The influence of religion and gender on physician and nurse HPV immunization recommendations in Newfoundland and Labrador

by

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## Abstract

Human papillomavirus (HPV) can have serious consequences for all genders. Despite these risks, Newfoundland and Labrador (NL) has failed to include all individuals in the provincially funded HPV vaccination program. The purpose of this instrumental case study was to assess physicians' and nurses' intentions to recommend the HPV vaccine for male youth through the lenses gender and religion, and to use that information to strengthen their intentions to recommend. Data were collected using surveys and individual interviews and analyzed using descriptive statistics and thematic coding. Findings were framed using the Theory of Planned Behaviour and revealed that there is an imbalance in HPV recommendations across genders, that sexual health is viewed primarily the responsibility of females, and that trans and non-female identifying individuals are systematically marginalized by the current policy. These findings have implications for policy and can raise the awareness of practitioners about systemic barriers to recommending the vaccine

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**List of Abbreviations**

| | |
|---|---|
| ARRNL | Association of Registered Nurses Newfoundland and Labrador |
| CDC | Centers for Disease Control |
| KT | Knowledge Translation |
| MSM | Men who have sex with men |
| MSW | Men who have sex with women |
| NACI | National Advisory Committee on Immunization |
| NL | Newfoundland and Labrador |
| NLMA | Newfoundland and Labrador Medical Association |
| NP | Nurse Practitioner |
| HIV | Human immunodeficiency virus |
| HPV | Human papillomavirus |
| RN | Registered Nurse |
| PHA | Public Health Agency of Canada [PHAC] |
| STBBI | Sexually Transmitted and Blood Borne Infection |
| STI | Sexually Transmitted Infection |
| WHO | World Health Organization |
| qHPV | Quadrivalent HPV vaccine |

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## Chapter 1: Introduction

### HPV and HPV vaccination programs in NL

Human papillomavirus (HPV) is a highly infectious, sexually transmitted and blood-borne infection (STBBI) (Government of Canada, 2013; Quinn, 2015). Seventy-five to eighty percent of sexually active adults will acquire the virus at some point in their lifetime (Melvin & Brady, 2014). While most infections resolve on their own and do not lead to cancer, some infections do (Giuliano, Anic, & Nyitray, 2010b). HPV has been related to oncogenic (cancer causing) HPV strains 16 and 18, which are covered by the vaccine, Gardasil®. The majority of these oncogenic HPV infections can be prevented by the vaccine (Lin, Doolan, Hung, & Wu, 2010). While all Canadian provinces and territories currently fund HPV vaccination programs for girls, only 5 provinces include all or some boys in their publicly funded programs (CBC News, 2013, 2015; Government of Nova Scotia, 2015; Ministry of Health and Long Term Care, 2016; Province of British Columbia, 2015).

The vaccine has reached significant uptake in the Newfoundland and Labrador (NL) female population, with immunization rates around 90% (Department of Health and Community Services, 2013b). In comparison, the national immunization rate for HPV was 72% for girls 12-14, and 64% for 17-year old girls in 2013 (Statistics Canada, 2015b). Data were not collected for the male population, as the vaccine is not a part of the provincially funded program in all provinces (Statistics Canada, 2015b) The most recent NL data from the 2012-2013 school year indicate that 94.3 % of grade six girls received the third and final dose in the series (Department of Health and Community Services,

2013b). There are no direct comparative data for boys in this age group in NL, as they are not a part of the publicly funded program. National data on vaccine uptake among boys may not be collected and available until all provinces and territories have chosen to fund the HPV vaccine for all youth (Elliott, 2016). Additionally, it is unlikely there will be publicly available statistics on HPV immunization rates among NL male and transgender youth in the near future.

There are national, international, and multinational recommendations for male HPV vaccination coming from the European Centre for Disease Prevention and Control, the Centers for Disease Control in the United States, Australia, and the National Advisory Committee on Immunization in Canada (NACI) (Audisio et al., 2016, p. 3026; Graham et al., 2015; National Advisory Committee on Immunization [NACI], 2015). Despite the recommendations and proven effectiveness of the vaccine in the male population, some scholars and policy makers have argued that a publicly funded HPV vaccination program for boys would not be a cost-effective program (Kim & Goldie, 2009). This argument is often based on the concept of *herd immunity*. Herd immunity occurs when enough members of a population are immunized that the infection becomes very difficult to spread (The National Institute of Allergy Infectious Diseases, 2013). According to this logic, once high coverage among girls is achieved, it is not cost-effective to vaccinate boys. However, there is also an argument for males to be vaccinated. If males were also covered, there would be even fewer cases of HPV in the whole population, which could extend to protecting girls as well. When coverage rates for females are high, the male population incidence of HPV infections is reduced (Graham et al., 2015). This reduction in male HPV comes as a result of universal female immunization. It is argued that the

benefit of vaccinating boys may be cost-effective when female immunization rates are lower (Chesson, Ekwueme, Saraiya, Dunne, & Markowitz, 2011). For instance, the cost per quality adjusted life years (QALY) was $184,300 when the female uptake was at 75% but only $23,600 when the female vaccine uptake was at 20%. In other words, the cost-effectiveness of the vaccine for boys is dependent on female uptake. This issue will be discussed in more detail in Chapter 2.

A more recent cost-effectiveness analysis of oropharyngeal cancer prevention among males through HPV vaccination suggests that vaccinating boys is cost-effective, independent of female coverage rates. Vaccinating a cohort of 192,940 Canadian males could lead to possible savings ranging from 8 to 28 million dollars depending on vaccine uptake and efficacy (Graham et al., 2015). This model exclusively evaluated the prevention of oropharyngeal cancer and did not consider the cost-saving benefits that might accrue when genital warts, anal cancer, and penile cancer are prevented. This study was conducted independent of female coverage rates for the vaccine.

There are no cost-effectiveness analyses of HPV vaccination for the prevention of anal cancer in the general male population. However, there are some studies that are specific to the men who have sex with men (MSM) population. One such study evaluated the impact of the vaccine on MSM who are HIV-negative (Deshmukh, Chiao, Das, & Cantor, 2014). This study found that those in the group who received the vaccine were 60.77% less likely to contract anal cancer in their lifetime. The authors concluded that vaccinating HIV-negative MSM who had previously been treated for high-grade intraepithelial neoplasia was cost-effective intervention (Deshmukh et al., 2014). Other studies support exclusive MSM vaccination strategies (Kim, 2010).

The cost-effectiveness of HPV vaccination against the direct impact of preventing penile cancer has not been studied, likely due to the disease's relatively low prevalence (Barnholtz-Sloan, Maldonado, Pow-sang, & Giuliano, 2007; Djajadiningrat et al., 2015). In Canada, 155 men were diagnosed with penile cancer in 2010, and 39 men died from penile cancer in 2011 (Canadian Cancer Society, 2016).

One systematic review considered the merits of including all males in three-dose series vaccination programs in high-income countries for the prevention of all types of HPV-related disease (Mohamed-Bechir, Jouin-Bortolotti, & Dervaux, 2015). This study recommended a risk-based approach, noting that a targeted program for MSM would be the most cost-effective. At the same time, the authors acknowledged that the feasibility of implementing this approach was questionable due to the difficulty in identifying an MSM population early in life. The authors also noted that a two-dose series,[1] which is 33% cheaper, and is now recommended for school-aged children could lead to an alternate cost-effectiveness evaluation (2015). While this systematic review may have been robust, it is also important to note that HPV vaccination for males is a field that is quickly changing as more research is published on the subject. The most recent evidence finds value in vaccinating all males, not just MSM (Graham et al., 2015).

The evidence surrounding HPV-related cancers in males and the need for immunizing this population can sometimes be conflicting. This is because research is

[1] The most recent research has also demonstrated that two doses of the vaccine are comparable to the previous three-dose recommendation in the HPV4 vaccine. National Advisory Committee on Immunization (2015) revised their three-dose recommendation to a two-dose regime for all immunocompromised youth 14 years of age and under, and also advised that the second and final dose should follow 6-12 months after the first.

often done in specific populations, for example HIV-negative MSM, where it can be challenging to make broad generalizations about the population as a whole (Deshmukh et al., 2014). In addition, a lot of the research on this subject is conducted in specific contexts, (Djajadiningrat et al., 2015; Louie, Mehanna, & Sasieni, 2015; Ruijs et al., 2011) and may not be transferable to areas like NL, where there is a unique social and religious history. As a result, it can be challenging to know what evidence should be used for decision-making at a time when large meta-analyses are not available to support rational decision-making.

There is an increasing incidence of HPV-related cancers among men (Chaturvedi et al., 2011; Giuliano, Anic, & Nyitray, 2010a). Studies indicate the effectiveness of a HPV vaccine that can prevent those cancers (Audisio et al., 2016; Quinn & Goldman, 2015). There are sub-populations that are less likely to be protected under a 'girls-only' program (Deshmukh et al., 2014) and uptake in the male population is unknown, but likely limited. The more recent studies point to the cost-effectiveness of vaccinating boys and men (Graham et al., 2015),and there is increasing national and international support for vaccinating males against HPV (World Health Organization, 2014). Other Canadian provinces are moving toward universal or girls plus risk-based disease prevention approach (CBC News, 2013, 2015; Government of Nova Scotia, 2015; Ministry of Health and Long Term Care, 2016; Province of British Columbia, 2015; Vaughn, 2016). Given these factors, it would seem that implementing a universal HPV vaccination in NL might be a straight-forward decision. However, NL funds a girls-only HPV program. The past government considered funding the vaccine, but this consideration did not come to fruition (Quinn, 2015). There is now a new government, that has made many cuts. One

factor in the lack of funding may be the current fiscal realities in NL. The fiscal context must be considered with respected to the NL revised immunization manual.

The NL government released a revised immunization manual in October 2015. This report guides the practice of healthcare professionals across the province. This document states that the schedule is designed for infants, children and adults, and people not immunized in infancy (Department of Health and Community Services, 2015). This document claims to be based on recommendations from the NACI, and the Canadian Immunization Guide. (2015, pp. 2.1-2). The NACI recommends the HPV vaccine for both genders (2015) however, the revised NL immunization manual states that the existing program is:

> Offered to grade 6 females, started for 2007-2008 school year 0, 2 and 6 months. 2008- 2009 offered to Grade 9 females as a catch-up program. The grade nine catch up program ended 2010. Females born 1994 have been offered HPV vaccine. Starting the 2015 school year, the recommendation changed to a 2 dose schedule at 0 and 6 months. (Department of Health and Community Services, 2015, pp. 2.3-2)

Boys are excluded from the program and the NL immunization manual does not mention the benefit of the HPV vaccine for males. Also missing from the manual is any contribution of the vaccine beyond the prevention of cervical cancer. The vaccine is indicated by the NACI for protection against genital warts and anal cancer (NACI, 2015), however, these benefits are not mentioned in the revised manual.

Given that the NL immunization manual was issued in late 2015, and making a statement that it is based on the national recommendations is misleading. The provincial

document has not transparently included all NACI recommendations and did not include the most current evidence of the cost-effectiveness of the vaccine in the Canadian context by including boys (Graham et al., 2015). The provincial manual did not explain why the NACI recommendations for vaccinating boys were not mentioned or adopted. The existing provincial policy that excludes boys further exacerbates existing health disparities in the male population and their ability to be protected against HPV. This research project hopes to inform thoughtful decision-making on HPV vaccination for male youth in NL.

Physicians and nurses hold a tremendous individual and collective power, as these professionals are in a position to make recommendations to individuals, families, and government to impact policy decisions about HPV vaccination. But they may not be in a position to use that power effectively. Physicians and nurses have a large volume of new studies to keep up on to maintain their clinical competencies with emerging evidence (Alper et al., 2004). HPV vaccination for males may not be on their radar as it is not a part of the provincial immunization mandate nor is there a clear, consistent, evidence-based message coming from the literature and practice guidelines. As a result, it was unclear prior to this study if they were recommending the vaccine for male youth. There are gaps between the national recommendations and the province's interpretation and limited implementation of these recommendations. These gaps have the potential to significantly harm health, or at the very least to be limited in preventing cancer and HPV-related infections in some populations.

## Problem Statement

There is an increased incidence of HPV-related cancers among men that can be prevented by an effective vaccine. There is substantial evidence demonstrating the health and social benefits towards preventing the HPV-related infections and cancer. At the time of writing, NL sponsors a girls-only HPV program with no universal or risk-based approach in place in NL. This is despite the fact that the NACI recommends the HPV vaccine to males and females (NACI, 2007; NACI, 2015). Physicians and nurses are in a position to recommend the vaccine to the male youth population. The attitudes of NL physicians and nurses towards the HPV vaccine are currently unknown and thus triggered the need for this study to understand what factors affect their intentions to recommend the vaccine in their clinical practice. This research project sought to understand the factors that influence physicians' and nurses' decision to recommend the HPV vaccine for male youth.

## Research Questions and Objectives

The goal of this instrumental case study was to generate evidence to inform the development of an appropriate strategy in NL that responds to the 2014 NACI recommendation to improve HPV vaccination rates among male youth. The objectives were to:

1. Gather information about NL physicians' and nurses' recommendation and/or intention to recommend HPV vaccination of male youth (9-18 years) and the factors that are associated with those recommendations;

2. Investigate the role of gender and religion as social factors influencing physicians' and nurses' decision-making about HPV immunization;
3. Identify ways to strengthen the intention of physicians and nurses to recommend and vaccinate male youth at-risk of HPV infections and HPV-related cancers in NL.

## The Research Context

**Geography.** NL presents a unique location for case study research. It is Canada's most easterly province and sits at the edge of North America (Newfoundland and Labrador, n.d.-a). The provincial population is 527,756 as of July 2015 (Statistics Canada, 2015a), however over one-third of residents live in the only major urban centre, St. John's (Newfoundland and Labrador, n.d.-a). Despite this relatively small population, the land mass is quite large. The island of Newfoundland is 111,390 square kilometers, and Labrador is 405,212 square kilometers (Newfoundland and Labrador, n.d.-a). Due to the grouping of most residents in St. John's, the delivery of healthcare and other necessary services is challenging in any rural areas throughout the province. The unique and isolated landscape has led to a unique culture (Newfoundland and Labrador, n.d.-b). The large land mass has led to the unique development of the public health system where nurses are responsible for childhood immunization. This public health system is so effective that NL has one of the highest childhood vaccination rates in the country.

**Religion**. Newfoundlanders and Labradorians are significantly more religious than the Canadian population, in general (Community Accounts, 2011).The strong ties to religion in the region remain today. Atlantic Canada, and in particular, NL has higher rates of religious observance than the general Canadian population (Community

Accounts, 2011). Approximately 95% of the population is affiliated with a religious community in comparison to the 78.3% national average (Community Accounts, 2011). The historically strong ties to the Roman Catholic church have been attributed to the large number of Irish Catholic immigration in the 18th century (Liza, 2000).

Protestants also played a role in the settlement and culture that shaped Newfoundland and Labradorian society. The Anglican Church support charity school for the poor and had a cultural force on the island prior to the establishment of social institutions on the island. The Moravians settled in Labrador, and church members included European settlers and Inuit peoples (Hiller, 2001). The Presbyterian Church also had a strong influence in NL, where physician missionaries served overseas and the church holds strong connections to Memorial University (Wishart, 2001).

