poor knowledge about influenza infection; and concern with side effects from the vaccine and allergies to egg products. These issues have also been discussed in the literature (Australian Influenza Specialist Group, 2007a). The Guillain-Barre syndrome (GBS) has also been documented as a concern since it has been associated as a rare side effect, post vaccination.

Adverse effects following immunisation show a statistically significant association between the US 1976 swine influenza vaccine (no longer in use) and GBS. A study in the US of the 1992/93 and 1994 influenza seasons combined found an increased GBS risk of borderline statistical significance, relative risk 1.7; 95 percent confidence interval 1.0-2.8, during the six weeks after vaccination. In New Zealand there has been no significant rise of GBS incidence following influenza vaccination during the 1990’s. (MOH, 2006, p. 267)
A limitation of the literature reviewed is a lack of RN specific data as most studies looked at HCWs in general. What the literature did highlight was the need for regular and up-to-date information provided to HCWs which could be accessed through various hospital media, with the aim of keeping staff well informed about the seasonal vaccine and the incidence of influenza illness each season.

1.4 The researcher’s interest

Interest in the uptake of the influenza vaccine started when the researcher was working as a Public Health nurse (PHN) administering the vaccine to teachers in schools. The anecdotal reasons for some teachers to not have the vaccine led me to ask why, only to find that many of their reasons were not based on facts but more on hearsay. The same question was then asked of RNs at a local DHB which identified that some also had refused the influenza vaccine. Further discussion with the Medical Officer of Health and Immunisation Coordinator at the Public Health unit (PHU), resulted in expressed concerns that HCWs were not being vaccinated with the influenza vaccine. Public Health nurses as health promoters in schools provide evidence-based information to answer the questions asked about the influenza vaccine and its efficacy, and routinely circulate the pamphlet and information guide on the influenza vaccine (New Zealand National Influenza Strategy Group, 2008b). The researcher was also concerned that health professionals need to have consistency in the messages relayed to the public and patients.

1.5 The significance of this study

The literature has noted that the uptake of the influenza vaccine by HCWs is low (Willis & Wortley, 2007). Studies have shown that there is a lack of confidence and trust in the influenza vaccine and a concern with adverse side effects. Some do not see the vaccine as a prophylactic intervention to preventing seasonal influenza, and HCWs believe that being fit and well with a good immune system is enough prevention (Australian Influenza Specialist Group, 2007a).

Poor knowledge about influenza infection and vaccine efficacy is recognized as a barrier to accessing the influenza vaccine annually (Australian Influenza Specialist Group, 2007a). These issues can be addressed through up-to-date education programs that provide evidence-based information. Ensuring that HCWs are better prepared to make an informed choice when deciding to have the influenza vaccine will help to lift the uptake (Australian Influenza Specialist Group, 2007a). Steckel (2007, p. 34) noted that “World-wide it is estimated that 250-500,000 individuals die of influenza annually”. The risk of acquiring influenza through cross-
infection from patients and staff can be reduced by the annual vaccination of HCW with influenza vaccine (Centers for Disease Control and Prevention, 2006).

The literature has not specifically targeted RNs when surveying HCWs. This study will examine in more depth why RNs do not readily have the annual influenza vaccine and will enable strategies to be established to address some of the issues that have been uncovered. The terms healthcare professional (HCP) and HCW are used interchangeably through this study depending on what term has been used in the literature. These terms relate to staff who may or may not be in direct contact with patients either clinically, socially or diagnostically, and who are regulated and unregulated, or licensed to provide health care (Health Protection Agency, 2009).

1.6 Aims of the research

The aim of this research was to find out why there were low rates of influenza vaccine uptake by RNs. In consultation with a local DHB virologist and the Public Health unit (PHU), the regional and national statistics on the rates of influenza vaccine uptake by HCWs were reviewed. To answer this question a survey was developed:

1. To determine the factors which influence an RNs decision to have the influenza vaccine or not;
2. To determine the effectiveness of the programme advertising the DHB influenza vaccine programme;
3. To determine how often RNs were vaccinated from 2005-2008.

1.7 Organisation of the thesis

Chapter One: Introduction

In this introductory chapter, the background for undertaking this study has been discussed. The history of the disease has been outlined and the personal interest of the researcher has been stated. The research aims and question have also been identified.

Chapter Two: Literature Review

National and international literature is reviewed and divided into three sections for discussion in relation to influences on the uptake of the influenza vaccine by HCWs. These sections are; factors involved in the uptake of influenza vaccine; physiological characteristics of influenza and the vaccine and ethical and legal aspects of vaccination for HCWs.
Chapter Three: Methodology
This chapter will outline the research design and methodology chosen for this study, along with the sample criteria and selection process. Ethical and cultural considerations will be examined as will the data collection tool. A qualitative approach was used to interpret participant’s comments on how they felt the District Health Board delivered the influenza vaccine programme.

Chapter Four: Results and Discussion
In this chapter the results of the survey are presented, analysed and discussed. The questionnaire used a Likert scale to determine the attitudes of respondents to the influenza vaccine, influenza illness, the local DHB annual vaccination programme, and the RNs’ attitude to working when unwell. Questions were asked to determine in what setting the RNs worked and how often in the last four years they had been vaccinated with the influenza vaccine. Participants comments were discussed on how they viewed the local District Health Boards annual influenza vaccine programme.

Chapter Five: Summary and Conclusions
The research is summarized in this chapter and the findings discussed to ensure the research aims and question have been adequately addressed. Recommendations are highlighted for further nursing research and the limitations of this research discussed. The research question will be reviewed to ensure that this has been adequately addressed.

I shall seek and find you.
I shall take you to bed and have my way with you.
I will make you ache, shake and sweat until you moan and groan.
I will make you beg for mercy and for me to stop.
I will exhaust you to the point that you will be relieved when I am finished with you.
I will leave you weak for days.
All my love
The flu
Now get your mind out of the gutter and GO AND GET YOUR FLU SHOT.
(Calder, 2007).
CHAPTER TWO - LITERATURE REVIEW

2.0 Introduction

This chapter reviews literature around what influences RNs to have the influenza vaccine. Both national and international literature will be examined to identify themes that may arise.

The literature review is presented in three sections. The first section discusses the uptake of the influenza vaccine by RNs and other HCWs, the second will look at the physiological characteristics of the influenza vaccine, and the third will explore the ethical and legal aspects to duty of care for New Zealand RNs.

2.1 Search Strategy

The literature for this review was located from multiple sources. Databases searched included Medline, The Cochrane Library, and Cumulative Index for Nursing and Allied Health Literature (CINAHL). Online nursing and allied health journals, articles found by searching reference lists of other articles and discussions with professionals in this field were also used. Searches were restricted to the last ten years and English language only. The majority of the research has come from the United States, United Kingdom, Australia and New Zealand.

2.2 Factors involved in the uptake of Influenza Vaccine

Results from the literature show the same theme both nationally and internationally, which is concern with the poor influenza immunisation rates among HCWs (Australian Influenza Specialist Group, 2007a; Centers for Disease Control and Prevention, 2007a; Coe, 2007; Doratotaj, Macknin, & Worley, 2008; Jennings, 2006; McLennan, Celi & Roth, 2007; Poland, Tosh & Jacobson, 2005; Polgreen, et al., 2008; Saluja, Theakson & Kaczorowski, 2005; Takayanagi, Cardoso, Costa, Araya & Machado, 2006; Tosh & Poland, 2007). The uptake rates will be discussed, as well as barriers and attitudes to receiving the influenza vaccine.

It has been recognized both nationally and internationally that HCWs’ uptake of the influenza vaccine is low. The president of the “American Nurses Association urges HCP to join the fight to stop influenza in its tracks by receiving annual influenza vaccination, as less than 40% of HCPs are immunised each year” (Patton, 2006 p.12). The Centers for Disease Control and Prevention reiterate this as only 42% of all HCWs were vaccinated in 2004. Dash et al. (2004), state that only 36% of workers in direct patient contact are immunised with the influenza vaccine annually. Jennings (2006) discusses rates of influenza vaccination uptake by HCWs in
New Zealand and his concern that these are low. He acknowledges that this is also reflected internationally, the average being close to 40% for all HCWs, with nurses falling behind that mark in New Zealand.

About 33% of all Canterbury District Health Board employees received free influenza vaccination in 2004 and again in 2005. Highest rates of uptake were amongst laboratory and administrative staff, followed by doctors then nurses (estimated at 16%). Surveys suggest similar coverage rates (20-40%) are being achieved in other New Zealand DHBs. (Jennings, 2006, p. 2)

2.2.1 Issues around the uptake of influenza vaccine

A study undertaken by Saluja et al. (2005), involving four Canadian teaching hospital emergency departments, examined staff attitudes to receiving the influenza vaccine. Registered nurses and physicians uptake were the second lowest in comparison with other HCWs. Although 58% of participants believed that Emergency Department staff were at an increased risk of contracting the virus, only 27% of participants believed that patients were also at risk of contracting the illness from them. Participants identified that having a chronic illness or being of an older age group were the major reasons in their decision to be vaccinated.

Willis and Wortley (2007) discussed barriers to the poor uptake of the influenza vaccine by RNs in the United States of America (USA), even though the USA Advisory Committee on Immunisation Practices recommends influenza immunisation among HCWs. The results revealed that many nurses were concerned with the effectiveness and safety of the vaccine. Not having sufficient information about the vaccine played a part in nurses’ lack of willingness to promote the vaccine to their patients. The Australian Influenza Specialist Group listed some of the reasons cited by HCWs for refusing the influenza vaccine. These include:

I never get the flu so don’t feel I need the vaccine; I am worried about having an adverse reaction; I am a healthy person and would prefer my immune system to protect me against the flu; The vaccine doesn’t work on me. I got the flu any way; I don’t believe in it; My boss doesn’t get vaccinated so why should I; and, I’m worried about developing Guillain-Barre syndrome. (AISG, 2007a, p. 3)

Some Australian healthcare facilities staff have highlighted the fact that in the past, limited access to vaccination and having to obtain and organise the dispensing of the vaccine by a HCP at their own expense were reasons for not having the influenza vaccine. These issues are not a problem for the DHB studied in this project as the influenza vaccination campaign is organized by Occupational Health Nurses and taken to staff in the wards on trolleys, appropriately named “needles on wheels”.

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2.2.2 Poor knowledge and lack of understanding

Polgreen et al. (2008, p. 14) explored the “elements of influenza vaccination programs that predict higher vaccination rates and surveyed the existing programs of 991 infectious diseases consultants (IDCs) across the United States”. The Healthcare Infection Control Practices Advisory Committee on Immunisation Practices (HICPAC) (as cited in Polgreen et al., 2008) had recently distributed new recommendations to hospitals across the USA in the hope that these would increase HCWs’ uptake of the influenza vaccine. The principal component of the programme was the supply of information that would lift HCWs’ knowledge on the benefits of receiving the vaccine. Other components included were the provision of free, easily-accessed vaccine delivery, improved internal publicity on vaccine uptake, and the implementation of signed declination forms from HCWs who had refused vaccination.

The response rate for the survey of IDCs was 48.2% and the results indicated that recommendations from HICPAC had not entirely been implemented. One of the outcomes of the survey was the failure of 21% of institutions to keep up-to-date records on HCWs’ vaccination rates, while two-thirds of the hospitals reported they had no way of recording off-site vaccinations. The institutions requiring staff to sign mandatory declination statements showed a higher rate of vaccination amongst their HCWs. The study noted that IDCs who were enthusiastic about lifting the vaccination rate may have been more inclined to respond to the survey. Results showed that those hospitals that did not implement the HICPAC recommendations were less likely to have had a good uptake of the influenza vaccine. Multiple interventions, as recommended by HICPAC, seem to be the key to higher vaccination rates, which is also supported by Polgreen et al. (2008).

The USA Centers for Disease Control and Protection (2007a) and Christini et al. (2007) state that a poor knowledge base and lack of understanding regarding how the vaccine works are major deterrents to HCPs’ uptake of the vaccine. Poor motivation and not having time as well as vaccination for personal protection were also reasons to not have the vaccine annually (Christini et al., 2007). The Australian Influenza Specialist Group (2007a) and Hoffmann and Perl (2005) suggest that keeping education programs relevant and up-to-date each year will help to enlist new HCWs to have the vaccine and will encourage continued annual uptake from staff who usually are vaccinated.

The New Zealand National Influenza Strategy Group campaign starts promoting influenza vaccination nationally through the media in April, to encourage uptake of the influenza vaccine early. They send out the promotional packages to every health care provider and encourage
practitioners to promote educational information with their patients. This information is also displayed through medical centers and hospitals. It is hoped that the promotion of influenza vaccination at a national level will encourage those who may be unsure whether to have the vaccine or not to engage in conversations with HCW. The campaign logo “You’re never too fit to get hit”, also encourages healthy people without medical conditions to discuss the influenza vaccine with their General Practitioner (GP) (New Zealand National Influenza Strategy Group, 2008b, p. 1).

Doratotaj et al. (2008 p. 301) used an interesting way to improve vaccination rates among HCWs in an urban tertiary hospital in the USA. Eight hundred HCWs were selected to participate in a randomized controlled trial. There were four groups, with 200 people in each. Participants in the first group received the regular influenza vaccine reminder, those in the second group an educational letter and influenza vaccine reminder. HCWs in the third group received a raffle ticket offer to win a Caribbean vacation if they had the influenza vaccine. The fourth group received both the educational letter and the raffle ticket. The results showed that there was no significant difference in vaccination rates between any of the four groups. The rate of influenza vaccination for all 6723 hospital staff for that year was 38.2%. The average vaccination rate for study participants was 41%, and participants receiving a letter and a raffle ticket, or a raffle ticket only was 43.3%. Thus it appears that incentives to become vaccinated did not improve the overall vaccination rate significantly.

2.3 Physiological Characteristics of Influenza and the Vaccine

In the Immunisation Handbook published by the New Zealand Ministry of Health (2006) it is suggested that influenza vaccination is the primary prevention measure for reducing the transmission of influenza infection. The New Zealand National Influenza Strategy Group (2008b) state that the vaccine predominantly used for the annual influenza immunisation in New Zealand is an intramuscularly administered purified, inactivated, split vaccine. The vaccine can be altered each year to accommodate the differing strains of influenza virus in circulation. Protective antibody levels develop four days to two weeks after immunisation. “The effectiveness of the influenza vaccine depends primarily on the age and immune competence of the vaccine recipient and the degree of similarity between the virus strains in the vaccine and those in circulation” (Ministry of Health, 2006, p. 262).
2.3.1 Vaccine efficacy

The World Health Organisation (2003) regards influenza vaccination of HCWs as the main prevention measure for reducing the incidence of influenza illness. Vaccines funded for use in New Zealand for the 2008 influenza season were Vaxigrip and Fluvax. The vaccine was made from an influenza virus that had been concentrated, inactivated and then broken apart. The vaccine cannot cause influenza as it does not contain any live viruses. The vaccine does contain traces of neomycin and polymyxin because these substances are used during production. The vaccine virus also contains minute amounts of egg protein. The population groups who identify as having sensitivity to neomycin, polymyxin or egg protein need to consult their medical professional before vaccination (New Zealand National Influenza Strategy Group, 2008b; Ministry of Health, 2006).

A randomized double blind control trial of 264 hospital based HCPs without chronic medical problems was conducted in two large teaching hospitals in Baltimore, USA. The trial was carried out over a three year period, to “determine the effectiveness of trivalent influenza vaccine in reducing infection, illness, and absence from work in young, healthy HCP” (Wilde et al., 1999, p. 908). The 264 participants were hospital-based physicians, nurses, and respiratory therapists. The control vaccines included meningococcal vaccine, pneumococcal vaccine, or saline placebo. These vaccines were used to promote study involvement as they are proven to be beneficial to the control group (Wilde et al., 1999).

A baseline blood sample was collected at the time of enrollment and then at the time of vaccination, which was in the northern hemisphere autumn (October-November). A post-vaccination sample was taken one month after the influenza season, to gauge subjects infected by the influenza type A (H3N2) or type B strains during each influenza season. The results indicated that for participants who received the vaccine the cumulative days of reported febrile respiratory illness were 28.7 per 100 subjects compared with 40.6 per 100 subjects in controls (P=.57) and days of absence were 9.9 per 100 subjects vs 21.1 per 100 subjects in controls (P=0.41) (Wilde et al.,1999). These results indicate that being vaccinated each year for the prevalent strain of influenza in circulation is an efficient way of preventing the spread of influenza and in reducing collective days of sickness and non-attendance at work.

The New Zealand National Influenza Strategy Group (2009) is encouraged by this year’s early uptake of the influenza vaccine and places the population in a good position to face the coming winter. They highlight the importance of protection from the known influenza virus, which is in
circulation each year, as a means of keeping well in case of contact with a virus in circulation for which there is currently no vaccine available.

2.3.2 Infectivity

Tosh and Poland (2007) discussed the logic of vaccinating HCWs with the influenza vaccine, and stated that in the past, unvaccinated HCWs have been associated with outbreaks of influenza in hospitals. Nosocomial influenza can be transmitted from HCWs to their patients, by the former’s working when unwell and by the shedding of the virus from those workers who are asymptomatic. The Centers for Disease Control and Prevention (2007b) and the World Health Organisation (2003) state that annual influenza vaccination is beneficial for HCWs. Tosh and Poland (2007, p. 2) support this, noting that “the benefits of influenza vaccination in working adults reduces upper respiratory tract infections by 25%, physician visits by 44%, and sick days off by 43%”.

In a presentation to HCWs Calder (2007) discussed the New Zealand Public Health Report (2001), which highlighted the fact that between 10 and 20% of New Zealanders (380,000-760,000 people) are infected with influenza each year. Between 56,000 and 164,000 New Zealanders consult their doctor because of influenza each year with the rates of hospitalisation and death being higher in Maori and Pacific peoples. Steckel (2007, p. 34) states that “worldwide, an estimated 250,000 to 500,000 individuals die of influenza annually. Influenza is a vaccine-preventable disease that affects 20% of the United States population every year” Polgreen et al. (2008) reiterate this information.

Jennings (2006), spokesperson for the New Zealand National Influenza Strategy Group, states that the most effective way to reduce the transmission of influenza infection to patients was the annual influenza vaccination for HCWs. The Centers for Disease Control and Prevention (2007a) discuss the way the influenza virus is spread by droplet infection from coughing or sneezing, and the way it can survive for up to twenty four hours on objects. Influenza infection can have a sudden onset, with typical symptoms of a high fever, body aches, nasal congestion and malaise. Some persons may be asymptomatic while remaining infectious to others: hence the risk of asymptomatic HCWs infecting patients and their own families. HCWs can be contagious up to a day before they show any symptoms. Dash et al. (2004) agree that people can be contagious while asymptomatic and add that HCWs are infectious five days after the onset of symptoms and are more likely [presumably, than non-HCWs] to continue working when unwell.
In New Zealand, the MOH (2006) reported that epidemics of influenza can affect all age groups, with the peak incidence usually during the winter months between May and October. Immunity to certain strains of the virus can only be developed through exposure to it in the past. Due to the possibility that differing strains may arise each year, annual immunisation is recommended. McLennan, Vollweiler and Celi (2009 p. 12) discuss how HCWs can “act as potential vectors for nosocomial transmission of influenza to vulnerable patients whom the disease would most jeopardise”. As a result of the shedding of the virus a day before being symptomatic, staying away when ill is not a good enough precaution and “only 50% of people show classic symptoms of the illness, yet can shed the virus for five to ten days” (McLennan et al., 2009, p. 12).

2.3.3 Attitudes to vaccination
Willis and Wortley (2007) examined the attitude of vaccinated and unvaccinated RNs to the influenza vaccine in the USA. Discussed were the attitudes of unvaccinated nurses and their belief that they had stronger immune systems due to workplace exposure to the disease. They also believed that universal precaution measures, such as good hand washing techniques and other infection control procedures, were safety measures to help prevent contracting the disease. Both vaccinated and unvaccinated groups expressed concern about the safety of the vaccine and agreed that if they were better informed about the disease and the vaccine, they would be in a better position to encourage their patients to have the influenza vaccine (Willis & Wortley, 2007). These concerns are also expressed by New Zealand nurses who anecdotally show little faith in the influenza vaccine and poor understanding around influenza infection. The poor knowledge deficit acts as a barrier to RNs accessing the influenza vaccine but McLennan et al. (2009) believe that, this could be changed through in-depth education campaigns.

2.4 Ethical and legal aspects of vaccination for HCWs
The Centers for Disease Control and Prevention (2007a) reports a growing concern at the low rates of influenza vaccine among HCWs with voluntary vaccination attaining rates of 40% or less. Due to the high infectivity of the virus, these low rates have led to discussions around mandating immunisation in the health care setting in the USA (Kordsmeier, 2006).

2.4.1 Mandating immunisation
Kordsmeier (2006) and Hancock (2006) offer differing stances with regard to mandating the influenza vaccine. Kordsmeier suggests that all HCWs should have a mandatory vaccination
each year, especially if working in direct patient contact. The RNs can be the catalyst to contracting the virus from their patients and passing it on to others before the RNs are aware of illness. It has also been recommended in some USA hospitals that a form be signed by those HCWs who decline mandatory vaccination. Refusal is only accepted from staff with legitimate medical or religious reasons (Helms & Polgreen, 2008; Tosh & Poland, 2007). Hancock and Isaacs and Leask (2008), on the other hand, do not advocate for mandatory vaccination. Rather, they support the provision for on-going educational programs that inform HCWs of the risk of cross infection to colleagues and high-risk patient groups. “No HCW should be immunized against influenza, for their own protection and to protect their patients against influenza. The issue is whether it is ethical and good practice to make immunisation mandatory” (Isaacs & Leask, 2008, p. 1027).