The province also has a history with a denominational school system. This system is another attribute that makes NL unique from other provinces in Canada (Elliott, 1998). Schools were started by churches or religious affiliated organizations and had legislative rights when NL became a Canadian province in 1949. It was only in 1997 when a referendum put the provincial legislature in charge of the school administration and removed the authority of churches. This strong tie between education and religion, and the separation that occurred just 19 years ago, demonstrates the unique historical ties that religion permeated, into what is now a formally secular social institution (Elliott, 1998). The names of the schools still flag the religious history of those institutions: Holy Heart and Brother Rice (both Catholic high schools) and Booth Memorial (a Salvation Army High School) and each physically located close to its affiliated church.

Religion has been associated with conservative decision-making in some sexual health related matters such as sex education about contraception and the provision of condoms in high schools. One might reasonably assume that due to the high degree of religiosity in this context, vaccine uptake to prevent a sexually transmissible infection would have been challenging. This is because religion is sometimes associated with reduced vaccine uptake (Guichon, Mitchell, Buffler, & Caplan, 2013). However, this has not been the case in this province. HPV vaccination has been extremely successful in NL for females in the school-based immunization program. The province reached around 90% vaccine uptake among females (Department of Health and Community Services, 2014). It is not known if the religion of the physician or nurse or the religion of the male youth (and their parents) may be a factor in health professionals' intention to recommend the vaccine. Religion could play in recommendations from physicians and nurses as males in the highest risk category, MSM, are in the LGBTQ community and those with fundamental religious views may condemn same-sex relationships.

HPV vaccination is not the first health issue that has demonstrated the intersectionality of religion and sexuality. Fundamental Christian groups have strong ties to anti-abortion, anti-choice rhetoric (Maguire, 2016). Religion has historic ties to holding perspectives on sexual healthcare and has created divides among the public about what is "right" and "wrong". This study intended to explore this paradox between high HPV vaccine uptake for girls in a religiously observant context, and contribute to the understanding of how religion might influence individual clinical practice decisions among physicians and nurses.

**Gender.** Gender impacts health in many ways and may be a factor associated with HPV vaccination recommendations. Medicine is a profession that is traditionally male dominated (although this is changing), and nursing is primarily female dominated (Zelek & Phillips, 2003). This study considered how the gender of providers impacted on their likelihood to recommend the vaccine for males. I also wanted to consider if there are fundamental ways females deliver healthcare that is more conducive to recommending the HPV vaccine for males. There is some evidence in the literature that suggests women are more likely to recommend the vaccine than their male professional counterparts (Allison et al., 2016). I did not know if this was the case here in NL. This study intended to fill that gap.

Gender of the vaccine recipient is another consideration. The way sexual healthcare has been traditionally approached puts the responsibility on females for the care of sexual health for the whole population (Petersen & Lupton, 1997; Sherwin, 1998). This approach re-entrenches gender roles but has become part of our unconscious social expectations of the genders (Petersen & Lupton, 1997; Sherwin, 1998). This approach creates a gender binary that does not leave room for those in the LBGTQ population. By considering how gender interacts with recommendations at this broader level, I open a larger conversation about what the implications of gender-based policies are, such as the pre-existing girls-only HPV immunization strategy in NL.

**Health professionals' policy position.** At the 2014 annual general meeting, the Newfoundland and Labrador Medical Association (NLMA) supported a motion to include males in the provincial publicly funded vaccine strategy. This decision was later rescinded at the 2015 meeting after research and deliberation. The NLMA decided that

based on the high vaccination rates in females, and cost-effectiveness data available at the time, they chose to change their recommendation. Their current recommendation to the provincial government is to fund the vaccine only for male youth who are considered high-risk. As a result of these contentious decisions, with mixed messages, we do not know how individual physicians and nurses feel about the vaccine for boys in the province. While this is an underlying issue that demonstrates the value of this research, changing the policy to include boys is neither the direct focus of this research project nor the problem we are seeking to address. The CMA does not have any policy documents listed on their website for the vaccination of girls nor boys (Canadian Medical Association, 2016).

The Association of Registered Nurses of Newfoundland and Labrador (ARNNL) has not taken a policy position that is publicly available, however the organization does distribute position statements and public policy documents relevant to registered nurses in the province (ARNNL, 2016). The Canadian Nurses Association website (2008) does not list any policy documents or position statements concerning the vaccination of girls or boys.

**Rationale**

Evidence on the benefits of HPV vaccination for male youth is fast emerging in the literature, and has gained frequent media attention over the past year (Guichon & Kaul, 2015; Quinn, 2015). This had led to a greater understanding of important pieces to the puzzle. We know that the vaccine is safe and effective in males (Centers for Disease Control, 2015a; Giuliano, 2007; Giuliano et al., 2011). We also know that the vaccine is

likely cost-effective in the Canadian context, even with modest efficacy and uptake (Graham et al., 2015). We also know that a physician's recommendation for vaccination can be the primary factor in the decision to get the HPV vaccine (Allison et al., 2016; Barnack, Reddy, & Swain, 2010; Darden & Jacobson, 2014). The gaps in the literature were filled by this research, which generated local knowledge about factors that inform nurses' and physicians' intentions to recommend the HPV vaccine for male youth. That evidence may support conversations among members of NLMA and ARNNL when developing their policy position in the context of other emerging evidence.

This research is important for several reasons. This research has the potential to improve decision-making for both policy-makers at the provincial level and clinicians at the individual level. A 'girls-only' vaccination program excludes males from agency in their healthcare decision-making and inhibits their ability to decide what preventive healthcare interventions they can participate in (Law & Gustafson, 2016; Law, 2016).

**Study Significance**

This research is significant because it demonstrates how gender and religion impact HPV vaccine recommendations for boys, and can bring to light the issues. Religion and gender should not be interfering with the recommendations of healthcare professions, as it can lead to increasing health disparities and inequities. It is important to understand how physicians and nurses make their recommendations and the rationale they use to support it. This is of particular importance in the context of a provincial policy that funds the vaccine for only one gender. Understanding the local factors that influence

physicians' and nurses' intentions to recommend and practices relating to HPV vaccination may inform future provincial policy, program and practice decisions.

**Theoretical Approach and Assumptions**

I approach this research with a few assumptions. First, I make the assumption that the HPV vaccine is a safe and effective strategy to prevent HPV infections that can lead to cancer. The overwhelming majority of the scientific community supports this view, and only some research on the academic fringes contest its safety (CDC, 2015a; Colafrancesco, Perricone, Tomljenovic, & Shoenfeld, 2013; Nyitray, 2010). I have also approached this research with assumptions that align with the theoretical framework that I have chosen to help me make meaning from my results. The Theory of Planned Behaviour asserts that, "intentions to perform a behaviour of different kinds can be predicted with a high accuracy from attitudes towards the behaviour, subjective norms, and perceived behavioural control; and these intentions, together with perceptions of behavioural control

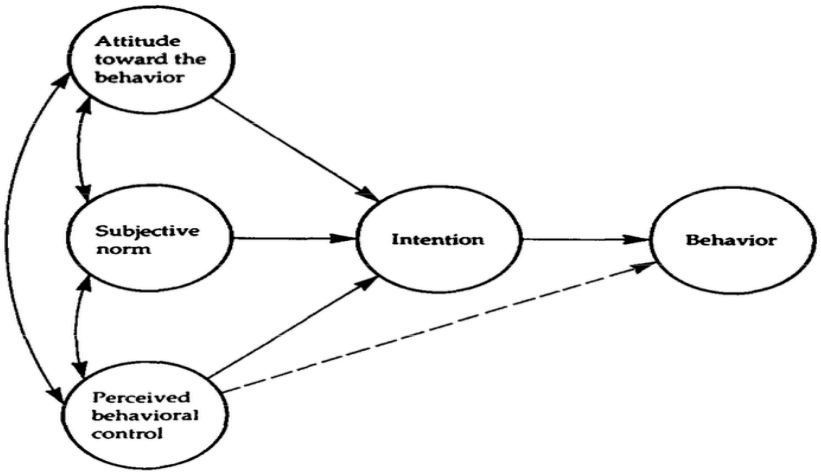


*Figure 2.1 Theory of Planned Behaviour Model: Ajzen (1991) demonstrates how attitudes, subjective norms, and perceived behavioural control influence intentions, and in turn behaviour.*

account for considerable variance in actual behaviour" (Ajzen, 1991, p. 179) . The relationship between these factors can be viewed in *Figure 1*.

**Behavioural beliefs and attitudes towards the behaviour.** Attitudes towards a behaviour are shaped by individuals forming link between the behaviour and a certain outcome. As the attributes linked to the behaviour would be determined positively or negatively by the individual, the attitude is determined. Individuals favour behaviours that they believe will have a positive outcome and tend not to favour behaviour that they believe will have undesirable outcomes (Ajzen, 1991).

**Normative beliefs and subjective norms**. Normative beliefs deal with the concern that important individuals or group approve or disapprove of a behaviour. The subjective norm is formed by the individual's motivation to comply with the individual or group. Ultimately, subjective norm is linked to the perceived social pressure to engage or not engage in a behaviour (Ajzen, 1991).

**Control beliefs and perceived behavioural control**. Control beliefs could be based on a variety of sources, including past experience with the behaviour, and second hand information about the behaviour. These factors can shape whether a person believes that it is difficult to carry out a given behaviour. These control beliefs then translate into perceived behavioural control which is determined by how much control the individual believes they have in their ability to carry out the behaviour (Ajzen, 1991).

The Theory of Planned Behaviour is a tool to help me gain the greatest understanding of the research findings. I chose to use this theoretical framework to help me understand what formed the intentions of physicians and nurses to recommend the HPV vaccine for male youth. This theory served as the frame for designing the study and

analyzing the findings. It helped me generate the most meaningful results that could be extrapolated to outside contexts. This theoretical plan facilitated my desire to use an instrumental case study methodology and lead me to discover how intentions could be strengthened.

In this study, attitudes towards the behaviour were captured by asking interview participants about their general perceptions about HPV vaccination for male youth, and whether it was a worthwhile health intervention. I was able to capture subjective norms by asking participants if they believed there was an overall acceptance of the vaccine among their peers. Thirdly, I understood perceived behavioural control by asking participants if they knew about the HPV vaccine being recommended to male youth, and probing them to see if they had enough information to make an informed recommendation.

**Personal Reflexivity**

As a critical realist, I must acknowledge my social position in relation to this research project. I believe it is important to be aware of the values as I have developed through my formal education and how personal experiences have shaped my views (Karnieli-Miller, Strier, & Pessach, 2009). Throughout the research process, I have consulted with my supervisor to ensure my personal position has minimally impacted the way I conduct the research. This is important to be transparent about my positionality and relationship to the project and to ensure credibility of my findings.

My personal perspective is shaped by my positionality in the world. I am a white, upper-middle class woman, who was raised in Brazil, the United States and Canada. I

hold citizenship in both the U.S. and Canada. The contrasting healthcare systems between these two countries have shaped my perspective on the issue. My formal education has taught me the importance of the social determinants of health, equity in health, and the value of preventive medicine. My undergraduate degree is in kinesiology, where I studied how to improve human health through exercise, diet and other lifestyle factors. In my upper years, I engaged in critical health studies seminars that questioned the status quo and considered alternative solutions to existing health problems. I learned to examine how certain policies and social systems privilege some groups while disadvantaging others.

I believe in upstream medicine, and immunization is one pathway to this approach to healthcare. As an educated and socially liberal woman, I value immunization as a public health practice. I believe that Canada's universal healthcare system should provide equitable access to healthcare services, including all vaccines, and not discriminate based on gender. A publicly funded girls-only HPV vaccination is gender biased because it excludes males and others across the gender spectrum, despite current national and international recommendations to include males. Focusing on HPV vaccination for male youth has given me the opportunity to study this form of prevention in further depth. In the future, I will be pursuing a degree in nursing where I hope to one day provide primary healthcare. This is where part of my interest in primary healthcare originates.

I am also interested in this issue from a personal perspective. I was an early adopter of the HPV vaccine myself, receiving my first dose in 2007 in the United States. I have always been interested in the persisting hesitancy towards this vaccine. I had a mild adverse reaction to the vaccine upon the first dose, where I experienced presyncope. I

stood up after my first dose, was nauseated and almost fainted. I recovered after spending some additional time in the doctor's office. I later learned my mother chose to postpone vaccinating my sister due to my initial adverse response. My sister was eventually fully vaccinated for HPV and my brother is now completing the series at age 21. This issue matters to me because it affects people from all gender identities, and when we have a safe, effective and affordable way to prevent certain types of cancer and genital warts, I believe we should use it.

Finally, this project falls under the domain of sexual and reproductive health, which is an area of health I am particularly interested in. It fascinates me because it affects virtually all of us, but is left as an issue that individuals often feel uncomfortable talking about it and therefore may not receive the attention it deserves. Bringing attention to this issue may save lives.

**Thesis outline**

This thesis consists of seven chapters. This *first chapter* introduced the HPV vaccine and the NL context in which the vaccine is recommended for girls only. I presented the problem statement and situated the context. I also presented the existing health professionals' policy position, the study rationale, significance of the study as well as the theoretical approach and assumptions. In *chapter two*, I discuss the current epidemiological evidence about the HPV vaccine for males and females, the infection, and cancer burden that is disproportionately affecting males (and some individuals across the gender spectrum) more than others. In addition, I discuss the protective value of the HPV vaccine in males demonstrated by high-quality randomized control trials. I also

discuss how certain males are at a higher risk for HPV, how recommendations are made for the vaccine, and the cost-effectiveness.

In *chapter three*, I transition from the biological and epidemiological side of the disease impact, and consider some of the social factors that influence recommendations for HPV and uptake. I start by considering how gender plays a role in the decision making of nurses, physicians, and the healthcare system as a whole. In addition, I consider the historical significance of vaccination and current day challenges with immunization uptake surrounding the anti-vaccination movement with respect to the HPV vaccine. At the conclusion of this chapter, I consider the ethical implications of excluding half the population from this HPV immunization program.

In *chapter four* I evaluate the current evidence on the perspectives that male HPV vaccine recipients and parents have on vaccination by reflecting their awareness and acceptability of the vaccine as presented in the literature. I consider how recommendations to males differ from those as females and thus how gender plays a role in the recommendation process. In addition, I also consider how religion of the recipient impacts the choice to immunize while evaluating the major world religions and their perspectives on immunization

In the *fifth chapter*, I establish the methodological approach I used. I discuss my critical realist epistemological approach to the research and the process for the collection and analysis of my survey and interview data. I also demonstrate to my reader how I embedded rigour and incorporated high ethical standards into my research project.

The findings are presented in *chapter six* beginning with the attributes of the population that was studied. This is followed by a thematic overview of how clinicians

address sex and sexuality in their practices, institutional as well as individual barriers and facilitators to recommendation and the political considerations that stem from the results.