Helms and Polgreen (2008) examined the effectiveness of refusal statements or signed declination forms for influenza vaccination in 22 hospitals in the USA. They found that influenza vaccination rates only increased slightly with the use of declination forms and voluntary compliance. In comparison, a hospital in Washington, USA, which had mandated vaccination of HCWs and accepted signed declination forms only from HCWs who refused vaccination under medical or religious grounds, had a 98% rate of vaccination.

2.4.2 Human rights

Hancock (2006, p. 77) argued that “nurses, like all individuals, have a right to self-determination; they have the ability to control their own lives without the imposition of external controls”. She sees mandating influenza vaccination as removing the right of nurses to choose for themselves. According to Kordsmeier (2006), nurses are aware of the risks to themselves and their patients of being exposed to infectious diseases and see vaccination as only one strategy in a combination of precautions that are part of standard procedures in infection control.

Isaacs and Leask (2008) perceive that mandatory vaccination of HCWs would impinge on human rights and autonomy, and could have the potential for causing psychosocial harm, especially if declining the vaccine should result in dismissal. Alienation of the workforce may cause a revolt among nurses who refuse to be vaccinated. Isaacs and Leask (2008) also see mandatory vaccination as having a negative effect on staff morale and causing anxiety amongst staff who are adverse to immunisation.
2.4.3 Health and safety in employment Act 1992

McLennan et al. (2007) noted that the purpose of the Health and Safety in Employment (HSE) Act NZ (1992) is to provide a work environment that is free from harm. According to McLennan et al. this act “applies to all New Zealand workplaces, and places duties on employers, and others who are in a position to manage or control hazards, to take all practicable steps to eliminate every significant hazard”. A recent survey of New Zealand DHBs discovered that nurses’ influenza vaccination rates were between 19-30% (McLennan et al.,). It could be debated that such low rates of immunisation be seen as a “significant hazard to vulnerable patient populations” and that unvaccinated nurses pose a threat not only to their patients but also to their colleagues (McLennan et al., p. 1).

The HSE Act 1992 states that,

Every employer shall take all practicable steps to ensure that no action or inaction of any employee while at work harms any other person. Employees themselves have similar duties under section 19, which states every employee shall take all practicable steps to ensure…(b) that no action or inaction of the employee while at work causes harm to any other person. (HSE Act 1992, p. 28)

This statement could be interpreted to suggest that influenza vaccination be an occupational requirement for all HCWs employed by DHBs. Unvaccinated HCWs may expose at-risk patients to nosocomial influenza.

2.5 Summary

Evidence from the literature review is consistent and confirms that the percentage of HCW who choose to have the influenza vaccine remains low, both internationally and nationally (Australian Influenza Specialist Group, 2007a; Centers for Disease Control and Prevention, 2007a; Coe, 2007; Doratotaj et al., 2008; Jennings, 2006; McLennan et al., 2007; Poland et al., 2005; Polgreen et al., 2008; Saluja et al., 2005; Takayanagi et al., 2006; Tosh & Poland, 2007). Barriers to HCWs’ choosing to have the vaccine are consistent in the literature and have been found to be predominantly poor knowledge and lack of understanding about the vaccine and its safety (Australian Influenza Specialist Group, 2007a; Centers for Disease Control and Prevention, 2007a; Jennings, 2006; Takayanagi et al., 2006; Willis & Wortley, 2007).

The research reviewed also highlights that for some HCWs, the risk of influenza infection from patients or colleagues is not a motivation to receive the vaccination (Australian Influenza Specialist Group, 2007a; Coe, 2007; Willis & Wortley, 2007). Various methods were discussed
to improve vaccine rates and to highlight the additional benefits to HCWs (Centers for Disease Control and Protection, 2007; Helms et al., 2008; Australian Influenza Specialist Group, 2007a; Australian Influenza Specialist Group, 2007b; Hancock, 2006; Kimura et al., 2007; Kordsmeier, 2006; New Zealand National Influenza Strategy Group, 2008a; Poland et al., 2005; Polgreen et al., 2008; Steckel, 2007; Wilde et al., 1999). Improving education and the promotion of influenza vaccination and of consistency of program delivery were identified as ways to help improve the rates of vaccination (Centers for Disease Control and Prevention, 2006 & 2007b; Christini et al., 2007; Coe, 2007; Dash et al., 2004; Hoffmann & Perl, 2005; Australian Influenza Specialist Group, 2007a; Polgreen et al., 2008; Takayanagi et al., 2007; Tosh & Poland, 2007).
CHAPTER THREE - METHODOLOGY

3.0 Introduction

The literature review has acknowledged the poor uptake of the influenza vaccine by RNs in New Zealand and throughout the world. This chapter will outline the research design and methodology chosen for this study, along with the sample criteria and selection process. Ethical and cultural considerations will be examined as well the data collection tool.

3.1 Research design

The research design for this thesis was a quantitative, cross-sectional survey, utilising a questionnaire as the data collection tool. Quantitative research looks at answering the researcher's question in a structured way that is measurable and easy to interpret. It also enables the researcher to examine an event to determine if there is a need for an intervention and to then compare variables within the study group (Di Cenzo, Guyatt & Ciliska, 2005).

Di Censo et al. (2005, p. 553) define a cross-sectional survey as “the observation of a defined population at a single point in time or during a specific time interval”. Reasons for choosing this design was a desire to compare the hospital and the community RNs’ attitudes to having the influenza vaccine. Included in this survey was one qualitative statement asking the participants to include their thoughts about the influenza campaign that runs annually through the local DHB.

To examine RNs’ beliefs and knowledge around the influenza vaccine and participation in the vaccination program run annually through a regional DHB, an anonymous self-administered questionnaire was developed. The questionnaire was designed utilising information from the literature review and building on a questionnaire previously developed by a virologist (Meech, 2008). The questionnaire was then piloted with an Occupational Health Nurse, a DHB virologist and six PHNs. No changes were made to the format of the questionnaire as a result of the pilot. To ensure a cross section of RNs were surveyed, the questionnaire was then distributed through four hospital wards and two areas in community health.

3.2 Research question

The research question is “What influences Registered Nurses to have the influenza vaccine?”
3.3 Research aims

The aims of the research were:

1. To determine the factors which influence an RNs decision to have the influenza vaccine or not;
2. To determine the effectiveness of the programme advertising the DHB influenza vaccine program; and
3. To determine how often RNs were vaccinated from 2005-2008.

3.4 Setting

The setting for this research was one regional DHB in New Zealand. The participants were RNs who worked either in the hospital, the community, or both. These settings were chosen to determine if RNs thought differently about the influenza vaccine depending on their work environment.

The New Zealand National Influenza Strategy Group (2009) recommends that the optimum time to have the influenza vaccine is from March to May to ensure protection before the start of influenza activity between May and September. At the regional DHB where this study was undertaken, the influenza vaccine program to staff is usually initiated at the beginning of March. The administration of the vaccine depends on when the manufacturer has the vaccine available, which is usually by mid-March. Questionnaires were distributed to hospital and community RNs in August, which is outside the recommended time-frame for seasonal prophylactic vaccination (Australian Influenza Strategy Group, 2007b), thus ensuring that those who normally had the influenza vaccine would have already been vaccinated.

3.5 Sample

Four hospital wards and two community settings in a regional DHB were invited to participate in the research. Clinical Nurse Managers (CNMs) were asked to distribute the questionnaires and all agreed to do this. At the time of distribution the researcher was unable to obtain a breakdown of numbers of RNs in these work areas; hence the decision to distribute 60 questionnaires, 10 to each area, was made randomly. Following the return of the questionnaires, the researcher discovered there were 224 RNs employed in the six areas, 76 in the community and 148 in the hospital in August 2008, when these areas were surveyed. This is a potential sample of 26.7% of nurses who work in these areas.
3.5.1 **Inclusion criteria:**

All participants had to be New Zealand Registered Nurses (RN). The Nursing Council of New Zealand defines an RN as a “nurse who is registered under the registered nurse scope of practice” (NCNZ, 2007 p. 1). The RN had to be employed by the regional DHB where this research was undertaken during August 2008, working either in the specific hospital wards, community settings or both. There was no timeframe imposed on participants on how long they had been employed by the DHB.

3.5.2 **Exclusion criteria**

Due to other research being undertaken in the hospital at the same time as this project, the RNs from four wards participating in another research project were excluded. PHNs were also excluded from the study due to the relationship they may have had with the researcher and also because six PHNs piloted the questionnaire.

3.6 **Participant recruitment**

The study was promoted by word-of-mouth within the wards and community settings selected. A request was made by the researcher to attend the weekly CNMs’ meeting at the hospital and the research proposal was presented. Consent was gained from the CNMs to promote and distribute this research in their work areas.

3.7 **Potential benefits and risks**

The potential benefits of this research for DHBs is to increase the awareness of factors that influence RNs to have or not have the influenza vaccine and the venue where they prefer to be vaccinated. It will help with further development of education programs to better fulfill the needs of HCWs. The benefit for the participants is that this study will provide evidence-based research around the facts and myths concerning influenza vaccination which will enable them to make an informed choice. There is no anticipated potential harm to participants.

3.8 **Ethical considerations**

Application for approval for the study was made to the Central Regional Ethics Committee (Appendix I), the Eastern Institute of Technology Research Approvals Committee (Appendix II) and the HBDHB Research Committee (Appendix III) and approval was received from all three bodies.
3.8.1 Cultural considerations:

Previous research in New Zealand involving RNs and the uptake of the influenza vaccine has not mentioned cultural considerations such as ethnicity as a barrier, but international research mentions religious beliefs as a factor for some nurses who refuse to have the influenza vaccination (Kordsmeier, 2006; Hancock, 2006; Helms & Polgreen, 2008). In consultation with the DHB Maori Health Unit (Appendix IV), it was discussed that influenza vaccination could be an issue for some culturally, but that individual Maori would decide whether to be vaccinated with the influenza vaccine independently (R. Pohe, Service Manager for Maori Health Unit, 2008). As a result of this discussion, it was decided that the questionnaire would not require the RN to identify their ethnicity.

3.8.2 Information sheet

The information sheet (Appendix V) outlined the purpose of the study as well as details of the researcher and supervisors should participants have questions relating to the research. It also outlined the right to decline to take part or to withdraw at any point during the study and the right to ask questions about the study. How participant confidentiality was to be protected and where results would be published was also explained. The information sheet noted that completion and return of the survey constituted implied consent to participate in the research. Anonymity was ensured as participants were asked to not put their names on the questionnaire.

3.8.3 Confidentiality

All survey responses have been kept confidential and each response assigned a number for data entry and analysis purposes. Paper data will be shredded at the conclusion of the study and the password-protected computer data will be stored for 5 years then deleted.

3.8.4 Statement of potential bias

The researcher has been employed by a regional DHB as a PHN for the last ten years. Part of my role is to vaccinate in the community setting. PHNs provide this program to schools in their geographical areas and offer the influenza vaccine to the teaching staff. The PHN has a role as a health professional to promote vaccination within the community, and every contact is viewed by the PHN as a health promotion opportunity, especially when working with at-risk patient groups. As a PHN, my role is to promote and advocate immunisation to clients in my care and I am pro-vaccination. By providing up-to-date information and web sites clients can access, I am giving clients the ability to make an informed decision before they decide to
vaccinate or not. My personal belief is that all HCWs should have the influenza vaccine annually.