*Chapter seven* frames the findings using the Theory of Planned Behaviour about how attitudes towards the behaviour, subjective norms and perceived behavioural control guide physicians' and nurses' intentions to recommend the vaccine, and the problems with how sexual healthcare is gendered In this chapter, I discuss how physicians' and nurses' recommendations of the HPV vaccine intersect with gender and religion. I leave the reader with recommendations and put forth possible policy options to improve the frequencies of HPV vaccine recommendations from physicians and nurses. In addition, I consider the policy implications that could stem from this research. Finally, *chapter eight* summarizes the research project, where I propose a knowledge translation (KT) plan, and conclude with a discussion of the limitations.

## Chapter 2: Human Papillomavirus and the Vaccine that Can Stop It

### The Human Papilloma Virus

HPV is a sexually transmitted infection that can cause genital warts and cancer in both men and women (Garland, 2012; Government of Canada, 2013). The virus consists of double-stranded DNA that infects squamous and mucosal epithelia (Garland, 2012; Quinn & Goldman, 2015). It is one of the most common STBBIs in Canada and internationally (Centers for Disease Control, 2016; Government of Canada, 2013). Approximately 80% of individuals will become infected with HPV during their lifetimes (Melvin & Brady, 2014). The infection occurs at various sites in all individuals and may cause anogenital and oropharyngeal condyloma, precancers or cancers (Melvin & Brady, 2014).

HPV has a proven link to cervical cancer and is the causal factor in most cases (Garland, 2012). Historically, HPV and cervical cancer have been paired, and research has focused on the connection between the virus and this particular cancer. Cervical cancer is a cancer that exclusively affects those born with female genitalia, including cisgender females and transgender males (Mosavi-Jarrahi & Kliewer, 2013). The discovery linking HPV and cervical cancer was made by scientist Harald zur Hausen in the 1980s, which resulted in his winning the 2008 Nobel Prize in Medicine (Luyten, Engelen, & Beutels, 2014; Nobel Media AB, 2014). Since then, as the scientific community has learned, HPV can cause various other cancers, which can affect both men and women (Garland, 2012; World Health Organization International Agency for Research on Cancer, 2007). This development has led to a shift in understanding that demonstrates HPV can cause cancer in anyone across the gender spectrum.

HPV has over 130 genotypes and the various genotypes infect different types of skin tissue (Garland, 2012). For example, some types of HPV cause skin lesions whereas others infect the genital area. The genotypes that can cause skin lesions, such as warts on the hands and feet, do not cause cancer whereas other genotypes can cause cancer and warts in the anogenital area (Government of Canada, 2013). Of the known genotypes of HPV, 30 to 40 types of them infect the genital area (Garland, 2012). These infections can occur in all genders.

Certain genotypes of HPV have a higher oncogenic potential, or a greater chance of causing cancer than others (Garland, 2012). Strains 16 and 18 account for 70% of cervical cancer cases, around 50% and 20% respectively. HPV can cause anogenital cancers, which include anal and penile cancer, of which 90% and 50% respectively, are HPV-related. In addition, oncogenic HPV types have been linked to approximately 15 to 20% of oropharyngeal cancers. On a global scale, these oropharyngeal cancers account for 4% of all cancers associated with HPV (Garland, 2012).

The genotypes of HPV that cause warts and anogenital warts are different from those that can cause cancer. HPV strains 6 and 11 cause approximately 90% of cases of genital warts (Garland, 2012). While these are usually benign, they can be painful and cause psychosocial distress. Despite the best available treatment, recurrence of genital warts is common, and treatment can be painful as well as costly (Garland, 2012).

A large international cohort study found that 50.5 % of men had at least one oncogenic or non-oncogenic HPV infection (Giuliano et al., 2010a). Interestingly, HPV infections are less persistent in men than women; 20% of women have their infection present after a year, whereas only 6% of men do. A study comparing HPV infections

among women and men revealed another difference. In women, there are age patterns for HPV acquisition with two peaks, however, males tend to acquire the infection consistently throughout their whole lifespan (Giuliano et al., 2010a). Regardless, HPV infections are present across the population and can have serious health consequences for individuals of all gender identities.

**Epidemiology and Pathology of HPV in Men**

Until 2007, the focus on HPV infections and the implications for cisgender women's health obscured attention to HPV infections in cisgender men. At that time, the World Health Organization (WHO) held a meeting to discuss the oncogenic potential of HPV in multiple cancers, particularly genotypes in the anogenital areas, as well as oral cancers (World Health Organization International Agency for Research on Cancer, 2007). As this field of knowledge was developing, the significance of the HPV vaccine for males took a different direction. The knowledge surrounding HPV vaccination for males started with the purpose of reducing the number of males who serve as HPV disease vector to their female partners (Giuliano et al., 2010a). Further research demonstrated the direct link between HPV infections and benign and cancerous diseases among males (Giuliano et al., 2010a). However, that research is not without problems.

Current epidemiological research reproduces the gender binary. The existing gender binary exists as society reinforces that individuals must fit into male or female boxes, rather than viewing gender as something that can occur on a spectrum. By-in-large, research classifies participants as either male or female. This is why it can be difficult to determine risk for people who do not identify with the gender they were assigned at birth, or who identify as genderqueer or on the non-binary gender spectrum.

With the exception of a few studies from South America, there remains limited epidemiological data on transgender and genderqueer individuals regarding the prevalence of HPV-related cancers and genital warts (dos Ramos Farías et al., 2011; Nureña, Brown, Galea, Sánchez, & Blas, 2013). The data from these countries may not be relevant or transferable to the Canadian context. Yet the dearth of such studies demonstrates a need for more epidemiological data on HPV prevalence as well as broader health data, as these populations may be at greater risk for STTBIs including HPV. While I seek to challenge this existing gender binary, I am limited by the evidence in what I present.

**Benign infections.**

***Genital warts***. HPV can cause genital warts in all individuals. It is valuable to consider how this condition impacts the male population. Genital warts are a common STBBI and are most common among men 25-29 years of age (Giuliano et al., 2010a). The worldwide prevalence in 16-35 year olds is 1% (Steben & LaBelle, 2012). Genital warts are also highly contagious; 65% of individuals who have sex with an infected partner will be infected by the virus (Giuliano et al., 2010a). While the vast majority of cases of genital warts are caused by non-oncogenic types of HPV 6 and 11, approximately one-third of cases of genital warts have a co-infection with an oncogenic type of HPV (Giuliano et al., 2010a). Genital warts require treatment and can have a significant impact on quality of life. So while they are not life-threatening, they can cause a considerable psychosocial and financial burden.

One way genital warts poses a burden is through the demand on the healthcare system. The demand comes out of the cost of treatment, and the negative impact on the

individual who needs to manage a chronic infection which leads to a reduced quality of life (Woodhall et al., 2008). The cost of genital warts treatment is difficult to quantify in financial terms because patients with genital warts can choose between a treatment and a non-treatment approach. Most choose treatment, but treatment options are varied (Lefebvre, Van Kriekinge, Goncalves, & de Sanjose, 2011), with estimates ranging between 255-950 CAD (Lefebvre et al., 2011). Regardless of treatment, recurrence is stable at about 20-30% at 3-month follow-up (Lefebvre et al., 2011). Unfortunately, it is difficult to find direct data on this issue in the Canadian context, as genital warts are not a nationally notifiable disease (Public Health Agency of Canada, 2015).

Vriend, Nieuwkerk, and van der Sande (2014) found that genital warts had a significant negative impact on the health-related quality of life (*HRQoL*)[2] when comparing those with and those without genital warts. The study looked at how genital warts impact the emotional and sexual well-being and considered the differences between genders. The study used the European Quality of Life Scale, a HRQoL instrument that measures the dimensions of (1) mobility, (2) self-care, (3) usual activities, (4) pain/discomfort, and (5) anxiety/depression. The study also used the CECA-10, a validated instrument designed specifically to evaluate emotional and sexual dimensions of HRQoL for those with genital warts. This study demonstrated that genital warts primarily had an emotional impact in comparison to an impact on sexual pleasure and relationships. However, the study did note that genital warts had a larger impact on overall well-being

[2] HRQoL is, "a subjective and multidimensional construct encompassing a person's physical, emotional and social functioning, which can be affected by a medical condition and/or its subsequent therapy" (Vriend et al., 2014, p. 949).

and discomfort in women than men. The impact on emotion among men was less in the men who have sex with men (MSM) population, in comparison to heterosexual men (Vriend et al., 2014). So while the direct physical manifestations of genital warts may be benign, their impact on overall health and well-being is not (Lefebvre et al., 2011; Steben & LaBelle, 2012; Vriend et al., 2014; Woodhall et al., 2008).

Despite the wide prevalence of HPV, the majority of HPV infections are transient and will disappear without intervention, and often without the individual even knowing they are infected (Government of Canada, 2013). Despite the high clearance rate, it is worth acknowledging the implications of the infection should it resolve on its own without treatment, and the uneven HPV distribution of HPV occurring more frequently in males (Giuliano et al., 2010a). A large systematic review found that the rate of HPV infection in men ranged 1.3% to 72.9%. While this variation is large, there are several reasons why this could be the case. It could be due to the diverse population studied, anatomical test sites and a variation in the HPV detection methods (Giuliano et al., 2010a).

The burden of HPV-related genital warts on society is less than other prominent STBBIs such as HIV, chlamydia and genital herpes (Lefebvre et al., 2011). However, among Canadians, genital warts are associated with a high degree of social stigma and negative impacts on their psyche, in particular for younger Canadians (Steben & LaBelle, 2012). These impacts should be considered when making policy recommendations about HPV vaccinations.

***Recurrent respiratory papillomatosis.*** Another disease, caused by HPV types 6 and 11 is recurrent respiratory papillomatosis (Garland, 2012; Giuliano et al., 2010a).

While this disease is rare, it causes wart-like lesions on the respiratory tract and has a bimodal distribution with peaks occurring in infancy/early childhood as a result of mother to child transmission through a vaginal childbirth, and again between the ages of 20 and 30 years (Garland, 2012; Giuliano et al., 2010a). The American prevalence rates of this disease are 4.3 percent for 100,000 children and 1.8 per 100,000 adults. While the childhood distribution of the disease is equal between genders, males carry a higher burden in the adult peak of the disease. Recurrent respiratory papillomatosis can lead to airway obstructions, which can require surgical intervention (Giuliano et al., 2010a).

Some recurrent respiratory papillomatosis can transform to malignant neoplasm (Karatayli-Ozgursoy, Bishop, Hillel, Akst, & Best, 2015). While there is limited data on mortality, a study of adult and pediatric acquired recurrent respiratory papillomatosis had relevant findings. This study reported that 10% of infections in the adult population, turn to dysplasia (early development of cancer) or carcinoma in situ in addition to papilloma, while none had this manifestation in the pediatric population. Alternatively, 5% of both the adult and pediatric population had cases of invasive carcinoma ex-papilloma. Interestingly, in the adult population, individuals with older onset of recurrent respiratory papillomatosis are more likely to have it turn malignant, while in the pediatric population, the opposite is true. Individuals who acquire it at a younger age are at a higher risk of the infection turning malignant (Karatayli-Ozgursoy et al., 2015)

**Cancerous infections from HPV.** A quarter of HPV-related cancers occur in men (Burki, 2009). There are three primary types of cancer caused by HPV that affect men; anal, penile and head and neck cancers (Burki, 2009). While anal and penile cancers are quite rare, head and neck cancers occur more frequently, and the incidence is on the rise

(Burki, 2009). Oncogenic types of HPV account for approximately 25-35% of oral cancers, 90% of anal cancers and 40% of penile cancers in the United States (Liddon, Hood, Wynn, & Markowitz, 2010). These cancers are becoming increasingly prominent. According to Audisio et al. (2016), "It is unclear why the dramatic increase in both oropharyngeal and anal cancer driven by HPV affecting both sexes which now exceeds the incidence of cervical cancer has received so little attention from policy makers" (p. 158). An Alberta study found an increase in the incidence of non-cervical HPV-related cancer from 1975 to 2009 (Shack, Lau, Huang, Doll, & Hao, 2014). While these increases were not statistically significant, they may be clinically significant especially from a psychosocial perspective as there was an observable increase in cases of oropharyngeal cancer in young males and anal cancer in younger females (Shack et al., 2014). Clinicians, public health departments and policy makers need to consider this evidence when making decisions about funding HPV vaccination programs.

***Anogenital cancers.***

Anal HPV infections, in general, are less studied and the little research that has been done focuses on at-risk populations, for example, MSM and HIV-infected men (Giuliano et al., 2010a). However, the disease continues to be quite rare, accounting for only 0.4% of new cancer diagnoses (Benevolo, Dona, Ravenda, & Chiocca, 2016). In 1974, the rate of anal cancer was 0.5 per 100,000 and grew to 1.3 per 100,000 in 2004 (Giuliano et al., 2010a). Although still quite rate, this makes it the most commonly diagnosed HPV-associated cancer in men (Giuliano et al., 2010a). A Canadian study reported that 92% of anal cancers are related to HPV (Quinn & Goldman, 2015).

In the United States, the reported incidence of anal cancer among men is on the rise (Giuliano et al., 2010a). This rise could be partially attributed to more individuals who are immunosuppressed and a larger population of MSM (Giuliano et al., 2010a). HIV-infected males and MSM are at a particularly increased risk for anal cancer. The prevalence of anal HPV infection in men ranges from 1.2% in the general population to 50% in the MSM and men with HIV (Giuliano et al., 2010a). Men who are single or never married, who smoke, or who have a large number of sexual partners are also at increased risk (Giuliano et al., 2010a). Among heterosexual men, anal HPV infections with any HPV type are 16.6% and when including the perianal region, prevalence is 24.8% (Giuliano et al., 2010a). Due to the relative rarity of this cancer, and grouping in the colorectal cancer category, specific statistics on mortality are unavailable (Benevolo et al., 2016)

Penile cancer can also be caused by HPV. Invasive squamous cell carcinomas in the penis account for less than 0.5% of cancers in men worldwide (Giuliano et al., 2010a). Although penile cancer is rare, 25-63% of them are associated with HPV (Djajadiningrat et al., 2015). Penile cancer is also associated with high morbidity and mortality (Giuliano et al., 2010a). The incidence of HPV-related penile cancer is on the rise, particularly in western countries and is related to a change in sexual practices that lead to higher exposures of men to HPV (Djajadiningrat et al., 2015). The risk factors most closely associated with HPV infections leading to penile cancer include smoking, phimosis, lack of neonatal circumcision, anogenital warts, high number of female sexual partners, lack of condom use, and early age at sexual debut (Giuliano et al., 2010a). In cultures where male circumcision in the norm, HPV-related penile cancers are extremely rare

(Djajadiningrat et al., 2015). This is notable with the shift in Canada away from circumcising male infants. Provinces no longer consider circumcision medically necessary and it is not covered under provincial healthcare plans (Department of Health and Community Services, 2013a).

While there are both HPV-related and unrelated penile cancers, the prognosis and survival are better for those with HPV-related cancers, more so than those negative for oncogenic types of HPV (Djajadiningrat et al., 2015). For example, someone who has a penile cancer attributed to HPV will have a lower mortality rate in comparison to someone whose penile cancer is not associated with HPV. According to a Dutch study, 79% of HPV-related cancer cases are attributable to HPV16. While there is likely some regional variance, HPV16 has been confirmed by several studies as holding the responsibility for the majority of HPV-related penile cancers (Djajadiningrat et al., 2015). Additionally, HPV-positive tumors are more common in younger men diagnosed with penile cancer (Djajadiningrat et al., 2015).