3.9 Data collection method

The questionnaire (Appendix VI) used a Likert scale for the first nine questions to determine attitudes of the respondents to the influenza vaccine and influenza illness. The remaining questions in the questionnaire asked for quantitative responses related to the local DHB influenza vaccine program and for participants to indicate their attitude to working when sick. Also explored were the preferred time and location of vaccination and whether participants worked in the hospital, community or both areas. Participants were asked to indicate their influenza vaccination history for the previous 4 years and for any additional comments that they may have about the DHB influenza vaccine program.

3.10 Reliability and validity

Reliability and validity are essential in research, and the results from research studies need to be accurate and without bias to contribute to and guide nurse clinical practice (Polit & Beck, 2004). One measure of reliability in quantitative research is how consistent the results are when using the same tool at different intervals (Beanland et al., 1999). The expectation would be that the results are predictable when the tool has been pre-tested. Schneider et al. (2007) discuss how a tool should generate the same or similar results if repeated with the same group at a later date. The questionnaire, which was piloted to ensure comprehension of questions asked, provided content validity but it was not possible to assess reliability

Beanland et al. (1999) discuss internal and external validity as “important criteria for evaluating the credibility and dependability of the results” (p. 184). The internal validity conveys the accuracy of the questionnaire in gauging the participants’ views and thoughts. External validity looks at how to establish the same findings of a study when used with other groups or in different settings. Participants surveyed came from two work environments, in the hospital and community setting, which will help to determine the external validity of the tool used.

3.11 Management of data

As questionnaires arrived by DHB internal mail, they were numbered by the researcher and put into a ring binder for easy access. Data were then entered onto a spreadsheet on a password-protected computer, and the numbered questionnaires stored in a locked filing cabinet.
3.12 Data analysis

Data were initially entered into Excel and double checked to prevent any data entry errors. Data were then transferred to the Statistical Package for the Social Sciences (SPSS) for analysis and data presentation. A statistician was then accessed to assist with the analysis of data and questions were presented as pie or bar graphs with percentages displayed. Descriptive statistics were calculated for attitudinal and vaccination data. Graphical representations were developed where appropriate and themes identified. Two-tailed t-tests for groups with unequal variance were calculated for differences between the means of participants who were vaccinated in 2008 versus those who were not for responses to questions 1-9. To analyse question 15, which asked participants for any additional comments concerning the local DHB influenza vaccine programme, Thomas’s (2006) general inductive approach for qualitative data analysis was used.

The purposes of using an inductive approach are to a) condense extensive and varied raw text data into a brief, summary format; b) to establish clear links between the research objectives and the summary findings derived from the raw data and c) to develop a model or theory about the underlying structure of experiences or processes which are evident in the raw data. (Thomas, 2006, p. 237)

Twenty five participants answered this question out of the 56 RNs who took part in the study. Comments from participants were read several times to allow the emergence of reoccurring themes and ideas which were then separated into categories. Referring to the research aims these categories were then assessed to ensure that the research objectives were adhered to (Thomas, 2006).

3.13 Summary

In this chapter, the methodological approach to this study has been described and the research design explained. A quantitative design was chosen to answer the question posed in this research, using a cross-sectional sample that examines variables and relationships at one point in time (Schneider et al., 2007). A general inductive approach for qualitative data analysis, as described by Thomas (2006) was used toanalyse responses from participants on their thoughts about the influenza campaign offered annually through the local DHB.

The sample is a selection of RNs who worked within the hospital, community or both settings of a regional DHB. One aim of this research was to determine what influenced RNs to have the annual influenza vaccine in their work setting. Participants were also asked if the local DHB
influenza vaccine program was effective in reminding staff to have the influenza vaccine and how many had received this in the last 4 years.

Participation in the research was voluntary and recruitment was promoted by word-of-mouth through the CNMs in pre-chosen areas. In Chapter Four the research results and themes within the findings are examined and discussed.
CHAPTER FOUR - RESULTS AND DISCUSSION

4.0 Introduction

In this chapter the results of the survey are presented, analysed and discussed. The questionnaire used a Likert scale to determine the attitudes of respondents to the influenza vaccine, influenza illness, the local DHB annual vaccination programme, and the RNs’ attitude to working when unwell. Questions were asked to determine in what setting the RNs worked and how often in the last four years they had been vaccinated with the influenza vaccine.

The first section asked the participants about their beliefs of the effectiveness of the influenza vaccine in preventing influenza. There were 5 options using a Likert scale, from strongly disagree to strongly agree. The intent of these questions was to determine if RNs saw the influenza vaccine as a means to help prevent infection with influenza.

The second section of the questionnaire focused on the RNs’ attitudes to the local DHBs annual influenza program, to ascertain whether RNs were satisfied with the way the vaccine was promoted and delivered and to identify if the program was conducive to RNs’ easy access to being vaccinated in an environment that suited them.

Sixty questionnaires were circulated and 56 returned. Thirty-three responses (58%) were from the hospital only, 14 (25%) from the community only and 9 (17%) stated that they worked in both areas. As noted in the previous chapter, there were 224 potential participants, and the return of 56 questionnaires gives a response rate of 25%. The data were transferred onto an Excel spread-sheet and then SPSS was used for analysis and data presentation. Data entry was double checked to minimize errors. Comparisons were made between the nurses who were vaccinated in 2008 and those who were not, as well as between the RNs who worked in the hospital, the community or both areas.

4.1 Section One: Influenza vaccine and influenza infection:

The first nine statements dealt with staff attitudes to the influenza vaccine and influenza infection and participants were asked to respond on the strongly agree to strongly disagree continuum.
Statement 1: The influenza vaccine is effective in preventing influenza.

While almost two thirds of the respondents agreed or strongly agreed with this statement (28 and 7 respectively), 21 respondents were either not sure or disagreed with it (see Figure 1). It is a concern that 16% of RNs are factually wrong in their understanding of the vaccine and its ability to help prevent influenza infection. Twenty one percent of participants do not have an opinion on whether they think it is effective or not, which may indicate a lack of knowledge in this area.

Willis and Wortley (2007) highlight the fact that nurses are concerned with the effectiveness and safety of the influenza vaccine, and that not having sufficient information about the vaccine deterred them from promoting it to their patients. Nurses surveyed by the Australian Influenza Specialist Group (2007a) believe that the vaccine was not effective for them as they got the flu anyway. Having faith in the effectiveness and safety of the vaccine is part of ongoing education, which need to be reinforced each year to ensure that all staff are adequately updated on the vaccine in circulation for the influenza season.

![Figure 1: Responses to Statement 1 “The influenza vaccine is effective in preventing influenza”](image)

Statement 2: The influenza vaccine does not cause any side-effects.

Just under two thirds (n=36) of participants stated the vaccine does cause side effects. A quarter (n=14) have no thoughts either way, which may suggest that they have never received the vaccine and have no personal knowledge about the side effects (see Figure 2).

The vaccine can cause localized soreness or redness at the injection site, a feeling of being unwell or tired, and in some instances mild fever or aching muscles (New Zealand National Influenza Strategy Group, 2008b). Being concerned about adverse reactions and developing
Guillian-Barre syndrome were two issues cited for refusing the influenza vaccine by HCWs in a survey undertaken by the Australian Influenza Specialist Group (2007a). The provision of in-depth information about the vaccine and the side-effects through media that is predominantly accessed by nurses would help to lift their knowledge and understanding. This information would also ensure that they have made an informed choice on whether to have the vaccine or not (Willis & Wortley, 2007).

![Figure 2: Responses to Statement 2 “The influenza vaccine does not cause any side effects”](image)

Statement 3: The influenza vaccine can cause influenza.

Participants were divided about whether influenza vaccine causes influenza illness. Ten participants strongly disagreed with this statement and 15 disagreed, which indicates that these participants have a good knowledge about the influenza vaccine. However, the fact that 55% either agreed, strongly agreed, or were unsure whether the vaccine could cause influenza infection (see Figure 3) indicates a need for more education in this area. This could be because some nurses do not understand the biological properties of the vaccine and how anti-bodies are developed. The Ministry of Health (2006) states that the vaccine cannot cause influenza as it does not contain any live viruses, and that protective antibody levels develop 4 days to 2 weeks after immunisation.
Statement 4: All Registered Nurses should repeat the influenza vaccine annually.

This statement elicited a varied response from participants. Forty five percent (n=23) of RNs strongly disagreed, and they also disagreed that they should repeat the influenza vaccine annually, with just over a quarter (n=18) who agreed with annual influenza vaccination. Fifteen participants had no opinion at all (see Figure 4). This is a disappointing result as annual vaccination of HCWs is seen as one of the main prevention measures for reducing the incidence of influenza illness and nosocomial infection of those in their care, findings also supported in the literature (WHO, 2003; CDCP, 2007b). The influenza virus changes periodically and the vaccine can be reconstituted to deal with this. Annual vaccination will help protect people from the influenza virus that is in circulation (New Zealand National Influenza Strategy Group, 2009).
Statement 5: If I’m healthy I’m unlikely to get influenza.

Thirty seven participants did not agree that being healthy will prevent them from contracting influenza. Nine RNs thought that being healthy would prevent them from contracting influenza and nine neither agreed nor disagreed with this statement (see Figure 5). Being fit and healthy will not protect you from contracting influenza according to New Zealand National Influenza Strategy Group (2008b), but annual vaccination with the influenza vaccine can provide the antibodies needed to fight an influenza infection (Ministry of Health, 2006). The literature has highlighted reasons given by HCWs for refusing the influenza vaccine, as they don’t get influenza so don’t need to be vaccinated and I’m healthy and would prefer my immune system to protect me from influenza (Australian Influenza Specialist Group, 2007a).

Educational programmes around influenza infection explain how a virus invades the immune system, leading to infection, and that being healthy would not always prevent this from happening. Due to the nature of their work environments, HCWs are more susceptible to infection, even when healthy, than workers in non-clinical environments. The primary transmission of influenza is from person-to-person when coming into contact with infected persons, either through coughing and sneezing or by touching infected surfaces (CDCP, 2007b).

![Figure 5: Responses to Statement 5 “If I’m healthy I’m unlikely to get influenza”](image)

Statement 6: I am at risk of contracting influenza through patient contact.

Forty seven out of 56 participants agreed that they were at risk of being infected with the influenza virus from their patients and four respectively either disagreed or had no opinion (see Figure 6). This result would be anticipated as the DHB Infection Control coordinator has a regular update on cross-infection at a mandatory RNs study day each year, reiterating the rates
of nosocomial infection in the hospital. The Centers for Disease Control and Prevention (2007a) stated that the influenza virus is able to survive on objects and hard surfaces for up to 24 hours. The risk of infection from patients to HCWs and back again is significant and relevant not only for hospital staff but also for nurses who visit homes in the community.