***Cancers of the head and neck.*** Head and neck cancers, which includes oral, laryngeal, and oropharyngeal cancers, are the sixth most common type of cancer worldwide (Marur, D'Souza, & Westra, 2010). Over a quarter of all head and neck cancers test positive for HPV, with the virus present in 35.6% of oropharyngeal cancer, 25.3% oral cavity cancers and 24% of laryngeal cancers (Giuliano et al., 2010a). HPV 16, one of the two primary strains of HPV that causes cancer, causes the majority of head and neck cancers, accounting for 90% of HPV positive oropharyngeal cancers (Giuliano et al., 2010a; Marur et al., 2010).

Many of the oral cancers linked to alcohol and smoking are on the decline (Giuliano et al., 2010a). This is consistent with the general decline of non-HPV-related cancers partially attributable to lower rates of tobacco use in both males and females in the United States and similar contexts (Marur et al., 2010). In contrast, HPV-related oral cancers are on the rise. These cancers of the oral cavity, oropharynx, hypopharynx, and larynx are attributable to high-risk HPV genotypes (Giuliano et al., 2010a).

Over the past several decades, there has been a significant increase in the number of oral cavity and oropharyngeal cancers that are HPV-related (Giuliano et al., 2010a). This rise in rates may be linked to the increase in oral sex, a behaviour that increases risk for head and neck cancer (Burki, 2009). A 2010 study published about heterosexual Canadian women's participation in oral sex, found that women were more willing to participate in casual non-coital sex than engage in vaginal intercourse (Malacad & Hess). Young women view oral sex as less intimate and less committal than vaginal sex (Malacad & Hess, 2010). This finding suggests that individuals would have a higher number of oral sex partners than vaginal intercourse partners. As a higher number of partners leads to a greater number of possible exposures to HPV, it could ultimately lead to more transmission, which has a potential to lead to more oropharyngeal cancer in younger men.

While oral sex does carry a lower risk of infection compared to penile-vaginal or penile-anal sex, there still remains a possibility of being infected with STBBIs, including HPV (Crosby et al., 2012). The greater number of oral sexual encounters had led to more HPV infections, and as a result, the HPV-associated cancers have increased (Burki,

2009). Due to this increase in higher risk, oral sex acts, oral cancer incidence rates have gone up (Burki, 2009; Chaturvedi et al., 2011; Giuliano et al., 2010a).

Oral cavity cancers have HPV 16 present in 70% of the cases with HPV DNA present (World Health Organization International Agency for Research on Cancer, 2007). This demonstrates that HPV 16 plays a significant role in the development of general oral cavity cancers.

While the exact population-level burden of HPV positive individuals is unknown, the HPV presence in oropharyngeal tumors has unarguably increased (Chaturvedi et al., 2011). One particular type of head and neck cancer, oropharyngeal squamous cell carcinoma, has increased significantly between 1984 and 2004 (Chaturvedi et al., 2011). There was a significant increase in the number of tumours, particularly in young individuals (<60), white and male individuals, and those do not have a history of alcohol and tobacco use (Chaturvedi et al., 2011; Marur et al., 2010). In 1980, 16.3% of tumors had HPV DNA present, and data from the 2000s indicates that 72.7% of oropharyngeal tumors had HPV present (Chaturvedi et al., 2011). Studies cite the rates of oropharyngeal cancer as low as 35% and others as high as 70% of oropharyngeal tumors are caused by HPV (Chaturvedi et al., 2011; World Health Organization International Agency for Research on Cancer, 2007). Of those cases with HPV present, 80% had the HPV type 16 which a high oncogenic potential (World Health Organization International Agency for Research on Cancer, 2007). The rate of HPV-related oropharyngeal cancers is expected to continue increasing (Moore & Mehta, 2015). Despite this increase in the number of oropharyngeal cancers, the HPV-related oral cancers have higher survival rates than non-HPV-related ones. So while oropharyngeal squamous cell carcinoma has a high survival

rate, it is still life-threatening and prevention strategies, such as vaccination, for the benefit of males should be further considered.

***HPV cancers affecting women.*** While my focus is on HPV infections that impact males and those not protected in the current girls-only immunization program, I would also like to acknowledge the kinds of HPV-related cancers that can affect women. The relationship between HPV and cancer was first known in women. It is key to acknowledge the historical role women's bodies played with respect to linking HPV to cancers.

It is widely known that cervical cancer is the dominant HPV-related cancer that affects women (Leggatt & Frazer, 2007; Li, Franceschi, Howell-Jones, SnijdersP.J., & Clifford, 2011; Mosavi-Jarrahi & Kliewer, 2013). The Public Health Agency of Canada [PHAC] claims that cervical cancer accounts for 1% of all female cancer deaths (2014). Risk factors for cervical cancer include being sexually active at a young age, having many sexual partners, smoking, a weakened immune system, prolonged use of birth control pills and giving birth to multiple children (Public Health Agency of Canada, 2014). This established link between HPV and cervical cancer started the movement to have females immunized against HPV. As the link between HPV and other cancers was unknown when the vaccine was first released, males were not the target of the original program. However, as the link between HPV and other types of cancer becomes evident, the move to immunize males is being considered.

Women can get vulvar and vaginal cancers from HPV. In a review conducted by the WHO International Agency for Research on Cancer, over 50 percent of the studies show HPV 16 DNA present in basaloid and warty tumors of the vulva (World Health

Organization International Agency for Research on Cancer, 2007). Additionally, half of all vaginal cancers have HPV DNA present (World Health Organization International Agency for Research on Cancer, 2007). Women, men and all individuals across the gender spectrum can suffer from the consequences of an HPV infection. The modern innovation of vaccination can help reduced the morbidity and mortality of many diseases and infections, including HPV.

**Immunization and the HPV Vaccine**

Worldwide, immunization has improved childhood survival from communicable diseases and is responsible for saving, at least, three million lives each year (Marfe, 2007). Vaccinations "could be considered one of the most important decisions parents can make concerning their children's well-being" (Marfe, 2007, p. 20). No action in life is risk-free, as with all life choices the pros and cons must be weighed, and rational decisions should be made. Overall, vaccines are safe, but no vaccine will ever have 0% risk and 100% efficacy (Marfe, 2007). According to Marfe, this fact should never stop someone from getting themselves or their children vaccinated.

As healthcare is administered provincially in Canada, certain provinces have taken the initiative to include boys in the HPV vaccination strategy. Prince Edward Island, Alberta, Nova Scotia, and Manitoba and Ontario have either started or plan to start vaccinating boys in a school-based program (CBC News, 2013, 2015; Government of Nova Scotia, 2015; Ministry of Health and Long Term Care, 2016; Prince Edward Island, 2013). Alternatively, British Columbia has decided to exclusively vaccinate males based on identified risk factors, such as the MSM population (Province of British Columbia, 2015).

The British Columbia policy that exclusively funds males in high-risk categories is aligned the current resolution held by the NLMA. Males in the high-risk category are defined by the Provincial Government of British Columbia as 9 to 26 year old males who have sex with men (including those who are not yet sexually active but are questioning their sexual orientation), are street involved, and those who are infected with HIV (HealthLink BC, 2015). Additionally, nine to eighteen-year-old males in the care of the Ministry of Children and Family Development, and twelve to seventeen-year-old males in youth custody services centres are eligible to receive vaccine at no personal cost (HealthLink BC, 2015). These boys are able to get the HPV vaccine at no cost.

Australia leads the world, as it took the initiative to implement a gender-neutral HPV vaccination program, and it was the first country to offer vaccination to the male population against HPV (Quinn & Goldman, 2015). Israel recently followed by including boys in their school-based immunization program (Efrati, 2015). There was no explicit evidence suggesting that religion placed an explicit role in these countries. However, the issue is that when religion does play a role, it is often more implicit, especially in secular countries.

**The Vaccine**

There are currently three vaccines approved for use in Canada to prevent HPV infections. Cervarix®, (HPV2) was approved in 2010 to prevent cervical cancer and was recommended exclusively for females. It is a bivalent vaccine meaning that it covers oncogenic HPV types, 16 and 18 (NACI, 2015).

The second is *Gardasil*®, a quadrivalent vaccine protects against strains 16, 18 as well as 6 and 11, the latter strains accounting for the majority of the cases of genital warts

(Garland, 2012). Gardasil® was approved for use in Canada in 2006 to prevent HPV-related cancers and genital warts (NACI, 2007; 2015). The quadrivalent HPV vaccine has been shown effective in reducing the incidence of HPV-related infections, despite the fact that definitive evidence showing that vaccines reduce HPV-related cancers is years away. The vaccine is safe, effective, and has the potential to prevent more cancers, save more lives, and reduce more human suffering than initially thought, especially if programs are extended beyond girls-only (Garland, 2012; World Health Organization, 2014). Phase 3 clinical trials proved an almost 100% efficacy against HPV 16 and 18 related precursors to cervical, vaginal, and vulvar cancers (Garland, 2012). While the original research was conducted on females, as the vaccine was intended exclusively for females, more recent studies in males provide evidence of high efficacy (around 90%), for strains 16 and 18, providing protection against anogenital cancers (Garland, 2012). The clinical trials have shown a near 100% efficacy against HPV types 6 and 11 in both males and females. The quadrivalent vaccine is the one currently included in routine publicly funded immunization programs for girls across the country and for boys in selected provinces.

*Gardasil-9*®, a nine-valent HPV vaccine (9vHPV) protects against five additional strains of HPV. It was approved for use by the Canadian government in April 2015 but is not part of the publicly funded HPV immunization strategy (Health Canada, 2015). The FDA approved 9vHPV vaccine in December 2014 and the European EMA approved it in October 2015 (Audisio et al., 2016; Liddon et al., 2010). The 9vHPV vaccine is highly effective compared to the quadrivalent vaccine at preventing HPV -21, -33, -34, -52, -58 related persistent infections and conditions (Audisio et al., 2016).

Recommendations for each vaccine vary by age and sex. The NACI recommends Cervarix and Gardasil® vaccine for females between 9 and 13 years of age and before the onset of sexual intercourse; females between the ages of 14 and 26 years of age, even if they are already sexually active, have previous Papanicolaouc (Pap) smear[3] abnormalities, or have had a previous HPV infection (NACI, 2015). Gardasil® is also recommended for females over 26 years of age, even if they are already sexually active, have had previous Pap smear abnormalities, or have had a previous HPV infection. Additionally, Gardasil® is recommended for males between 9 and 13 years of age and before the onset of sexual intercourse; males between the ages of 14 and 26 years of age even if they are already sexually active or have had a previous HPV infection. The vaccine is also recommended more specifically to men who have sex with men (MSM) who are 9 years of age and older (NACI, 2015). The 9-valent vaccine recommendations mirror those of the quadrivalent HPV vaccine.

NACI (2015) also makes statements about what they do not recommend. Cervarix is not recommended for females under nine years of age, pregnant women, and males. Gardasil® is not recommended by NACI for females under nine years of age, and pregnant women (NACI, 2015).

**HPV vaccine efficacy.** The HPV vaccine has proven efficacy against HPV-related external genital lesions in men 16-26 years old. The vaccine was 90.4% efficacious against HPV types 6, 11, 16 and 18 (Giuliano et al., 2010a). Another study

[3] A Pap smear is a gynecological exam that screens for carcinoma of the cervix (Kawada & Hochner-Celnikier, 2013)

found that the quadrivalent vaccine 90-100% effective against persistent HPV infections for types 6 and 11, which cause genital warts in both men and women.

Gardasil® has been shown to prevent infections caused by HPV types 6, 11, 16 and 18. A study showed a 64% decrease in the four types of HPV found in girls 14-19 years old and a 34% decrease in 20-24-year-old females (Markowitz et al., 2016). This American study produced the first national evidence of impact of HPV immunization on females in their twenties (Markowitz et al., 2016). Still, there is no documented reduction in cervical cancers. Vaccination against HPV occurs at a young age, and it takes a long time for an HPV infection to manifest into cancer. So it may take decades until there is solid evidence that the vaccine reduces the incidence of cervical and other HPV-related cancers.

Despite proven efficacy from clinical trials in reducing rates of HPV infections, the people must choose to get vaccinated. Many are unaware that the HPV vaccine is beneficial to the health of males, and this is a persistent and significant barrier (Perez et al., 2015). "The effectiveness of any vaccination program that incorporates males will be reliant on awareness of HPV infection and disease in the general male population" (Giuliano et al., 2010a, p. S17). As long as the general population is not aware of the link between HPV and cancers in males, the uptake of the vaccine will be limited.

**Vaccine safety.** Vaccine safety should be a high priority. However, "allegations of harm from vaccination based on weak evidence can lead to real harm when, as a result, safe and effective vaccines cease to be used" (World Health Organization, 2014, p. 2). Finding the appropriate balance of risk and benefit has led to the success of immunization and eradication of many diseases. Risk is inherent in all things, including vaccination. For

the vast majority of the population, the benefits of immunization significantly outweigh any possible risk. It is understandable that some would be concerned about potentially negative consequences for themselves or their children. Individuals must find and examine credible evidence concerning the safety and efficacy of vaccination when making a decision. The same is true for the HPV vaccine. Over 200 million doses of the HPV vaccine since 2006 have been administered worldwide without any significant concerns over safety (Dornbusch et al., 2015)**.**

***HPV vaccine side effects***. As with any medical intervention, there will always be a risk of negative side effects. These risks must be considered in light of the positive impact that a vaccine can have. Most provinces, including NL, use Gardasil® in their publicly funded program (Health and Community Services, 2007). HPV vaccines have proven safety records. The majority of Gardasil® side effects are mild and transient (Garland, 2012). The serious side effects are extremely rare. Fainting or hives occur in approximately 78 cases per million doses, and fainting with seizures accounts for 28 cases per million doses (Garland, 2012). Finally, anaphylaxis is extremely rate occurring at only 7.8 cases per million doses (Garland, 2012). Side effects immediately after the infection, such as injection site pain, redness, swelling, headache, and fatigue are common (Schiller, Castellsagué, & Garland, 2012). However, these side effects need to be weighed against the potential benefit in the prevention of cancer and genital warts.

**Cost-effectiveness.** The cost-effectiveness of the HPV vaccine has been contested. It is also particularly complicated in the NL context, where HPV uptake among girls is so high and no cost-effectiveness analysis has been done. While partially true, the cost-effectiveness argument is weakened by several factors. It excludes the presence of

unimmunized female immigrants and other travellers in the population, and males who participate in exclusively same sex activities. Given the best available scientific evidence, the HPV vaccine has the potential to save the provincial government money in the long-term (Graham et al., 2015). There is a current dramatic increase in the cases of HPV-related oropharyngeal and anal cancers in the Western world (Audisio et al., 2016). Despite this marked increase, HPV vaccination has not been provided to males in some provinces, and these are the individuals who are most susceptible to oropharyngeal and anal cancers (Chaturvedi, 2010; D'Souza & Dempsey, 2011; Deshmukh et al., 2014).