Other results from this survey have highlighted a decline in influenza vaccination rates since 2006 (see Statement 14). Having knowledge about influenza and the vaccine did not appear to always encourage RNs to be vaccinated, as has been noted in other literature (Australian Influenza Specialist Group, 2007a). Although the questionnaire highlighted the fact that 86% of participants were aware that they might be infected with influenza by their patients, results below show that considerable fewer than 86% of participants are regularly vaccinated. Christini et al. (2007) also notes that vaccination for personal protection was not a motivation for their research participants to have the influenza vaccine annually.

![Figure 6: Responses to Statement 6 “I am at risk of contracting influenza through patient contact”](image)

**Statement 7: Influenza is a mild illness.**

Ninety-four percent of the participants disagreed with this statement (see Figure 7). Whilst it is reassuring that the RNs believed this, this belief did not appear to encourage them to have the annual influenza vaccine. The participants might have had personal and work experience of influenza infection that had influenced their belief that influenza was not a mild illness.
Figure 7: Responses to Statement 7 “Influenza is a mild illness”

Statement 8: I am well informed on how influenza is spread.

Ninety-five percent of participants agreed that they were well informed on how influenza was spread and only a small percentage had no opinion either way (see Figure 8). Willis and Wortley (2007, p. 22) discussed how “many unvaccinated nurses believed they were not at risk of contracting influenza because they do not fall into high-risk groups and believed that they had stronger immune systems due to workplace exposure to the disease”. This finding contradicts the responses for statement 3, which asked participants if the influenza vaccine can cause influenza. Participants responses indicated 33% of the RNs believed the influenza vaccine could cause influenza and 22% had no opinion. This indicates the high percentage of participants who believe incorrect information as they identified here that they were well informed on how influenza was spread.

Figure 8: Responses to Statement 8 “I am well informed on how influenza is spread”
Statement 9: The side effects of the influenza vaccination were unpleasant and significant enough to stop me from wanting to be vaccinated.

Thirty two participants did not agree with this statement and 15 neither agreed nor disagreed. The 16% of the participants who agreed might have been unfortunate to have experienced side effects after immunisation in the past (see Figure 9). Although the literature suggested that side effects of vaccination were an issue for HCWs (Australian Influenza Specialist Group, 2007a), these results showed that the majority were not influenced by concerns around this. Regular education programs may help the 15 participants who neither agreed nor disagreed make an informed decision before being vaccinated. It is encouraging that most participants were not deterred from having the influenza vaccine by side effects which would suggest that they might have received the influenza vaccine in the past without any significant problems.

![Figure 9: Responses to Statement 9 “The side effects of influenza vaccination are unpleasant and significant enough to stop me from wanting to be vaccinated”](image)

**Vaccinated versus non-vaccinated nurses**

Data for the first nine questions were assigned to two groups: vaccinated in 2008 or not. Then means were calculated for each group and t-tests calculated to determine if there were any significant differences in the responses between the two groups. The larger the mean score the greater the agreement with the statement (see Table 1)
Table 1: Comparison of 2008 vaccinated versus unvaccinated nurses

<table>
<thead>
<tr>
<th></th>
<th>Vacc mean</th>
<th>UnVacc mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>The Influenza Vaccine is effective in preventing influenza</td>
<td>4.2*</td>
</tr>
<tr>
<td>Q2</td>
<td>The Influenza Vaccine does not cause any side effects</td>
<td>3.0*</td>
</tr>
<tr>
<td>Q3</td>
<td>The Influenza Vaccine can cause influenza</td>
<td>2.4</td>
</tr>
<tr>
<td>Q4</td>
<td>All Registered Nurses should repeat the Influenza Vaccine annually</td>
<td>4.2*</td>
</tr>
<tr>
<td>Q5</td>
<td>If I’m healthy I’m unlikely to get influenza</td>
<td>1.7*</td>
</tr>
<tr>
<td>Q6</td>
<td>I am at risk of contracting influenza through patient contact</td>
<td>4.4*</td>
</tr>
<tr>
<td>Q7</td>
<td>Influenza is a mild illness</td>
<td>1.6</td>
</tr>
<tr>
<td>Q8</td>
<td>I am well informed on how influenza is spread</td>
<td>4.3</td>
</tr>
<tr>
<td>Q9</td>
<td>The side effects of influenza vaccination are unpleasant and significant enough to stop me from wanting to be vaccinated</td>
<td>1.6*</td>
</tr>
</tbody>
</table>

*significant at p<0.01

Significant differences are seen between the groups for their responses to questions 1, 2, 4, 5, 6 and 9. These results indicate that, compared to nurses who chose not to be vaccinated in 2008, those who were vaccinated are more likely to believe correct information about the vaccine, are more likely to recognize the seriousness and risk of nosocomial infection, and are strong believers in nurses’ responsibility to be vaccinated annually.

4.1.1 A Comparison of Registered Nurses who work in the hospital, community and in both areas.

A comparison of these three areas was made to determine if there were different factors that influenced the RNs to have the influenza vaccine. While some of the answers varied considerably, depending on the area that the RN worked in, three statements in particular stood out and will be discussed, highlighting the comparisons.

Statement 1 asked if the influenza vaccine was effective in preventing influenza. Just over 60% of RNs who worked only in the hospital strongly agreed/agreed with this, compared to just over 40% of RNs who worked only in the community. All of the RNs who worked in both the hospital and community settings agreed that the influenza vaccine was effective in preventing influenza. This result would suggest that the RNs who worked in both areas understood the benefits of being vaccinated against influenza infection. It could be that working across the two domains heightened the RNs’ awareness in regard to cross-infection. They might have patients whom they have seen in their homes who regularly had the influenza vaccine and stayed well, in comparison with patients who became unwell and were unvaccinated. Forty percent of RNs who worked in the community did not have faith that the influenza vaccine prevented influenza. They might have clients in the community who had had the vaccine but still
contracted flu-like symptoms. Unless a blood test was done to isolate the infection the vaccine could be associated with their becoming unwell.

The optimal time to vaccinate people in high risk groups is usually during March to April which is in advance to the usual May to October period of influenza activity. The effectiveness of the vaccine depends primarily on the age and immune competence of the vaccine recipient and the degree of similarity between the virus strains in the vaccine and those in circulation. (MOH, 2006, p. 262)

Statement 3 asked if the influenza vaccine could cause influenza. Seventy six percent of RNs who worked in both the hospital and community disagreed with this statement, compared to 42% of the hospital-only RNs and 38% who worked only in the community (see Figure 10). RNs who worked across both work environments might be able to compare their vaccinated community patients, with those patients who were hospitalised as a result of influenza infection whom might have been unvaccinated. Of the participants who only worked in the community, 42% agreed that the influenza vaccine could cause influenza. As already discussed, this response might be due to their experience with patients who became unwell after vaccination. It could also be due to their lack of knowledge about the vaccine.

Poor differentiation between influenza and colds, non-influenza respiratory infections and non-viral illnesses that can produce influenza-like symptoms is common. Differences between these infections must be continually pushed to HCWs. Furthermore, HCWs should be educated that the influenza vaccine does not contain any live viruses and hence cannot cause influenza. (ISG, 2007a, p. 5)

This education would also address the percentage of RNs who had no opinion about whether the influenza vaccine could cause influenza. Of the participants who only worked in the hospital 35% agreed that the vaccine caused influenza. The reasons for this response could be the same as their colleagues who worked only in the community.
Figure 10: Responses to Statement 3 “The influenza vaccine can cause influenza”

Statement 7 asked if influenza was a mild illness. The RNs who worked in the hospital only (98%) and those who worked in the hospital and community (88%) settings recognised that influenza infection was a serious illness. Only 35% of community RNs strongly disagreed that influenza was a mild illness and 57% had no opinion (see Figure 11). It is a concern that a large proportion of the participants from the community setting had no opinion as to whether influenza illness was mild or not.

As highlighted in the literature, influenza illness causes an estimated 250,000 to 500,000 deaths annually (Steckal, 2007). Influenza is not a mild illness, and between 56,000 and 164,000 New Zealanders consult their doctor each year because of influenza (Calder, 2007). To adequately ensure that RNs are well informed about influenza illness, it is important to provide good information around the illness each year as the influenza season approaches.
4.1.2 Registered Nurses’ attitudes towards the local DHB influenza vaccine programme.

In question 10, a number of statements were proposed and the participant was asked to either agree or disagree (see Figure 12).

*Statement 10a: I find the campaign effective in reminding me to get my influenza vaccine.*

While 43 participants agreed with the above statement there were 13 who disagreed. This response would indicate that the process of reminding staff that the influenza vaccine is now available might not have been an effective reminder for all staff. Regular and up-to-date education programs were quoted as being beneficial to enlist new HCWs to have the vaccine and encourage annual uptake from staff who usually were vaccinated (Hoffmann & Perl, 2005).
Statement 10b: I work shifts that are not conducive to me receiving the influenza vaccine.
Fifty five participants answered this question and 47 disagreed that shift work prevented them from receiving the influenza vaccine. Only 8 participants felt that the annual programme’s delivery times clashed with their shifts. This is a clear indication that the current programme was providing opportunities at all hours for staff to receive the influenza vaccine. As stated in Christini et al. (2007), for some, availability alone is not always an incentive to be vaccinated; a lack of time and poor motivation have been given as reasons for poor uptake of the vaccine.

Statement 10c: I feel pressured to become vaccinated.
This statement was included to determine if the influenza vaccination programme provides participants with the information to make an informed decision, without coercion. All participants answered this question, with 21 agreeing that they do feel pressured to be vaccinated. Coercion in the work place can come in differing forms, from the CNM encouraging that all staff receive the vaccine to being shoulder tapped to remind one to get vaccinated.

Helms and Polgreen (2008, p. 1027) discuss how “mandatory immunisation infringes civil liberty and autonomy. Society recognises the right of people to bodily integrity. Vaccines are invasive so there is greater infringement of liberty than other public health mandates which infringe autonomy, such as seat belts”. It is important that staff have the right to make an informed choice about having the influenza vaccine, without feeling pressured to make their decision.

Statement 10d: The delivery time and location is not convenient to me.
This statement was included to determine if staff who worked outside of the hospital or outside of regular hours (8am to 5pm) felt that the same conditions as their colleagues were available to them to access the influenza vaccine. Forty three participants disagreed with the statement and 11 agreed, with two participants not answering. Results would suggest that the delivery time and location of the annual influenza programme suited most of the participants but there were some who felt disadvantaged. This response could be due to their hours of work or work environment. The provision of mobile vaccination clinics or “needles on wheels” make vaccination in the work areas more accessible for busy clinical staff. These have proven successful in increasing vaccination rates in some hospitals. Accessibility can be enhanced by adding an after-hours mobile service to capture permanent night staff, and delivery over a period of time to capture staff on leave (Australian Influenza Specialist Group, 2007a).
Statement 10e: I prefer to be vaccinated at my work area.

Thirty seven participants agreed that they preferred to be vaccinated in their work areas and seventeen disagreed, with two participants not responding. The local DHB where this study was undertaken have minimal authorised vaccinators working in general areas. Occupational Health Nurses deliver this program normally but, for the 2009 vaccination campaign, they had support from the Immunisation Team and Infection Control Nurses.

Statement 10f: The information I receive around influenza vaccination is adequate to allow me to make an informed decision about being vaccinated.

Over 80% (n=48) of the participants agreed with this statement, indicating that the majority of these RNs believed they were well informed about the influenza vaccine. Seven participants disagreed with this and one nurse did not reply. Supportive education programs and keeping key messages applicable are important strategies to successful influenza vaccine promotion (Australian Influenza Specialist Group, 2007a).

4.1.3 Registered Nurses’ attitudes to working when sick.

Statement 11 asked the participants which sentence best described how they felt about working when sick. There were 89 responses indicating some participants answered more than once (see Figure 13).

Statement 11a: I don’t work when I am sick.

If the participant gave this response, then they were asked to proceed to statement 12. Seventeen participants agreed with this statement. It is noteworthy that 39 nurses in this study indicated that they went to work when they were sick.

Statement 11b: I sometimes work when I am sick because I don’t want to let my colleagues down.

Of the 39 participants who identified that they work when sick, 35 (90%) indicated it was because they did not want to let their colleagues down. Provision of evidence-based education programs that highlight the transmission of influenza virus from person-to-person through working when unwell and infecting colleagues and patients will help nurses make an informed decision about coming to work when they are unwell. The Centers for Disease Control and Prevention (2006) reiterated that the spread of the influenza virus is primarily by droplet infection from coughing or sneezing and can have a sudden onset.
Figure 12: Responses to Statement 10 “Nurses attitudes towards the HBDHB influenza vaccine program”
Statement 11c: I sometimes work when I am sick because I don’t want to let my patients down.
Eighteen participants (46%) indicated this was a reason for working when sick. Working when symptomatic is definitely exposing vulnerable patients to increased risk of infection and this could attribute to an extended time in hospital for the patient. This is especially of concern for patients with chronic health conditions who are at risk of complications from influenza. Jennings (2006) discussed the spread of influenza infection from HCW to patients being able to occur before the HCW was symptomatic as they were contagious a day before symptoms were apparent.

Statement 11d: I sometimes work when I am sick because I am not concerned with cross-infection.
Only 2 participants agreed with this statement, but 54 believe they may prevent cross-infection by using other precautions when in close patient contact. These might include wearing a mask, rigorous hand washing and choosing not to nurse immuno-compromised patients.

Statement 11e: I sometimes work when I am sick because I am concerned with using up my sick leave.
Seventeen participants agreed with this statement, which is supported by the RNs in statement 15. Health care workers may not always take sick-leave for themselves but may be the main caregiver in their family and stay home when other family members, primarily their children, are unwell.

Figure 13: Agreement with Statement 11 a-e “Registered Nurses’ attitudes to working when sick”
The issue around working when ill has also been highlighted in the literature. Tosh and Poland (2007) discussed cases where HCWs had been associated with outbreaks of influenza in hospitals. Nosocomial influenza could be transmitted from HCWs to their patients by working when unwell as the virus is virulent and easily spread.

Participants working when they are unwell can be a complex issue as nurses are concerned that they might not have adequate sick-leave when they need it. If the HCW requires an operation or a family member becomes unwell, then sick-leave can quickly be eroded. Once sick-leave has been used for the year, it could then become a financial burden for some who are unwell as they will not get paid while off work and may have to rely on annual leave. It is assured that the RNs who do come to work when they are sick are taking other precautions to ensure they are not infecting colleagues and patients. The literature discussed the use of “universal precaution measures such as good hand washing techniques and other safety measures to reduce transmission of infection” (Willis & Wortley, 2007, p. 22).

4.1.4 Nurses participation in the DHB influenza vaccine programme.

Participants were asked where they preferred to have the influenza vaccine administered. Three vaccination providers were highlighted, and participants were asked to indicate where they would go to be vaccinated (see Figure 14). Out of the 56 participants, 32 identified a preference. Twenty four RNs (43%) preferred to have their influenza vaccination through the annual DHB program and eight preferred to be vaccinated offsite. Having the vaccine available during work time and being delivered at a time and place that suits the individual is convenient for most RNs. The literature supports this and states that lack of time and poor motivation have been cited as reasons to not being vaccinated with the influenza vaccine (Christini et al., 2007). The remaining 24 participants who did not identify a preference for where they would like to be vaccinated were the group of participants whom identified as not receiving the influenza vaccination. The reasons outlined for this have been varied from having no faith that the influenza vaccine is effective in preventing illness to being allergic to products used in the manufacture of the vaccine. There were 3 RNs in the group of 24 who had received the vaccine once in the last four years.

Participants were also asked if they qualified to receive the influenza vaccine under the government health scheme for chronic illness or if they preferred to be vaccinated at a medical practice. Four RNs (7%) indicated a preference for each option. This could be due to the DHB influenza vaccination consent form, asking staff to identify any medical conditions they have or
any medication that they are taking. The RNs medical history is confidential information that they may not want their employer to know.

The New Zealand National Influenza Strategy Group (2008b) and Ministry of Health (2006) discussed eligible conditions that qualified for funded influenza vaccine through a medical practice. Also discussed were special groups who should only be vaccinated under controlled conditions. If the RN fitted into either group he or she might have preferred to go to their medical practice as staff there would have prior knowledge of the RNs medical history, thus preventing explanations to the DHB vaccinator. Four participants identified that they went to their medical practice to receive their influenza vaccine and that they also fitted into the chronic health scheme for a chronic illness, consequently, they answered twice.

![Figure 14: Responses to Statement 12 “Nurses use of the HBDHB vaccination program”](image)

4.1.5 Demographics.

**Statement 13: Where do you work**

Participants were asked to identify which area they worked in. This statement was to ascertain if there were differing attitudes to the uptake of the influenza vaccine and influenza infection between the RNs in the hospital and those in the community setting. Thirty three identified as working in the hospital, 14 in the community, and 9 stated that they worked over both of these areas.
4.1.6 Nurse respondents who had the influenza vaccine in the last four years.

Statement 14: In the last four years how often did you have the influenza vaccine?
In 2005, 20 (36%) of participants had the vaccine, 22 (39%) in 2006, 20 (36%) in 2007, and only 16 (28%) in 2008 (see Figure 15). There has been a decline in the uptake of the vaccine by this group of RNs since 2006. Only 13 out of 56 RNs indicated that they had had the influenza vaccine each year for the past four years. Fifteen RNs stated that they have only sporadically had the vaccine in the last four years, so were partially vaccinated and 28 were unvaccinated.

Demographically, participants were divided into the three areas of work, hospital, community, or working in both, to discern if there were differing results to the influenza vaccine uptake. The number of hospital staff who identified as having had the influenza vaccine every year in the last 4 years was 11, 7 were partially vaccinated and 15 were unvaccinated. The community staff had only 1 staff member who had been regularly vaccinated in the last 4 years, 5 were partially, and 8 unvaccinated. RNs who worked in both the hospital and the community had 1 person who had been regularly vaccinated in the last 4 years, 3 were partially, and 5 unvaccinated.

The New Zealand National Influenza Strategy Group (2008), are concerned at the relatively low rate of influenza immunisation among health professionals. Coverage rates for some DHBs are just 20-40 percent regardless of the vaccine being free. The risk of vulnerable patients being exposed to the virus from un-immunised HCWs can be easily addressed through annual immunisation programs. These results are also reflected in this research completed in 2008 through a local DHB. As these results are mirrored in other DHBs (New Zealand National Influenza Strategy Group, 2008) this is not only a local issue.
4.1.7 Participants additional comments concerning the DHB influenza vaccine program.

Statement 15: Please add any additional comments concerning the DHB influenza vaccine program.

There were 25 RNs who made comments about the local DHB influenza vaccine program. Participants were divided in how they felt about the program that the local DHB delivered but were mostly supportive of it even if they had decided not to be vaccinated. Their reasons for this ranged from having allergies to the products in the vaccine and being needle-phobic, to not believing in vaccination and a lack of faith that the vaccine was effective. Some participants had never had the flu so did not appear to value having the vaccine and did not see the need for prophylactic measures. Being young and of good health was quoted in the comments and also in the literature as a reason to not have the influenza vaccine (Australian Influenza Specialist Group, 2007a).

Themes had been identified from the statements that the participants made and these were discussed along with the literature which highlighted the same issues. Thomas (2006, p. 238) states that the “primary purpose of the inductive approach is to allow research findings to emerge from the frequent, dominant or significant themes inherent in raw data, without the
restraints imposed by structured methodologies”. Participants comments have been condensed into themes and analysed.

**Positive Support for the influenza vaccine programme:**

Thirteen participants praised the free influenza vaccine program that the local DHB provides. They appreciated the Occupational Health Nurses utilising study days and setting up at the education centre with their “needles on wheels” trolley to be available to vaccinate staff attending these days. Some participants felt mystified that colleagues did not utilise the programme. This is supported in the literature where a study revealed that HCW stated limited access and having to obtain and organise the dispensing of the vaccine at their own cost were reasons for poor uptake of the influenza vaccine (Australian Influenza Specialist Group, 2007a).

**Participants comments:**

“It’s great to be able to get this. Just seeing the occupational health nurse makes me feel valued and cared for. I missed the vaccination this year as I was just too overloaded in the ward. It became a low priority compared to just getting the shift done. Not enough time to spare really” (p. 40)

“Easily accessible vaccinators very cooperative in getting the vaccine to you i.e.; set up at education center as know a lot of paediatric staff at study day, great service, thank you” (p. 8)

“This is a well run program with the nurses going the extra mile to ensure staff receive their vaccines” (p.32)

**Refuse to have the influenza vaccine:**

Some participants have identified that they do not have the influenza vaccine. This is a theme that is supported by the poor vaccination rates as noted in Statement 14. Twenty eight out of 56 participants indicated that they do not receive the influenza vaccine. Some reasons identified by RNs were having allergies to products used in the manufacture of the vaccine. Other reasons vary from lack of time to get to the venue to be vaccinated, to not valuing or having faith in the vaccine. The literature also highlights these barriers as other HCWs have quoted similar barriers. “I never get the flu so don’t feel I need the vaccine; I am a healthy person and would prefer my immune system to protect me against the flu” (Australian Influenza Specialist Group, 2007a, p. 3).

Never having been infected with influenza and being young and fit are reasons why some participants refuse to be vaccinated. These reasons are a myth that the New Zealand National Influenza Strategy Group (2008b) attempts to dispel in their yearly national campaign. Being young and fit will not prevent influenza infection. Annual influenza vaccination with the current
strain in circulation is one prophylactic measure that is advised. This is also supported in the literature (Australian Influenza Specialist Group, 2007a). The Ministry of Health (2006), notes that immunity to certain strains of the virus can only be developed through exposure to it in the past, and since differing strains occur each year, most people require annual immunisation.

Multiple allergies and sensitivity to egg whites were cited by three participants as reasons to not be vaccinated with the influenza vaccine. The NZNISG (2008b) states that people who identify as being sensitive to egg products should be cautious as the vaccine may contain minute amounts of egg protein. It is advised they consult with a medical professional before being vaccinated. Being needle phobic was also quoted as a reason not to be vaccinated. The literature identifies and agrees with this (ISG, 2007a).