**Summary**

HPV is a known to be a serious, yet common STBBI. Most sexually active individuals will be infected at some point in their lifetime. Women have been the focus of HPV vaccination programs in the past due to the scientific evidence of the connection between HPV and cervical cancer. More recent evidence has linked HPV to genital warts and multiple cancers that affect unprotected individuals of all gender identities. *Gardasil*®, a quadrivalent HPV vaccine has been shown effective in reducing the incidence of HPV-related infections, despite the fact that definitive evidence showing that vaccines reduce HPV-related cancers is years away. The vaccine is safe, effective, and has the potential to prevent more cancers, save more lives, and reduce more human suffering than initially thought, especially if programs are extended beyond girls-only.

The complex history of all vaccines has shaped the acceptance of HPV vaccination today. Vaccines are largely viewed as the most significant public health victory in history. However, certain individuals and groups express discomfort with vaccination due to fears over safety, efficacy and a general lack of acceptance of the

health benefit they provide, despite overwhelming evidence in their favour. Fear mongering in the media has played into public unease with vaccines. Despite this, Canada, and NL in particular have a strong culture of belief in the efficacy of vaccines and the benefit they provide to their families and society.

Canada is certainly moving in the right direction, but there is still work to be done to protect youth from across the gender spectrum from complications related to HPV. Sociocultural factors can have a significant impact on how we make health care decisions for ourselves and our families. In the next chapter, I will cover the literature on physicians' and nurses' knowledge and willingness to recommend the HPV vaccine for male youth, and how religion, the historical context, ethics and equity shape the recommendations.

## Chapter 3: HPV vaccination and social factors that impact decision making

In this chapter, I discuss the acceptability and recommendations for the HPV from the perspectives of health professionals, regulatory agencies and governments. Gender has the potential to play a role on recommendations and implicit medical practices. I explore how religion of the provider could have potential influence on vaccine recommendations. I also consider the HPV vaccine within the context of the history of vaccinations as well as the anti-vaccination movement. The anti-vaccination movement has significant potential to impede individuals from valuing a physician's recommendation for vaccination. Finally, I discuss the vaccine equity and the ethics of vaccinating some individuals, but not others when the entire population is in fact at risk. When discussing vaccine acceptability, I am describing the accepted value of the vaccine, willingness to get vaccinated and the dialogue surrounding the support of the vaccine as well as statistics on vaccine uptake.

### Gender

Gender has the potential to play a prominent role in HPV vaccination for male youth. It can play a role is the gender of the healthcare provider and the systemic norms of healthcare delivery. The physician or nurse may have different recommendation practices based on their own gender. While there is a fairly substantial body of literature on the differences in beliefs towards the HPV vaccine between male and female patients, there is limited research on the role of the physicians' or nurses' gender on their beliefs and clinical practices towards HPV immunization for males.

While a physician's recommendation is clearly an important component of immunization practices, there is limited research on both the physicians' recommendation

and the recommendation of nurses. The Canadian healthcare system is facing a shift to allow the delivery of primary healthcare to occur with not only physicians, but with other healthcare providers as well. These providers include highly trained professionals, such as nurse practitioners, pharmacists, and physician assistants. With more professions providing access to primary care, there will be a scientific need for evidence about the perspectives of these professionals on immunization and why they recommend them. The perspectives of nurses and physicians, and their intentions to recommend the HPV vaccine, are relevant to the acceptance of HPV vaccination in NL. Most lay people value the medical perspectives of physicians and nurses, in particular of those professionals who vaccinate and recommend vaccination as a component of their clinical practice.

**Nurses.** Registered nurses are important healthcare providers whose attitudes and perspectives towards the HPV vaccine can shape vaccine uptake. At the time of this writing, there are two key studies relating to nurses' attitudes towards the HPV vaccine for male youth. White, Waldrop, and Waldrop (2016) look specifically at American registered nurses' perspectives of the HPV vaccine for male youth. The study used a descriptive exploratory design, surveyed 111 nurses on their knowledge and acceptability of the HPV vaccine for males. These nurses were all graduates of the same nursing school in southeastern United States. This study has transferable findings to this context due to similar recommendations in Canada versus the U.S. for HPV vaccination for males. Liddon et al. (2010) conducted a literature review of HPV vaccine on acceptability among healthcare providers, and includes research on RN recommendations for females and males in the Canadian context. Because of changes in recommendations and emerging

research on this issue, the findings are more useful in terms of historical trends in acceptability than in transferability to this provincial context.

Nurses serve as both providers and community members, and "what nurses know, perceive and believe can have an impact not only on patients but also persons they come in contact with on a more informal basis" (White et al., 2016, p. 22). Nurses are knowledgeable about the HPV infections, but reported a lower awareness of the relevance of the vaccine for males versus females (White et al., 2016). Nurses disagreed that HPV causes too few cancers to make vaccinating males worthwhile. Additionally, very few nurses opposed HPV immunization for moral or religious reasons (White et al., 2016). In order to utilize the voices of nurses to improve vaccine uptake, nurses need to become more educated on the health benefits of HPV immunization for the male population (White et al., 2016). Improvements in HPV immunization could be made by public health campaigns increasing the knowledge and awareness in males. By improving the understanding, a more accurate flow of information can occur between nurses, patients and community members (White et al., 2016).

One national survey of Canadian nurses' intention to recommend the HPV vaccine to girls and boys found that 77% of respondents would recommend the HPV vaccine for boys prior to becoming sexually active, compared to 70% who would recommend the vaccine for men (Liddon et al., 2010). In contrast, 91% of nurses supported vaccinating girls before they became sexually active, and 82% would recommend the vaccine to sexually active females (Liddon et al., 2010).

**Physicians.** Despite the large body of information on the role of a physician's recommendation on vaccine uptake, there is limited research on the specific impact of

physician recommendation for the HPV vaccine in male youth (Reimer, Schommer, Houlihan, & Gerrard, 2014). A physician's recommendation is cited as the primary factor in determining whether or not an individual gets their child vaccinated (Darden & Jacobson, 2014; Ferris et al., 2009; Reimer et al., 2014; Rosenthal et al., 2011). There are however a number of factors that impact the likelihood that physicians will recommend the HPV vaccine. Physicians' recommendations are shaped by a variety of components, including the undergraduate and post graduate continuing medical education, peer reviewed studies, evidence informed practice guidelines, dialogue with their colleagues as well as knowledge that is disseminated through the media to the public, and personal opinions. Some of this information through these channels is imperfect, and could lead to recommendations that are not based on the best available scientific evidence.

Subjective positioning can play a role in professional decision-making in partnership with research evidence. Physicians' recommendations are shaped by their social position and their life experience. For example, one study found that American physicians are less likely to recommend the HPV vaccine if they are politically conservative, more religious, practice a sub-specialty, are hesitant about having their own children vaccinated, and are late adopters of other vaccination recommendations (Barnack et al., 2010).

Allison et al. (2016) is one key and current study that looked at American family physicians' (n=218) and pediatricians' (n=364) perspectives on the HPV vaccine. It used a nationally representative sample through the American Academy of Family Physicians and the American Academy of Pediatricians. The researchers used a multivariable analysis to understand what characteristics were associated with not discussing the

vaccine. Most evidence demonstrates that physicians are in favour of the HPV vaccine. HPV vaccination is recommended for all 11-12 year olds, however opportunities to immunize these individuals are frequently missed when physicians neglect to recommend the vaccine (Allison et al., 2016). Physicians face both institutional and individual barriers to recommending the HPV vaccine. An example of an institutional barrier could be a lack of compensation for physicians to bill for their time when recommending the vaccine. Alternately, an individual barrier could be not finding the time to research the necessary background information on HPV immunization. Physicians are less likely to recommend the HPV to parents when they expect the parents will defer the vaccine. More than half of physicians said that greater than a quarter of parents deferred vaccination for their 11-12-year-old children (Allison et al., 2016).

Only 12% of pediatricians and 33% of family physicians were somewhat or unlikely to bring up the HPV vaccine again if parents had deferred at the first discussion (Allison et al., 2016). Frequency of deferral was same across genders in eleven to twelve-year-olds, but deferral was more common in boys thirteen to fourteen than girls. This deferral serves as a deterrent for physicians when they may feel they are entering a social awkward exchange when a parent does not want their child vaccinated.

Most physicians who would administer the vaccine to girls would also do so for boys (Allison et al., 2016). So while there is promising support that physicians will recommend the vaccine to boys, it is apparent that physicians were more likely to recommend the vaccine to girls than boys. While the majority of physicians are administering the vaccine, more than a third are not strongly recommending the vaccine

to 11-12 year olds and are less likely to strongly recommend the vaccine to boys (Allison et al., 2016).

Physicians in private practice, with a higher percent of private insurance, and a higher percent of non-Hispanic white patients are more likely to report parental deferral (Allison et al., 2016). Physicians' perceptions of parental attitudes may not always be accurate as physicians were likely to believe that parents perceive the vaccine more negatively than they actually do. This perception that parents would defer, even if they actually would not, is a barrier to ensure the whole eligible population receiving a recommendation. "If physicians do not discuss the vaccine, they have no opportunity to provide a strong recommendation or to understand and address parents'; knowledge gaps or to elicit concerns" (p. 6). Parents will likely defer a vaccine because they question its relevance or safety and an open conversation a parent has with a physician is an opportunity to fill that gap (Allison et al., 2016). A lack of strong recommendation may contribute to missed opportunities for HPV vaccination as it is accepted that a strong recommendation for HPV vaccination from a physician is strongly associated with receipt of the vaccine (Allison et al., 2016).

Another study found that physicians' recommendation depended on gender and age, and recommendation varied between 82 and 92 percent for older adolescent patients (Liddon et al., 2010). This is aligned with the findings of Allison et al. (2016).

A study from New Mexico found that clinicians struggled to recommend the HPV vaccine to their youth population as many in this population only visit their primary care practitioner for acute issues (Sussman et al., 2015). When recommending the vaccine, physicians felt more comfortable emphasizing the benefits of cancer prevention, rather

than discussion the value of the vaccine to protect against a STBBI. One physician went as far as to say that she would only discuss the STBBI aspect of the vaccine it if a patient or parent would bring it up themselves (Sussman et al., 2015).

Due to the original orientation of the HPV public health awareness and vaccination programs towards females, there has been a lagging acceptability of the vaccine for males. There is also evidence to suggest that males are less likely to have the vaccine recommended to them than females (Liddon et al., 2010). Despite this lag, research suggests that many providers are recommending the vaccine to their male patients at close to the same rates as their female patients (Liddon et al., 2010). One study found that of a group of physicians that would recommend the vaccine to females, over 90% would also recommend the HPV vaccine to males aged 13-18 and 19-26 (Weiss, Zimet, Rosenthal, Brenneman, & Klein, 2010). It is reassuring to see updated recommendation practices with more physicians approaching the vaccine as one that is valuable for both their male and female patients.

**Healthcare system**

At the policy level of the healthcare system, the HPV vaccine is accepted and recommended. At the time of writing, the WHO has not made any specific recommendations for the HPV vaccine for boys. However, they published statements on the vaccine's safety and encourage HPV vaccination (World Health Organization, 2014). In the Canadian healthcare system, NACI recommends the HPV vaccine; and multiple provinces have chosen to systemically encourage vaccination by funding the vaccine for boys publicly (CBC News, 2013, 2015; NACI, 2015). NL has not chosen to implement these recommendations as part of the public health policy.

There are, however, other systemic issues that reduce the uptake of the HPV vaccine for males that are more related to social systems than policy systems. One of the social systemic barriers relates to gender that leads to the reduced uptake of the HPV vaccine for males. There is evidence to suggest that men access healthcare less frequently than women do (Tudiver & Talbot, 1999). Research from the U.K. has indicated that a reluctance to access health services is a key issue affecting men (Galdas, Cheater, & Marshall, 2005). This reluctance to access healthcare may be attributed to a belief about a man's traditional role and social characteristics (Tudiver & Talbot, 1999). Some men have perceptions of immunity, immortality, difficulty relinquishing control and a belief that health-seeking behaviour is unacceptable. This leads some men to be uninterested in prevention (Tudiver & Talbot, 1999). When these men are role models to male youth, the youth become accustomed to a culture where they do not engage in their own preventative healthcare.

Youth are another population that face unique barriers to accessing primary care. Youth need health services with a high degree of sensitivity to their biological, cognitive and psychological transition into adulthood (Tylee, Haller, Graham, Churchill, & Sanci, 2007). At this time in a young person's life, there are significant emotional and cognitive changes that occur which have unique implications for this age group (Tylee et al., 2007). Youth often experience a 'personal fable' which leads them to believe that a behaviour is risky for others but not themselves (Tylee et al., 2007). This perception of a lack of vulnerability to risky behaviours can have an impact on health. Youth also fear a lack of confidentiality when accessing healthcare, especially as it relates to sexual health.

There are few, if any, specific studies on the connection between male youth and primary healthcare access. The demonstrated reluctance between youth and males in general to access primary healthcare can be extrapolated to suggest that this population does not prioritize preventative healthcare services. This gap in accessing healthcare services should be considered with its relationship to HPV vaccine recommendations.

The sexual healthcare of males is managed differently than females according to pre-existing gender binaries. Girls grow up being taught about sexual health through a lens of pregnancy and STBBI prevention with a goal of managing a woman's fertility (not to mention her desire and purity). In this woman-centric public health practice as a means to prevent STBBIs, males are far less often part of the prevention equation. Girls grow up forming a relationship with their family doctor or a gynecologist, boys generally do not transition into adulthood with an analogous relationship to a physician (Gille, 2014). Gille (2014), an American physician offered an alternative for boys to help manage their sexual health so a conversation can be opened up earlier on in their youth. He proposes that boys should be able to have a relationship with their urologist the way girls have a relationship with their gynecologist growing into adulthood. Males should be able to value and care for their sexual health the same way that females are taught to as they make the transition into adulthood for the purpose of prevention instead of waiting till there are visits after the opportunity for prevention has been lost (Gille, 2014).

Pediatricians were less likely to recommend the vaccine due to a perception that parents would be less receptive to an STBBI vaccine, although this study was published prior to a widespread awareness of the connection between HPV and cancers affecting males (Kahn et al., 2005). In addition, healthcare providers held a belief that parents

would be less likely to vaccinate a son than they would be to vaccinate a daughter (Kahn et al., 2005). A competing study showed that almost all pediatricians recommend the HPV vaccine to their young patients and there is only a one percent gap in pediatricians administering it to boys compared to girls, at 98% and 99% respectively (Allison et al., 2013).

The gap between recommendations to girls and boys is slightly more pronounced among family doctors. For family physicians, 87% would administer the vaccine to girls, and six percent less, at 81% would administer the vaccine to boys (Allison et al., 2016). This article suggested that physicians in general need more information about why to vaccination boys and guidance on ways to discuss the need for HPV vaccination with parents (Allison et al., 2016).

A separate study found that the healthcare provider recommendation varied by patient age (Liddon et al., 2010). In addition, provider recommendation was higher for older adolescence (Liddon et al., 2010). It is likely that there is a high acceptability of the vaccine among the MSM population, but it is difficult to select men who identify as gay or bisexual prior to the onset of sexual activity when the vaccine is most effective (Liddon et al., 2010). This review was done at a time when the HPV vaccine was not included in the publicly funded program for boys by the government NL. As a result, it is important to take into consideration the contextual understanding of the vaccine given the current state of affairs. It is likely that public perceptions and acceptability changes when there are national recommendations, as there are now and then will change when the vaccine is covered publicly by the province (Liddon et al., 2010; NACI, 2015).

**Religion of the providers**

Healthcare providers should be aware of the role religion can play in their patient's medical decision-making. "Respectful consideration of religious beliefs within a clinical setting is important because medicine and religion come together to frame and enlighten choices made by patients as well as health professionals" (Grabenstein, 2013, p. 2012). While the religion of providers has the potential to play a role on immunization recommendations, there is limited literature in this area. Despite the limited research on this topic, there are examples of when religion could interfere with decision making. For example, stem cell lines from abortions have been used in the development of some vaccines, which may lead to some health care providers and parents to be uncomfortable with vaccination (Grabenstein, 2013, p. 2012).

Religion has impacted other aspects of clinical decision making. It has played a role in physicians' practices in the areas of birth control, abortion and medically assisted dying. Physicians who have chosen to not provide certain services have been threatened by their professional college in Ontario (Kirkey, 2015). More recently, Christian physicians have noted moral objections in playing a role in medically assisted dying (Writer, 2016).

While there is a significant amount of research on the impact religion has on parents' intention to vaccinate for HPV and the role that religion plays, there is little research on the provider's religious affiliation and their likelihood to recommend the HPV vaccine. There are many "many declinations among religious persons reflect concerns about vaccine safety or personal beliefs among a social network organized around a faith community" (Zimmerman & Raviotta, 2013, p. 2009). Vaccination is in

line with religion, especially when it is viewed as a way to be altruistic to protect one's faith community (Zimmerman & Raviotta, 2013, p. 2009). Clinicians can remind patients of important scientists who made significant contributions to the science behind vaccines. For example, "scriptural passages promote this such as being one's brother's keeper (Genesis 4:9), loving your neighbor as yourself (Leviticus 19:18, Matthew 19:19), providing for relatives (1 Timothy 5:8) and having concern for community as when one part suffers, the other part suffers with it (1 Corinthians 12:25-26)" (Zimmerman & Raviotta, 2013, p. 2009).

> Medical professionals need to be aware of religious concerns and
>
> Efforts to thwart public health programs on the grounds of religious concerns, ideological opposition or bureaucratic timidity must be confronted directly by public health experts when the evidence supports the safety and efficacy of the health program and vulnerable populations are exposed to significant risks (Guichon et al., 2013, p. 412).

The health of the population as a whole is dependent on religious groups accepting the vaccination.

**History of vaccination**

Current evidence demonstrates that vaccinations are one of the top ten public health achievements of the last century. Due to scientific innovation, "high immunization coverage has resulted in drastic declines in vaccine-preventable diseases, particularly in many high-and middle-income countries" (Omer, Salmon, Orenstein, deHart, & Halsey, 2009, p. 1981). According to the WHO, immunization prevents between two and three million deaths each year (WHO, 2014). Despite this obvious public health triumph, there

is vaccine hesitancy, particularly in developed countries. While vaccines are perceived to be a modern scientific advancement, the science behind vaccines dates back to the 18th century (Artenstein & Poland, 2012).

Edward Jenner, the father of vaccination, first discovered the protective effect of cowpox against smallpox, which lead to the smallpox vaccine. Eighty years later, Pasteur discovered microbial attenuation and the subsequent implications this process had for immunization (Artenstein & Poland, 2012). Soon after, Pasteur was able to demonstrate protection against rabies in humans using this method (Artenstein & Poland, 2012). As the knowledge has advanced, more safe and effective vaccines have been produced to save lives and reduce human suffering. With the known safety and efficacy, delivery programs are embedded in the Canadian healthcare system. Vaccination has reduced individual and collective disease burden and is the most cost-effective way to advance global welfare (Centers for Disease Control, 2011).

**The anti-vaccination movement**

The smallpox vaccine was a largely successful public health intervention. However, many people were not pleased when smallpox vaccination became mandatory in England through The Vaccination Act (The College of Physicians of Philadelphia, 2016). In 1853, all children up to three months of age were required to get vaccinated and in 1867, the law changed mandating that all children up to 14 years of age to be vaccinated (The College of Physicians of Philadelphia, 2016). The opposition to this act is likely where the anti-vaccination movement was born. It begun with an anti-vaccination journal and then parents surrendering themselves into police, in lieu of vaccinating their children. Following this movement in 1896, the American government

formed a conscientious objection to vaccination, which allowed parents to refuse vaccination for their children without legal penalty (The College of Physicians of Philadelphia, 2016). Over the next hundred years, many fatal diseases were eradicated through the development of many modern immunizations. In the late 20th century, vaccines became somewhat a victim of their own successes, as individuals no longer experienced the illness that many vaccines prevented first hand (Kata, 2010).

Knowing some of the history of vaccines provides the context for the present day attitudes toward immunization, in general and to HPV vaccination, in particular. In the late 1990s, vaccine hesitancy and concerns over vaccine safety have become a part of culture across the western world. The most notable concerns over vaccine safety comes from Andrew Wakefield's quack study published in *The Lancet*, linked MMR to autism and triggered a modern revolution over concerns about the safety of vaccination (Dyer, 2010). While there is absolutely no evidence of a link between autism and the mumps, measles, rubella (MMR) vaccine, this now revoked paper has led to unsubstantiated concerns over the safety of the MMR vaccine and vaccination in general (Dyer, 2010; MacDonald & Finlay, 2013).

Following this supposed link, many parents abstained from immunizing their children, or opted for single antigen vaccines with, for example, the MMR (measles, mumps, and rubella) (Marfe, 2007). This meant administering the measles, mumps, and rubella immunizations in separate doses and multiple visits to the doctor. Critics of this approach claim it is risky because it extends the period of time between vaccinations and therefore the opportunities to exposure to infection. A parent is more likely to miss a dose if they must take their child to the doctor six times instead of twice (Marfe, 2007). The

MMR vaccination schedule was designed to optimize protection for the individual getting vaccinated and the population at large (Marfe, 2007). Providing balanced information, while appropriately acknowledging the risks and benefits can have a significant impact on the likelihood of a parent to vaccinate their child (Marfe, 2007).

**Vaccine hesitancy and vaccine opposition**

The SAGE working group defined *vaccine hesitancy* as: "[the] delay in acceptance or refusal of vaccination despite the availability of vaccine services... It is influenced by factors such as complacency, convenience, and confidence" (MacDonald, 2015, p. 4163). This issue can occur with any vaccine including HPV. There are many reasons why people can be vaccine-hesitant. In contrast, some people may be described as vaccine opposed because they are not on the fence about their decision to vaccinate (Bean, 2011). Public health strategists direct more attention to vaccine-hesitant individuals who may be interested but still have questions. Vaccine hesitant individuals may face barriers to vaccination that can be mitigated through: engagement of religious or other influential leaders in the community, social mobilization, mass media campaigns, improved conveniences, mandates/ sanctions on non-vaccination, reminder and follow-up appointments, communications training for healthcare workers related to benefits of HPV vaccine, non-financial incentives and an aim to increase knowledge and awareness (WHO SAGE Vaccine Hesitancy Working Group, 2015). Those who are vaccine opposed have made up their minds and are unlikely to be persuaded by scientific evidence.

**HPV vaccine controversies**

There have been a number of controversies surrounding this vaccine. There have been international disputes over the safety of the vaccine in the Japan, as well as Canadian researchers raising concerns over the safety of the HPV vaccine.

*International HPV vaccine controversy.* The Japanese Minister of Health, Labour and Welfare suspended the HPV vaccination program in June of 2013 (Gilmour et al., 2013). This occurred just three months after including HPV in the routine immunization schedule and publicly funding it (Gilmour et al., 2013). Routine immunization was halted due to a fear of adverse events, in particular, complex regional pain syndrome (Gilmour et al., 2013). While this diagnosis would likely be devastating, there is no definitive research linking the HPV vaccine to this syndrome. It does not appear that the Japanese Vaccine Adverse Reactions Review Committee used a scientific approach to identify causation (Gilmour et al., 2013). The vote to remove the vaccine was 3:2, and the decision was made without adequate presentation of scientific evidence (Gilmour et al., 2013). This decision should be re-considered in light of other vaccines that are not currently included in their immunization program but which are recommended by the WHO and have a high uptake worldwide. These vaccines are mumps, hepatitis B, rubella, adult pneumococcal and rotavirus (Gilmour et al., 2013). Therefore, Japan's decision to halt HPV vaccination programs is consistent with its broader approach to vaccination, which may be considered flawed.

The European Academy of Paediatrics responded with a position statement strongly advising the Japanese government to actively support a gender-neutral

immunization program (Dornbusch et al., 2015). Additionally, the WHO Global Advisory Committee on Vaccine Safety has put out a statement on the continued safety of the HPV vaccine (World Health Organization, 2014), noting that Japan's decision to pull the vaccine was based on anecdotal evidence that was not substantiated by any epidemiological or biological data.

*Canadian HPV vaccine controversy*. There was a domestic controversy when a Canadian scholar called for a moratorium of HPV immunization for girls in 2015 and internationally when countries like Japan pulled the program with unnecessary urgency (Dyer, 2015; Gilmour et al., 2013; Rail, Molino, & Lippman, 2015). In Canada, researchers have challenged the safety of the HPV vaccine. Geneviève Rail, a critical health studies scholar at Concordia University in Montreal claimed that there should be a moratorium on the existing HPV immunization program until the safety can be established (Dyer, 2015). Molino and Lippman wrote in Le Devoir titled "Urgent call for a moratorium on the vaccination against HPV" (2015). This article sparked a controversy over the safety of the HPV vaccine. The article suggests that girls who were vaccinated in schools did not have appropriate informed consent, that there is a deficient system of pharmacovigilance, that cervical cancer is a false public health priority, that the vaccine efficacy is unproven and that the approval was done with haste (Rail et al., 2015). These claims are not substantiated in the literature on this subject (Dyer, 2015).

The article published in Le Devoir was based on a study funded by the Canadian Institutes of Health Research (CIHR) (Dyer, 2015). David Coulombe, a spokesperson from CIHR said that the purpose of this research project was to profile HPV vaccination discourses and experiences in Canada and its impact on Canadian youth (Dyer, 2015).

This research project which challenged the safety of the HPV vaccine is not supported by physicians and other researchers (Dyer, 2015) These professionals have come together against the Le Devoir article making a joint statement (Dyer, 2015). They argued that the authors are confusing correlation and causation and that Canada actually has one of the most robust vaccine adverse reporting systems in the world (Dyer, 2015). The safety is this case has been contested but the medical community almost unanimously agrees on the safety and efficacy of the vaccine (Dyer, 2015).

**Role of the media on perceptions of the HPV vaccine.** Most recently, there have been concerns over the safety of the HPV vaccine and supposed red flags about providers not appropriately communicating the risks of HPV vaccination. Many of these concerns are not substantiated by scientific evidence. On February 5, 2015, an article titled "A Wonder Drug's Dark Side" (*Figure 2*) surfaced in the Toronto Star stating that the HPV vaccine had a "dark side"

TORONTO STAR

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> STAR INVESTIGATION

# A wonder drug's dark side

Hundreds of thousands of teen girls in Canada have safely taken Gardasil, a vaccine shown to prevent HPV. But a Star investigation has found that since 2008, at least 60 Canadians experienced debilitating illnesses after inoculation. Patients and parents say the incidents point to the importance of full disclosure of risks

DAVID BRUSER AND JESSE MCLEAN
STAFF REPORTERS

By the time Kaitlyn Armstrong received her third and final injection of the popular HPV vaccine Gardasil, pain had spread through the Whitby teen's body, migrating from her back to her knees to her hips.

After her first dose, Natalie Kenzie of London developed egg-size lumps on the soles of her feet, her joints swelled and her limbs twitched uncontrollably.

Before getting the shots, both 13-year-old girls were told the vaccine had no significant risks. And as they struggled to learn what ailed them, and began to believe Gardasil played a role, doctors dismissed their concerns.

Hundreds of thousands of teenage girls in Canada have received the vaccine's three doses, the vast majority without incident.

Regulators, including Health Canada and the FDA in the United States, cite comprehensive clinical trials and other data that show the vaccine's well-studied safety and efficacy.

But since 2008 at least 60 girls and women in Canada have convulsed or developed disabling joint and muscle pain and other debilitating conditions after receiving Gardasil.

One needed a wheelchair, another a feeding tube. A 14-year-old Quebec girl, Annabelle Morin, died two weeks after receiving the second injection of the vaccine.

It was 7:30 p.m. on the night of Dec. 9, 2008, when her mother, Linda, found her in the tub, her head underwater and turned to the side.

The paramedics lifted Annabelle's body on to a stretcher. "I put a blanket on her, saying, 'She's going to freeze,' " Linda recalled. "I did not know she was already dead."

The Quebec coroner's office said the cause of death was drowning, yet also said that any role Gardasil might have played should be further investigated.

In the cases discussed in this article, it is the opinion of a patient or doctor that a particular drug has caused a side-effect.

There is no conclusive evidence showing the vaccine caused a death or illness.

Like Kenzie and Armstrong, many of the girls say the vaccine was pushed on them by school officials, nurses or doctors who understated the risks, sometimes claiming zero significant side effects despite the existence of a list of rare but serious vaccine-related reactions published by the drug's maker.

The Star has found the girls' concerns are not isolated, that in Canada important safety information about the vaccine has not been communicated to many young patients and their parents.

As part of its ongoing investigation into drug safety, the newspaper analyzed side-effect reports from a Health Canada database, and interviewed regulators, a doctor closely involved in the vaccine's clinical trial and, in 12 cases, young women and parents who believe the vaccine caused considerable suffering.

Some of the girls have, after several years, made partial recoveries and are trying to live normal lives. Others are still bouncing from doctor to doctor, looking for answers.

GARDASIL continued on A10

RANDY RISLING/TORONTO STAR

Kaitlyn Armstrong says the nurses giving her the HPV vaccine Gardasil ignored her when she said she was allergic to metal.

> WHAT IS GARDASIL?

> A vaccine delivered in a series of shots. The $400-$500 cost paid by province. Public health nurses administer the inoculations in schools.

> Approved in more than 130 countries, the vaccine protects against strains of human papillomavirus (HPV) that cause 70 per cent of cervical cancer cases. Roughly 400 Canadian women die of cervical cancer each year.

*Figure 2.1:* Toronto Star Front Page Article: This image depicts the front page of the newspaper that instilled fear around the HPV vaccine, but was later retracted by the editors.

(Guichon & Kaul, 2015). This article was removed from the website and replaced days later with a statement signed by doctors and scientists from across Canada insisting that the HPV vaccine has no "dark side" and a letter from the publisher asking its readers for forgiveness (Toronto Star Publisher, 2015).

Beyond this flawed media exposure, there are other ways that beliefs about vaccine safety can be changed through popular culture and the media. A paper published in the US reported on the impact presidential candidates' comments had on parents' perceptions of the HPV vaccine (Zucker, Reiter, Mayer, & Brewer, 2015). The data used in this study was from a survey asking parents of male youth about their beliefs about the HPV vaccine and their vaccination behaviours. Data from Google demonstrated that after the presidential debate where these comments arose, there was an increased volume of web searches on the HPV vaccine (Zucker et al., 2015). While presidential candidates' comments did not have a significant effect on parents' overall views of the vaccine, it did cause those who were aware of the comments to be more concerned about the possible negative short-term effects of HPV vaccination (Zucker et al., 2015). The take away finding from this study is a need for reliable sources for people to find accurate health information (Zucker et al., 2015).