Participants comments:

“I have consistently refused to be vaccinated but this year have had the flu & been off work sick. I will consider carefully next year when offered again. I still am very sceptical that it prevents people catching flu” (p. 54)

“I have chosen not to have the influenza vaccine. No real reason why- (time and never getting to the place maybe)” (p. 14)

“I find more elderly community clients become more unwell when they have the vaccine. I neither encourage or discourage this vaccine but would not recommend it to my family” (p. 30)

Concern over using sick leave:

Some participants indicated that they were unhappy with the way the sick leave was structured and that consequently, they did work when unwell because of not wanting to use their sick leave in case they became really ill and had no sick leave left to take. There was also concern that the sick leave allocation had changed in the last wage round, reducing this for part-time staff. Participant 13 has covered a few themes in comments about the DHB influenza vaccine program. Participant comment:

“Whilst I appreciate it is an individual choice I believe that all health workers should have it. In this environment especially this year staff just pass ‘Bugs’ from one to another. The incidence of sickness seems large this year. Also I believe that having the vaccination gives some protection and you might get a few cold symptoms but not the intense fatigue/muscle ache from full infection. Am angry that sick leave has changed as I have not used any in the last 4 years but due to being part time am only entitled to 7 in a year which lets face it if you get D&V or sinus infection etc- usually takes a while to recover. Have worked when sick because of this” (p. 13).

Pressured to be vaccinated:
The expectation to have the influenza vaccine, demonstrated by continual reminders, shoulder tapping and using the CNM to remind staff, could be interpreted as being pressured to be vaccinated. Feeling pressured to be vaccinated was also mentioned in Statement 15, and 21 out of 56 participants identified this in Statement 10c. The literature highlights this issue in discussion papers around the provision of mandating influenza vaccination for those who have direct patient contact (Kordsmeier, 2006; Hancock, 2006). Enforcing influenza vaccination could be seen as impinging on the right of self determination and could cause alienation within the work force if staff had refused to be vaccinated (Isaacs and Leask, 2008).

“I choose not to be vaccinated as I am young (23yrs) & don’t get the ‘flu’ as such. Often feel pressured to get vaccinated by the local DHB” (p 15)

4.2 Summary of the findings.

The findings from this research highlights that 37% of RNs had incorrect knowledge about the effectiveness of the influenza vaccine. Another example of RNs holding incorrect beliefs about the vaccine is demonstrated in the 55% of RNs who either think it can or might cause influenza. Participants were divided about RNs repeating the influenza vaccination annually with more who disagreed than agreed. Most RNs do not agree that being healthy will prevent them from contracting influenza infection and they are aware that they are at risk of infection through patient contact. They also believe that influenza is not a mild illness.

A comparison was made between RNs working in the hospital, community, and in both areas. It highlighted differing opinions, depending on work environments, although the numbers in each group were small and thus the results cannot be generalised. Those RNs who work in both the hospital and community appear to have more faith in the influenza vaccine being effective in preventing influenza.

Registered Nurses were asked if the annual influenza vaccination program suited their needs. The results indicate that overall the information that they receive is adequate to make an informed choice to be vaccinated. They prefer vaccination to be where they work and shift work is not a deterrent to receiving the vaccine. They also indicate that the delivery of the program is convenient to their needs and while some RNs feel pressured to be vaccinated, most do not. The local DHB program is effective in reminding RNs to get their influenza vaccine and they prefer this to be done through the DHB. There were concerns around using sick leave and running out when it may be needed most. RNs identify that they come to work when unwell as they mainly do not want to let their colleagues or patients down.
In the last four years the influenza vaccine has only been accessed in this sample by an average of 20 RNs each year out of 56, and this number decreased in 2008 to 16. Although RNs mostly indicate that they have faith in the influenza vaccine and the local DHB programme, there are still those who do not agree with vaccination and would not recommend it to their patients or family. There are a variety of reasons why the influenza vaccine is declined, ranging from anaphylaxis, not finding time to access the vaccine, to not believing in the vaccine. The Occupational Health Nurses were praised for providing a good service and were appreciated for using innovative ways to deliver the influenza vaccine.

What has been highlighted in the literature review and in the findings are that HCWs and in this research RNs are not having the influenza vaccine annually. The reasons acknowledged in the literature have also been recognized in this study.
CHAPTER FIVE - SUMMARY AND CONCLUSIONS

5.0 Introduction

In this chapter, the research study is discussed and the findings identified. Recommendations will be highlighted for further nursing research and the limitations of this research discussed. The research question will be reviewed to ensure that it has been adequately addressed. To conclude, there will be recommendations proposed, after consideration of the research findings.

5.1 Aim of this Research

The aim of this research was to identify what influences RNs to have the influenza vaccine. To answer this question, a quantitative questionnaire was developed from the literature and a questionnaire that had previously been developed through a local DHB. There were 56 RNs who responded to the survey questionnaire, resulting in a sample of 25% of the nurses in the areas surveyed. The demographics showed that 33 RNs identified as working in the hospital, 14 in the community, and 9 worked in both the hospital and the community.

5.2 Summary

Although the findings have shown that some RNs surveyed have confidence in the influenza vaccine being effective in preventing influenza infection, there is still a high proportion of RNs who think that the vaccine can or might cause influenza. Participants have identified through this research incorrect knowledge and beliefs about the influenza vaccine, infection and their understanding around cross infection. RN’s can become immunisation vaccinators once they have completed the training, and to ensure on going competency must attend an annual update. They can then administer the influenza vaccine to HCW’s in their work area ensuring the time and place suits each individual. The advantage of having RNs with this education and knowledge will flow over to the work areas and provide both consistency in information given and in the services that are offered. RNs were asked if they should repeat the influenza vaccine annually, with nearly half who did not think they should with a big proportion who had no opinion either way. RNs did not think that being healthy would prevent them from getting influenza and agreed that they were at risk of contracting influenza through patient contact. RNs
were also aware that influenza was not a mild illness. They felt well informed on how it was spread and did not see side-effects from being vaccinated as a deterrent to future vaccination.

The researcher concludes that while the findings suggest this is in contrast to vaccination rates for the last four years, and that the participants who answered neither agree nor disagree are the group to target for next year; they may not have an opinion either way due to lack of knowledge and information. The literature also highlights the fact that HCWs show a low stimulation to be vaccinated and that the provision of comprehensive educational programs may increase uptake (Willis & Wortley, 2007).

A comparison was made between RNs who work in the hospital, community or in both settings. Three attitudinal statements were analysed and highlighted that RNs who worked across both areas were more confident that the influenza vaccine was effective in preventing influenza (100%), in comparison with RNs who worked only in the hospital (60%) or community (40%), who were less confident in this effectiveness. The same was obvious when participants were asked if the influenza vaccine could cause influenza. Just over three quarters of RNs who worked in both areas disagreed with this. The RNs in the community (38%) and the hospital (42%) were not as confident that the vaccine did not cause influenza. RNs who worked in the hospital (98%) and those who worked across both disciplines (88%) both disagreed that influenza is a mild illness. Only 35% of community RNs disagreed with this, while 57% had no opinion either way.

The second part of the questionnaire looked at identifying factors associated with the local DHB influenza vaccine programme that were effective. Overall, participants thought that the annual campaign was working well and that the information received around influenza vaccination was adequate to allow them to make an informed decision about being vaccinated. Over 60% preferred to be vaccinated in their work areas and over 80% did not agree with the statement that the delivery time and location was not convenient for them. When asked if they felt pressure to be vaccinated, once again over 60% disagreed with this and most felt that the shifts that they worked were conducive to receiving the vaccine and that the campaign was effective in reminding them to get the influenza vaccine. The researcher then concludes that the local
DHB vaccination program overall is working well in encouraging staff to be vaccinated, so why are they not?

Participants were asked to identify how they felt about working when they were sick. Out of 56 participants, there were 89 responses to this question as the participants could answer more than once. Firstly, if they did not work at all when sick, they could move on to the next question. The most common reason given by participants as to why they would work when they were sick was that they did not want to let their colleagues down, and secondly that they did not want to let their patients down. Only 2 participants stated that they worked when they were sick as they were not concerned with cross-infection, and 17 stated that they worked when sick as they were concerned about running out of their sick leave.

The local DHB vaccination program was the preferred provider, indicated by the participants for influenza vaccine uptake. There were four who indicated that they chose to go to their medical practice and four who qualified to receive the influenza vaccine under the government health scheme for chronic illness. Only 32 participants answered this question.

When asked how often they had received the influenza vaccine in the last four years results show that there has been a decline since 2006 (22), 2007 (20), 2008 (16). These results were then divided into work areas. Hospital participants (33) had a total of 11 vaccinated. Community (14) had 1 vaccinated, and participants who worked in both areas (9) also had 1 vaccinated. These results were 15 participants who identified as being partially vaccinated, 7 from the hospital, 5 from the community, and 3 from both work areas.

Lastly, it was asked if there were additional comments concerning the local DHB influenza vaccine program. It was identified that staff chose not to have the influenza vaccine because they were allergic to products in the vaccine and also were needle phobic. Some stated that they did not believe in vaccination, having no faith that the vaccine worked as they had witnessed people becoming sick after being vaccinated. Never having had the flu and being young and of good health were also identified as reasons why they would refuse vaccination.
It was also noted that the programme was valued and supported by staff. They appreciated the time and effort that the Occupational Health Nurses put into the program and saw the free service as being very positive. Sick leave changes were acknowledged as a reason for coming to work when sick as RNs were concerned that they would run out of sick leave allocated. Feeling pressured to be vaccinated was also highlighted by 21 out of the 56 participants.

An important finding from this research identified that, although participants felt the annual DHB vaccination program was working well, they were not accessing it. There has been a decline in vaccination uptake since 2006 from 22 to 16 in 2008.

5.3 Limitations to this Study

Limitations to the research were that a power analysis should have been done to establish the number of RNs employed in the local DHB required to produce significant results. When the researcher initially asked for this information it was declined.

5.4 Recommendations

This research has highlighted the need for a collaborative approach to promoting and delivering the annual influenza vaccine program through the local DHB. The Occupational Health team, with the support of Infection Control, Immunisation Team and the Public Health Unit, have developed a collaborative approach to the delivery of the influenza program for the 2009 launch of the influenza season. This approach has lifted the vaccination rate for all HCWs by 33%. The researcher would recommend that this programme continue each year and that the momentum of this campaign help to increase influenza uptake rates in the years to come. Due to the limitations of adequately capturing the percentage of HCW who may choose to have the vaccine outside the DHB, it is recommended that a system be put in place to capture this information. The annual influenza vaccine programme would benefit in having the continued support of DHB management to ensure that rates of staff influenza vaccination continue to improve.
5.41 Recommendations for education

Information gained through this survey has shown that there are a proportion of RNs who do not appear to understand the characteristics of the vaccine or the modes of transmission of the disease, to make an informed decision about being vaccinated with the influenza vaccine. It is recommended that provision be made at mandatory study days for regular up-dates and that the DHB on line communication to staff (What’s on) continue to be utilised for both education up-dates and to inform when clinics are being held and where these are.