The media has a profound impact on how the public perceives vaccination, holding a significant amount of power (Marfe, 2007). It holds the power to influence people through a number of different platforms, however, the internet, in particular, has a wide array of easily accessible information which has a substantial impact on how vaccination is perceived (Marfe, 2007). While the internet has changed the way information is communicated in the modern age, it allows for unreliable information to be

widely disseminated (Marfe, 2007). Outside of the scientific literature, one can find almost anything to support a claim, even if it is fraudulent. A lot of this literature is not substantiated by scientific evidence, and is created by individuals outside the fields of medicine or health research. Many who fall into the vaccine hesitancy spectrum become this way through beliefs that are formed through emotion not evidence (Bean, 2011). If an individual wants to find information on the web that says vaccines cause autism, there are a plethora of websites that say this and people looking for this answer will happily accept it due to their confirmation bias, even though it is not backed by any scientific evidence (Kata, 2010).

**Vaccine Equity**

There are a number of issues associated with equity in the realm of the HPV vaccine. When the policy is gendered, it further marginalizes people who do not fit into the male/female gender binary. In addition, it puts an undue burden on women to be responsible for the protection of the whole population (Law & Gustafson, 2016). It is also an inequitable exclusion of boys from publicly funded vaccination that should count all lives, not just female ones. Finally, the argument that males are protected by the herd immunity from females, creates a greater health disparity gap between MSM and the rest of the population (Law & Gustafson, 2016). With a gender biased HPV vaccination recommendation and funding strategy, the health disparity between groups that are and are not vaccinated is widened, thus creating an inequity.

**Ethics**

This equity issue can be extended into an ethical dilemma as well. Is it ethical to discriminate access to a vaccine solely on the basis of gender or sexuality? Is it also

ethical to make assumptions about herd immunity based on the assumption that the majority of the population does not engage in same-sex sexual behaviour? Physicians and nurses have a responsibility in the deontological ethical lens, through their professional codes of ethics to care, preserve life, freedom and autonomy (Law & Gustafson, 2016). Supporting and recommending this vaccine would be a component of an ethical practice (Law & Gustafson, 2016). In addition, a utilitarian ethical approach would also demonstrate a professional need to support the vaccine (Law & Gustafson, 2016). Public health systems are inherently utilitarian, promoting the good of the masses (Garbutt & Davies, 2011). In a utilitarian system, where HPV vaccination demonstrates high utility for the population as a whole by reducing suffering and promoting the health of society, recommending vaccination is ethical under this framework (Law & Gustafson, 2016).

**Approaches to Disease Prevention**

Vaccination is a key component to primary disease prevention. In a population-based approach, the entire population is vaccinated, irrespective of risk status. This approach ensures that herd immunity is acquired throughout the entire population. Alternatively, a society could adopt a risk-based approach to disease prevention by only vaccinating the members of the population who are at the highest risk. When this approach is taken, high-risk members of the population can be overlooked as they may not be identified early enough to get the vaccine, and there is no herd immunity effect.

Historically, risk-based approaches have been ineffective compared to a population-based approach. Each approach has advantages and disadvantages. The benefits of a population-based approach are that it seeks to remove the root cause, it has a

large potential to improve the health of the whole population as well as shifting population norms (French, Kaleebu, Pisani, & Whitworth, 2006). However, this approach has only a small benefit for the majority of individuals. There also may be a poor motivation to comply (French et al., 2006). A further drawback of the population-based approach, is that the individual benefit-risk ratio may be concerning (French et al., 2006). The population-based approach has its drawbacks but it emphasizes the good of the collective, and is, therefore, more in line with the values of the healthcare system in Canada.

There are two possible approaches to include males in the publicly funded HPV immunization strategy. The first would be to include all individuals, the second is a risk-based, or targeted approach. In the targeted approach, identified high-risk groups would be covered by a publicly funded program whereas others who do not fall in the high-risk group are not covered and must pay out of pocket for immunization. The risk-based approach may be less costly to implement in the short term, however this approach has a number of limitations making it a less appealing option (French et al., 2006). For one, the logistics would be complex in a risk-based program.

**Risk-based HPV vaccination strategy.** As previously mentioned, British Columbia has taken a risk-based approach to HPV vaccination and this is similar to the current position of the NLMA (Newfoundland and Labrador Medical Association, 2015; Province of British Columbia, 2015). The rationale behind this approach is to protect the males who engage in same sex behaviour who are not protected by the herd immunity from the female population. When males who engage in sexual acts with other males, they are not protected by the herd immunity that has developed through the high

immunization rates of girls. The possible cost-saving benefit of vaccinating only high-risk individuals may sound like a good option when there are limited budgetary resources available. However, the logistics of implementation of a risk-based approach to MSM youth would be significantly challenging and potentially discriminatory.

In the United States, there is precedence for only vaccinating people for a virus with identified risk factors. Initially, the Hepatitis B (HBV) vaccine was targeted exclusively towards those who engaged in high-risk behaviours, lifestyles, and occupations (Centers for Disease Control [CDC], 1991). Like HPV, HBV can be transmitted sexually (CDC, 2015b). However, this approach did not protect people as vaccinating these people prior to exposure was not feasible (CDC, 1991). These high-risk individuals did not seek out the vaccine, and herd immunity did not occur as such a small portion of the population were protected with an unsuccessful risk-based program (CDC, 1991). After coming to this realization, the CDC recommended all infants be vaccinated (CDC, 1991). This was to protect them from acquiring the virus as young children, where they would be most prone to develop a chronic HBV infection and chronic liver infection (CDC, 1991).

This recommendation followed the WHO's Expanded Program on Immunization, which recommends routinely vaccinating infants (CDC, 1991). Since these recommendations came out in 1991, the rate of HBV infection has fallen 82% (CDC, 2015a). While in the past, decision-makers believed a risk-based strategy would be an effective measure to reduce HBV incidence, it proved ineffective. Vaccinating all children at birth has had a profound impact on decreasing the incidence and prevalence of HBV. Like HBV, the HPV vaccine is the best way to prevent acquiring the virus. While a

targeted approach may be viewed as an alternative to vaccinating all individuals, the example of HBV shows that it is unlikely to be effective.

Programs that target at-risk individuals for immunization that have ignored a population-based approach have demonstrated a lack of efficacy. In addition to the limited effectiveness of a targeted program there are other issues that must first be addressed. The logistics of implementing this approach would be challenging. Step one would be to ensure MSM are aware of a targeted program and their eligibility for HPV vaccination (Sauvageau & Dufour-Turbis, 2015). Ensuring this awareness exists before or shortly after sexual debut would be key. In practice, it would be difficult to engage members of this population at the ideal age (9-14). It is unlikely male youth would openly identify as MSM at the time when the vaccine is most effective. The vaccine has a higher immune response at a younger age, so this critical period could be missed as providers wait for this population to form a solid sexual identity (Allison et al., 2016). Additionally, beyond the immune response, the older the individual gets, the more likely they are to have engaged in sex with more partners, thus increasing their possible exposure to HPV prior to vaccination. MSM are open to getting vaccinated for HPV (Rank et al., 2012). While reassuring that this population is open to getting vaccinated, the lack of awareness of this vaccine for males and specifically the MSM population persists (Nadarzynski, Smith, Richardson, Jones, & Llewellyn, 2014).

Second, implementing this risk-based approach would be difficult as males must individually identify as MSM prior to sexual onset. Beyond that, they must also feel comfortable enough with their sexuality that they are able to report it to their healthcare provider, but also ensure these individuals are visiting their healthcare provider and

sharing with their provider their sexual orientation and/or sexual practices. The literature on MSM ages 20 years and older indicates that they are willing to disclose their sexual orientation or homosexual practices but only a few years following sexual debut and after they have had several sexual partners (Sauvageau & Dufour-Turbis, 2015). While research conducted in an older group of males found that 93% would be willing to disclose same-sex behaviour to a healthcare provider to get the vaccine, these individuals are much older than the ideal age to vaccinate (Brewer & Calo, 2015). Another study found that MSM would tell their doctors, but not until after two years of sexual initiation, where statistically, the average individual has had fifteen sexual partners (Brewer & Calo, 2015). At this point, the window of opportunity to for the greatest effectiveness has been closed and this marginalized population has been further disadvantaged.

Third, the burden of further stigmatizing an already oppressed population should be weighed heavily. Vaccinating only the high-risk individuals could ultimately become a stigmatizing practice. This may result in the vaccine becoming labeled by youth as one that is only for gay and bisexual youth, which is not the case (Brewer & Calo, 2015). This issue mirrors the need to prevent another disease becoming labelled the "gay disease" in the way that HIV/AIDs was associated with MSM in the 1980s. If the government ultimately decided that funding the vaccine for exclusively high-risk individuals was the optimal choice, the logistics of vaccinating these individuals at age twelve would be extremely challenging. The province currently vaccinates girls in grade six (Newfoundland and Labrador Department of Health and Community Services, 2013). Most boys at this age do not yet identify themselves as MSM, and thus missing the most effective time to vaccinate this population (Brewer & Calo, 2015). The logistics of

implementing this strategy would be extremely difficult as it would mean publically identifying exclusively gay, bisexual and questioning male youth to receive the HPV vaccine alongside all their female peers. This strategy could ultimately force these children to "come out" before they are prepared to do so, or risk missing an important vaccination.

**Summary**

The HPV vaccine has the potential for a broad uptake among male youth. There are a number of factors that need to be considered for this to happen. First, physicians and nurses must have the appropriate knowledge and self-efficacy to immunize male youth and the population needs to recognize the positive healthcare outcomes of the vaccine. In particular, MSM should be prioritized by physicians and nurses as a population who will greatly benefit from a HPV vaccine recommendation.

Provider recommendations however are particular to the social contexts in which they practice. There is limited evidence that provider religion has an impact on vaccination. Despite religion playing a minor role on their recommendations, it is important for providers to understand and educate people of differing religious beliefs that the vaccine is a safe and effective, and demonstrate how becoming vaccinated does not contradict their religious values.

The gender and specialty of the health professionals has the potential to impact the recommendation, as does the gender of the patient. It is accepted that females are more likely to receive a vaccine recommendation than males. This is likely due to a number of factors, for example the link between HPV and cancer for girls is better known. However, providers need to consider how they can be a part of a cultural shift to encourage the

uptake of the HPV vaccine for boys by acknowledging the risks and valuing identifying males that would benefit from HPV immunization programs. This can be done by encouraging male youth to be involved in sexual health decisions and encouraging them to value managing their own sexual health from a young age.

While vaccination is valued by many, the hesitancy of individuals and groups dates back to the introduction of the first vaccine, the smallpox vaccine. The anti-vaccination movement has played out over time starting with parents opposing The Vaccination Act in England and now spans to modern times. Today, some parents fear that the MMR vaccine can cause autism, as a result of a fraudulent study and celebrity spokespeople who have non-medical personal beliefs contesting the safety of vaccination. These misguided concerns over vaccine safety have impacted HPV vaccine uptake in the population.

There are also equity and ethical issues associated with giving the vaccine to girls only. When protection is assumed through herd immunity for boys, it places an undue burden on women to protect the population as a whole. In addition, it poses an ethical dilemma given that the provincial government discriminates based on gender, and potentially sexuality in the future. This dilemma occurs in the context of a time when there is evidence that individuals of all genders and sexualities are at risk for an HPV infection. A risk-based vaccination strategy would be complex to execute, and is inherently discriminatory, and likely ineffective.

## Chapter 4: HPV vaccination and the recipient and their parents

In this chapter, I discuss the awareness and acceptability of the HPV vaccination through the lens of the recipients and their families. When knowledge levels are low, people are less likely to understand their risk factors, and therefore less likely to understand the value and relevance of the vaccine for their health. A systematic review found that three quarters of studies reported that knowledge and awareness about HPV was associated with greater vaccine acceptability (Liddon et al., 2010).

The first dimension is that gender of the youth can play an on uptake of the vaccine. The provider may not make a recommendation to the youth or the youth may not believe they are at risk because they have not been educated on the link between HPV and cancers that may impact them. There is a significant body of literature that demonstrates that males and females have a different awareness and acceptance of HPV vaccine. The second dimension is how the religion of the recipient and their family can also play a role in vaccine uptake. These religious perspectives must be considered when the vaccine is recommended.

### Gender

The acceptability of the HPV vaccine differs across gender, profession and position in society. Gender can play a role on HPV immunization, through two separate dimensions. First, the gender of the patient, more specifically how the awareness of the vaccine is differently for males versus females. This awareness is key as it plays a significant role in recommendation. This point is important due to the focus of this thesis on HPV vaccination in male youth. The second key point is on the acceptability of the

**Awareness of HPV vaccine among males and parents of male youth**

Males are less likely than females to be aware of HPV vaccination. A study conducted in the United States which recruited from men from primary healthcare centres, found that only 18% of the surveyed population were aware of HPV vaccine availability for the male population (Reimer et al., 2014). This number compares poorly with a 50% awareness of the vaccine for females (Reimer et al., 2014). This number may be higher in Canada due to the universal coverage for girls across Canada, but exemplifies the gap between male and female awareness.

Few males are aware that the HPV vaccine is recommended and available for them (Perez et al., 2015). Most parents of sons 9-16 years old are unaware, unengaged or undecided about HPV vaccination for boys, and a very low percentage of parents report having their sons immunized for HPV. In order to be convinced that vaccinating their sons would be worthwhile, parents needed to be convinced of the value of the vaccine with more general information on HPV vaccination, the financial cost, and that the vaccine was safe (Perez et al., 2015).

While it is important to understand how the HPV vaccine is perceived among males in general, special consideration should be made to educate high-risk populations. In comparison to MSW (men who have sex with women), MSM have higher rates of anogenital HPV infection and oropharyngeal cancers (Giuliani et al., 2016). These high-risk groups could benefit more from the vaccine as they have a higher relative risk of acquiring HPV in their lifetime (Gilbert, Brewer, & Reiter, 2011). In the MSM population, a greater awareness regarding HPV infections and positive attitudes towards preventative behaviour is associated with vaccination (Giuliani et al., 2016). Past surveys

have demonstrated that only 21% of MSM respondents knew that the vaccine could be used to prevent infection and cancer in men (Gilbert et al., 2011, p. 22).

In an Italian study that profiled the perceptions of HPV vaccine among high-risk men, which included data from MSW and MSM and the researchers were able to compare the two data sets (Giuliani et al., 2016). Three quarters of respondents, independent of sexuality, were aware that the HPV vaccine was a very common or common infection. Interestingly, in this sample MSW were more likely to have heard of the HPV vaccine. The researchers of this study speculated the MSW learned of the link between HPV and cervical cancer from their female sex partners (Giuliani et al., 2016). Given that MSM are less likely to know about the HPV and the vaccine, the gap between MSW and MSM health is potentially widened. It points to a heightened need to build a greater awareness of the vaccine for a high-risk group.