5.42 Recommendations for practice

Other DHBs have found that, by having trained adult vaccinators as part of the everyday work team, the influenza vaccine was able to be administered in the work environment without disruption in work time, and that the 20 minute observation post-vaccination could be carried out on the job. Also highlighted by the survey was the fact that participants identified not having time to get to the vaccination area; being too busy to leave their work area for the vaccination; and having missed the time when the Occupational Health Nurses were in their work areas vaccinating as barriers to the uptake of the influenza vaccine. It is recommended that by having trained vaccinators this will enable staff to have the vaccine at a time and place that suits them. It will also provide yearly education to this group of vaccinators as they will be required to do annual updates as part of the vaccinator requirements. This information will then be filtered back to their work areas, enabling staff to be better informed to answer any queries posed by their colleagues.

5.5 Recommendation for Further Research

Influenza vaccination has been highlighted in the literature as one of the primary prevention methods for the spread of nosocomial influenza infection in the health care settings (Tosh & Poland, 2007). A recommendation for further research would be a qualitative descriptive design. This would capture the emotive side as to why RNs are unwilling to access the influenza vaccination annually through the local DHB programme. It is also recommended that this survey be repeated with a larger sample of RNs.
5.6 Conclusion

This study has identified that having faith that the influenza vaccine is effective in helping to prevent influenza illness and does not cause serious side-effects would encourage RNs to have the influenza vaccine annually. Understanding how the virus is transmitted from person to person, and the realisation that being in optimal health will not prevent infection with the influenza virus, will ensure that RNs explore other methods of personal protection.

The DHB annual influenza vaccination programme is delivered by the Occupational Health Nurses at the hospital and in the community. They are supported by the Immunisation Team, Infection Control Team and Public Health Nurses. This campaign is advertised through the online media and posters around the hospital. Ongoing education and health promotion is an integral part of the delivery to lift the awareness and dispel the myths associated with influenza vaccines. By the provision of up-to-date information HCWs are able to make an informed decision without feeling pressured to have the vaccine and should be able to choose where and when to be vaccinated.

Working while unwell is an issue for some who wish to conserve their sick leave. There are reasons as to why they feel inclined to do this, from not wanting to let their colleagues and patients down, to running out of sick leave. Once again better education around the spread of infectious illnesses will enable RNs to make an informed choice before choosing to work when unwell.
REFERENCES


Kordsmeier, J. (2006). Influenza vaccinations: Should they be mandatory for nurses? 
2nd Opinion, 3(2), 76-77.


Appendix I  Central Regional Ethics Committee approval Letter

Health and Disability Ethics Committees

3 July 2006

Catherine Hedley
7 Ewan Place
Taradale
Napier

Dear Catherine

What influences RN's to have the Influenza Vaccine
Catherine Hedley
EIT
CEN/06/28/EXP

The above study has been given ethical approval by the Central Regional Ethics Committee.

Approved Documents
Participant Information Sheet version 1 submitted

Accreditation
The Committee involved in the approval of this study is accredited by the Health Research Council and is constituted and operates in accordance with the Operational Standard for Ethics Committees, April 2006.

Final Report
The study is approved until 3 August 2009. A final report is required at the end of the study. The report form is available on http://www.ethicscommittees.health.govt.nz and should be forwarded along with a summary of the results. If the study will not be completed as advised, please forward a progress report and an application for extension of ethical approval one month before the above date.

Amendments
All amendments to the study must be advised to the Committee prior to their implementation, except in the case where immediate implementation is required for reasons of safety. In such cases the Committee must be notified as soon as possible of the change.

Please quote the above ethics committee reference number in all correspondence.

The Principal Investigator is responsible for advising any other study sites of approvals and all other correspondence with the Ethics Committee.

It should be noted that Ethics Committee approval does not imply any resource commitment or administrative facilitation by any healthcare provider within whose facility the research is to be carried out. Where applicable, authority for this must be obtained separately from the appropriate manager within the organisation.

Yours sincerely,

Jiska van Bruggen
Central Regional Ethics Committee Administrator
Email: jiska_van_bruggen@moh.govt.nz

Central Regional Ethics Committee
Ministry of Health
Level 2, 1-3 The Terraces
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Administered by the Ministry of Health  Approved by the Health Research Council  http://www.moh.health.govt.nz/ethicscommittees

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Appendix II  Eastern Institute of Technology Research Approvals Committee Approval Letter

Ref: 13/08

1 July 2008

Catherine Hedley
7 Ewen Place
Taradale
Napier 4112

Dear Catherine

Master of Nursing Student Research – Faculty of Health & Sport Science

Your research project ‘What influences RN’s to have the influenza vaccine’ was examined by the Research Approvals Committee at their meeting held on 27 June 2008.

I am pleased to advise that the Committee has approved your project.

We wish you well for the project.

Yours sincerely

Jeanette Fifield
Secretary
Research Approvals Committee

Cc: Head of School, Nursing – Faculty of Health & Sport Science
Dr. Bob Marshall
22 July 2008

Catherine Hedley
Flaxmore Community Health
19 Swansea Road
Flaxmore

Dear Catherine

Re: Hawke's Bay District Health Board Research Application

Thank you for your application to conduct research within the Hawke’s Bay District Health Board. I am pleased to advise that your application has been successful.

Please find enclosed a signed copy of your application.

Should you have any queries during your research, I can be contacted during office hours. It would assist if you quoted your registration number in any communication with this office.

Regards

Yours sincerely

[Signature]

Alasdair Williamson RN MSc
RESEARCH OFFICER
Appendix IV  Letter of Support from the Maori Health Unit

Cath Hedley

From:  Rapal Pohe  
Sent:  Tuesday, 10 June 2008 8:14  
To:  Cath Hedley  
Subject:  RE: Ethical Consideration  

Kia ora Cath  
There may be cultural reasons for RNs or any Maori person refusing to have the influenza vaccine however I have not yet met anyone who has used this for a reason. Cultural reasons could be because foreign bodies are introduced into the blood stream but in today's Maori there will not be many people who are even aware that this is a cultural issue. I am aware that Maori nurses like their colleagues from other cultures will not have the vaccine for the same ethical reasons.

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From:  Cath Hedley  
Sent:  Wednesday, 4 June 2008 11:52 a.m.  
To:  Rapal Pohe  Subject:  Ethical Consideration  

Kia ora Rapal  

My name is Cath Hedley and I am undertaking research as part of my thesis for my master's degree in nursing. The question I pose is "What influences Registered Nurses to have the influenza Vaccine?" The RN to be surveyed are those that work for the HRCNB both in the hospital and in the community. To obtain consent from the ethics committee one of the questions that is asked is a description of any ethical issues for consideration. I realise that although this research is optional and anonymous there may be Maori RNs who for cultural reasons don't have the vaccine. I have not included this in my questionnaire and ask you if you see this as a cultural concern. Bearing in mind that the vaccine that is offered through the HRCNB program is optional. I value your response in this area and if you could reply in letter form this will then be included in my thesis.

Many Thanks  
Cath Hedley  
Public Health Nurse  
Registered Nurse  
Flaxmere Community Health
Appendix V  Information Sheet

PARTICIPANT INFORMATION SHEET

You are invited to participate in a research project which asks:

What Influences Registered Nurses to have the Influenza Vaccine?

The purpose of this research project is to discover what influences Registered Nurses to have
the influenza vaccine. This research has gained approval from the Central Regional Ethics
Committee and the Research Approval Committee at EIT. Consent has also been gained from
the HBDHB Research Coordination Committee. Your participation in this research is
voluntary and would involve completing a twenty question survey. Completing the survey
implies consent to participate in this project. All information will be confidential and
anonymous for the purpose of this research, and no individual will be identified in any
reports. Access to findings can be obtained from the HBDHB library.

I am currently a Master of Nursing research student at the Eastern Institute of Technology,

Taradale.

Researcher: Cath Hedley  Email: thevally@xtra.co.nz
7 Ewan Place Taradale    Ph: 845 2303

Work Email: cuth.hedlev@hawkesbaydhh.govt.nz    Ph: 879 9440

For any queries regarding ethical concerns, please contact:
Professor B. Marshall, Faculty of Health & Sports Science, EIT.
Phone 974 8000 ext. 5422
Appendix VI  Questionnaire

Questionnaire: What influences Registered Nurses to have the Influenza Vaccine?

Please complete the following questionnaire and send back via internal mail in the self-addressed envelope attached by the 22nd August 2008.

To: Registered Nurses Employed by the Hawke’s Bay District Health Board.

Please place a circle around the one number that most clearly indicates your answer

<table>
<thead>
<tr>
<th>Question</th>
<th>Description</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>The Influenza Vaccine is effective in preventing Influenza</td>
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<tr>
<td>Q2</td>
<td>The Influenza Vaccine does not cause any side effects</td>
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<tr>
<td>Q3</td>
<td>The Influenza Vaccine can cause influenza</td>
<td></td>
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<tr>
<td>Q4</td>
<td>All Registered Nurses should repeat the Influenza Vaccine annually</td>
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<tr>
<td>Q5</td>
<td>If I’m healthy I’m unlikely to get influenza</td>
<td></td>
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<tr>
<td>Q6</td>
<td>I am at risk of contracting influenza through patient contact</td>
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<td>Q7</td>
<td>Influenza is a mild illness</td>
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<tr>
<td>Q8</td>
<td>I am well informed on how influenza is spread</td>
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<tr>
<td>Q9</td>
<td>The side effects of influenza vaccination are unpleasant and significant enough to stop me from wanting to be vaccinated</td>
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</tbody>
</table>

Q.10 Tick the boxes that describe your response to the following statements about the HBDHB Influenza Vaccine program.

- I find the campaign effective in reminding me to get my influenza vaccine.
- I work shifts that are not conducive to me receiving the Influenza vaccine.
- I feel pressured to become vaccinated.
- The delivery time and location is not convenient to me.
- I prefer to be vaccinated at my work area.
- The information I receive around Influenza vaccination is adequate to allow me to make an informed decision about being vaccinated.
Q 11 Tick the boxes that describe how you feel about working when you are sick.

- I don't work when I am sick (go to Question 12)
- I sometimes work when I am sick because I don't want to let my colleagues down
- I sometimes work when I am sick because I don't want to let my patients down
- I sometimes work when I am sick because I am not concerned about cross infection
- I sometimes work when I am sick because I am concerned about using up my sick leave

Q 12 Tick the boxes that apply to you

- I choose to be vaccinated against influenza from a medical practice.
- I choose to be vaccinated against influenza through the HBDHB Influenza Vaccine program.
- I qualify to receive the Influenza Vaccine under the government health scheme for chronic illness.

Q 13 Tick the box that describes where you work

- I work only in the hospital.
- I work only in the community.
- I work in both the hospital and the community

Q 14 Circle the years that apply

In the last four years how often did you have the Influenza Vaccine?

<table>
<thead>
<tr>
<th>Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
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</table>

Q 15 Please add any additional comments you have concerning the HBDHB Influenza Vaccine programme


Thank you for completing this survey.

Catherine Hedley