A vital primary prevention strategy to stop the development of HPV-related cancers in MSM is the HPV vaccine (Gilbert et al., 2011). Independent of HIV status, MSM are more likely to be willing to get vaccinated when there was a higher perceived effectiveness of the vaccine, a belief that their physician would recommend the vaccine, and anticipated regret over getting a HPV-related cancer after missing the opportunity to be vaccinated (Gilbert et al., 2011). These three key factors that influence willingness to get vaccinated could have significant implications.

The findings of this study suggest that heightened awareness about the importance of the HPV vaccine in the MSM population could result in a greater acceptance of the vaccine. The researchers suggest that MSM with enhanced access to the information regarding the potential severity of a HPV infection, the relationship between HPV and

male cancers, and the benefits of the HPV vaccine may be more likely to get vaccinated. When programs designed outreach to target the MSM population, marketing the prevention of cancer rather than HPV more generally would likely be a more effective strategy (Gilbert et al., 2011). There is still work to be done in terms of building awareness of HPV vaccination for males.

**Readiness for HPV vaccine among men**

Men are open to getting vaccinated to protect themselves from HPV-related health complications (Liddon et al., 2010). In studies where college students were surveyed for interest in getting vaccinated, a large majority (74-78%) expressed an interest (Liddon et al., 2010). However, studies of groups with different backgrounds, such as a group of adult males from a Georgia community, had a significantly lower rate of acceptance and interest of getting the vaccine for themselves, with only 33% saying they were interested in getting vaccinated, and 40% indicating that they were undecided (Ferris et al., 2009; Liddon et al., 2010).

The acceptability of the vaccine was much higher among college men compared with men in the general population (Liddon et al., 2010). Overall, Liddon et al. found that there was a high overall acceptability of the HPV vaccine for males, but that there was variability of the acceptance based on the population, as the higher acceptability was reflected among college students and lower among a community sample (2010).

The evidence reflects that men generally prefer a HPV vaccine that protects against more strains of the virus, and one that has a direct positive impact on their health rather than the health of their partners (Liddon et al., 2010). When men were informed that the HPV vaccine could protect their female partners against the possibility of getting

cervical cancer, it had no effect on desire to get vaccinated (Liddon et al., 2010). A possible reason for this gap could be the limited media and public health campaigns following the launch for males in comparison to the widespread campaigns when the vaccine was released for females (Reimer et al., 2014). While the media campaigns, and direct to consumer advertisements for *Gardasil*® occurred in the United States, many Canadians consume American television due to content overflow. In addition, many Canadian public health authorities pushed for HPV vaccination for girls after its approval. An equally strong campaign has not been present for male vaccination. In fact, the public push for the vaccine has been almost nonexistent for males.

Men who believed their parents, partners, and physicians would approve of them getting vaccinated, were more willing to get vaccinated (Liddon et al., 2010). Ensuring the vaccine is viewed positively and accepted by the community plays a significant role on an individual's willingness to get vaccinated. While it is important to understand why men are willing to get vaccinated, it is also valuable to understand why men reject it.

Some other correlates of acceptance were the men with the greatest lifetime number of sexual partners, were not currently sexually active, and did not engage in oral sex (Ferris et al., 2009). The male acceptance rate in this population could be the result of other intersecting determinants such as education and culture (Ferris et al., 2009; Liddon et al., 2010). Men who were more familiar with HPV were more likely to be accepting of the HPV vaccine (Ferris et al., 2009). Men in this study indicated that they would be more willing to get vaccinated if it was recommended to them by their doctor (56.0%), if they vaccine was free (51.4%), and if the research proved it would be beneficial to their health (50.7%) (Ferris et al., 2009).

**Perceptions of risk and risk factors**

Those who viewed themselves as at-risk for HPV are more likely to be willing to get the HPV vaccine. There is one study on the topic of perceived risk of men who have had oral sex. In a study of college men, who had recently given or received oral sex with two more partners, are more likely to believe they are at a heightened risk for oral cancer and thus more likely to seek the HPV vaccine (Crosby et al., 2012). Those who had oral sex within the last two months, recognized that oral sex is a risk behaviour that could lead to an HPV infection, and in turn, oral cancer (Crosby et al., 2012). Men engaging in a greater frequency of oral sex were more likely to indicate they were willing to be vaccinated against HPV in the next 12 months (Crosby et al., 2012). This increased interest in immunization in college-aged men, who value the vaccine more when they engage in oral sex, could lead to greater HPV vaccine acceptance and uptake (Crosby et al., 2012, p. 11).

Behavioural factors also influence vaccine acceptance. For instance, males with more lifetime sex partners, those currently dating, those with a current sexual partner, were sexually active, or had ever had an STBBI test, were more likely to accept the HPV vaccine (Liddon et al., 2010). Not surprisingly, men who perceived themselves to be at a greater risk were more likely to get the vaccine (Liddon et al., 2010). The acceptability of the vaccine was related to the individual perceptions of risk for a HPV infection. The most common reasons for not wanting to get the HPV vaccine were: being in a monogamous relationship and therefore not at-risk, not generally interested, and insufficient evidence to prove benefit of the vaccine to men (Liddon et al., 2010). As a result, a perceived low-risk lead to less interest in getting vaccinated against HPV.

The MSM population is at increased risk for HPV for a number of reasons. Firstly, they are not protected by the herd immunity that men who have sex with women have herd immunity (Sauvageau & Dufour-Turbis, 2015). Studies on the impact of girls-only vaccination programs have demonstrated reduced cases of genital warts in both females and heterosexual males (Sauvageau & Dufour-Turbis, 2015). This reduction has not carried over to have a significant benefit on the MSM population (Sauvageau & Dufour-Turbis, 2015). As a result, MSM are at a higher risk for HPV exposure, in comparison to their "herd protected" men who have sex with women (MSW) counterparts. This leads to MSM holding a substantial HPV burden (Brewer & Calo, 2015). Within the MSM community, there is a further gradient of individuals with particular risk factors. For instance, there is a higher probability of virus transmission from the penis to the anus, than from anus to penis (Brewer & Calo, 2015). The prevalence of anal HPV infections is high among MSM at greater than 60% and varies among those who are HIV positive at greater than 80% (Sauvageau & Dufour-Turbis, 2015). Genital warts are 2-3 times more common in MSM compared to a group of men who have sex with women in the same age group (Giuliano, Palefsky, et al., 2011; Sauvageau & Dufour-Turbis, 2015). Only about 5% of the Canadian population is estimated to fall into the MSM category (Sauvageau & Dufour-Turbis, 2015). However, their health is significantly threatened by HPV and some sexual activities are riskier than others.

As a result of the persistent gender binary that fuels the way epidemiological research is conducted, there is a gap in the literature on HPV-risk for individuals who do not identify as cisgender. Actual and perceived risk for transgender and genderqueer, as well as other sexual minorities is unclear. There is, however some limited evidence that

there is an increased prevalence of HPV-related individuals from all across the gender spectrum, not just those who fit into the category of male or female (Quinn et al., 2015). This gap in the existing literature demonstrates a need to profile the risk for HPV-related cancers of populations across the gender spectrum as well as those who are more likely to engage in higher risk activities or those known to be in higher risk categories.

Being HIV-positive is another risk factor. Individuals who are HIV positive are at higher risk for HPV infections manifesting into cancer than the general population (World Health Organization International Agency for Research on Cancer, 2007). People who are HIV positive are less able to clear the virus on their own once exposed. This leads these individuals to be at a higher risk of developing an HPV infection that develop into cancer, than the general population (dos Ramos Farías et al., 2011; World Health Organization International Agency for Research on Cancer, 2007). As these individuals are at a higher risk of an HPV infection complicating into cancer, they may be more willing to be vaccinated, as their perceived risk is higher.

**Religion of the Recipient**

Religious beliefs and their interpretation play a role in the acceptability of vaccination and likelihood to follow a physicians' recommendation (Grabenstein, 2013). While there are a number of sub-groups within religions that oppose vaccination, the majority of the world's religions support it and the science that backs it up (Grabenstein, 2013). Understanding the role religion plays in choices around vaccination is important for vaccine acceptability. A large proportion of the world population (84%) associates with organized religion; linking science and religion is important to gain support for modern scientific advances, such as vaccination (Winston, 2012). The focus of this

section is on the religion of the recipient, and not the individual giving the recommendation.

**Dominant NL religious group-Christians.**

***Christianity***. Immunization practices among Christians can vary by denomination and the how closely an individual identifies with the religion (i.e., fundamentalists or evangelicals) (Grabenstein, 2013). Most Christian denominations have no objections to immunization: a minority of do. While the Catholic Church accepts and encourages vaccination overall, it continues to resist certain aspects of immunization (Grabenstein, 2013; The National Catholic Bioethics Center, 2006). The primary concern among Catholics and some other Christian denominations is the use of aborted cell lines in the development of the vaccines (Grabenstein, 2013).While two cell lines exist from aborted fetuses, WI-38 and MRC-5, they came from fetuses that were aborted by women who did not want to continue their pregnancies (Grabenstein, 2013; Loving, 2015).

The use of these fetal cell lines do pose some moral questions, for those that disprove of abortions, these abortions were not performed for the purpose of vaccine research and no additional abortions that need to be performed to ensure vaccines are manufactured (Grabenstein, 2013). The Catholic Church made the point that getting an abortion, and getting vaccinated are morally separate actions, and that individuals getting vaccinated do not share the immorality with the individual who received the abortion (Grabenstein, 2013). As a result of this belief, vaccination is morally justifiable in the Catholic Church. This however does not prevent individual Catholics from holding different views. Catholic parents were three times more likely to vaccinate their daughters against HPV (Shelton, Snavely, De Jesus, Othus, & Allen, 2013). This is in contrast to

Protestants and other Christian denominations who had more negative beliefs about HPV vaccination than their Catholic counterparts (Shelton et al., 2013).

Other Christian denominations oppose vaccination for various reasons. For example, Church of Christ, Scientist followers deny the reality of disease and that one can be cured of a disease, by convincing oneself that it is not real (Grabenstein, 2013). As a result of this belief, vaccination is viewed as irrelevant.

Religiosity and spirituality are a major component of culture and can play a key role in community (Thomas, Blumling, & Delaney, 2015). A study conducted in a religious community in the rural American south found that religiosity and spirituality played a role in parents' decision to vaccinate for HPV (Thomas et al., 2015). Participants indicated that they would be more likely to have their child vaccinated if their pastor or religious leader was supportive of and promoting the vaccine (Thomas et al., 2015). Self-reported however religiosity was not found to be protective against sexual risk-taking. Culturally sensitive materials need to be considered when implementing health messages, particularly ones regarding sexual health in rural, religious communities (Thomas et al., 2015). The findings of these studies may be relevant to the NL context where many communities are rural and the church, in particular the Catholic Church, is what ties the community together and may inform decisions.

Religion can play a key role in the acceptance of HPV vaccination, and is an important sociocultural influence in the United States. The province of NL shares cultural similarities to the United States, particularly in relation to religion. This is because religion is an integral part of the culture in NL, much like in many parts of the United

States. This may mean a higher relevance, or transferability to the American data on this topic.

Religion can shape the decision-making for people in multiple areas of their life, immunization practices being one of them (Shelton et al., 2013). The views on vaccination from religion are as varied as the religions themselves (Grabenstein, 2013). For those with religious beliefs opposed to vaccination, this opposition may be even stronger for those that protect against STIs (Shelton et al., 2013). This indicates that understanding religious views towards HPV vaccination can be a valuable tool when designing immunization programs.

***Christianity predicting HPV vaccination in Canada.*** Despite the large number of studies conducted on this topic, the literature continues to be inconclusive regarding impact of religion on vaccination, and specific HPV vaccination intention. Historically, religion has had the power to oversee and interfere with medicine. Religion can likely make a difference in decision-making at many levels from the policy side, to the practitioner, and the individual level. Based on media accounts, Gardasil® is disliked by the political right and group of religious conservatives (Guichon et al., 2013). The norms of a religious group can have an impact on vaccine uptake (Guichon et al., 2013).

There have been documented incidents of opposition to HPV vaccination in Canada, where religion has prevented girls from getting routine immunization. This occurred in the Calgary Catholic school district and four private schools in Manitoba (Guichon et al., 2013; Skerritt, 2008). While most of these objections have ended, it comes from a persisting belief that immunization may encourage or give permission to youth by their parents, schools and communities to have sex at a younger age. This

strongly held belief is not supported by scientific evidence. Research has consistently demonstrated that receipt of the HPV vaccine does not lead to become sexually active at a younger age, or increased promiscuity (Jena, Goldman, & Seabury, 2015; Smith, Kaufman, Strumpf, & Levesque, 2015).

In a similar instance, the Board of Trustees of the Calgary Catholic School district voted on September 24, 2008, to ban the HPV vaccine from the district (Guichon et al., 2013). This ban came as the bishops contested Gardasil® vaccination stating, "a school-based approach to vaccination sends a message that early sexual intercourse is allowed, as long as one uses 'protection'" (Guichon et al., 2013, p. 409). This vaccine ban resulted in a significant reduction in immunization uptake among eligible youth. Shortly after the Calgary HPV vaccine began in January 2009, 70% of eligible children in the public schools had received the vaccine. Only 18.9% of children attending Calgary Catholic schools had received the vaccine in the clinics that Alberta Health Services had opened up in order to encourage these students to get vaccinated (Guichon et al., 2013).These significant differences in uptake between the school-based and community settings could potentially be extended to the logistical issues associated with the risk-based strategy where men in the MSM category have provincial coverage for the vaccine. The school-based immunization takes little effort on the individual getting vaccinated, whereas a community-based immunization requires an individual to self-identify as at risk and then schedule two to three appointments for full immunization. While the limited uptake between the school-based and community settings may be because parents were uncomfortable vaccinating their children when their religious leaders were opposed to it. It is likely that the limited significant difference is not attributed to the religious

opposition alone, but also likely due to the logistical challenges of immunization in a community-based setting.

The grounds for the Alberta Roman Catholic Bishops' decision was that they opposed sending mixed messages about the acceptance of premarital sex, implying that HPV vaccination would mean the church is accepting sex before marriage (Guichon et al., 2013). This decision became highly political and citizen intervention ultimately led to the reversal of this decision.

Some deeply religious Christians may believe they do not need to get vaccinated, that vaccination is redundant if they are faithful to their beliefs, and their partner should not fear infection (Grabenstein, 2013). However, for STBBIs, such as HPV, an individual may be fully compliant in their religious belief and still become infected, this should be noted as a convincing factor when counseling patients on the value of vaccination (Grabenstein, 2013).

**Non-dominant Religions.** Religions outside of Christianity have also expressed some level of hesitation towards the HPV vaccine. There is limited research on the relationship between HPV uptake and affiliation with specific religious groups. However, religious groups are not homogeneous and there is great variation between individuals who identify within the same religious group. Degree of religiosity is another potentially significant item and may be more significant than the affiliation in and of itself. Grabenstein (2013) conducted a review about what the world religions teach about vaccination and I largely draw from his research in this section.

***Judaism.*** A qualitative study of the British Jewish community found that respondents viewed vaccines positively yet paradoxical, and there was a lower uptake of

the HPV vaccine. Mothers who believe the vaccine was contrary to religion and those who scored highest on religiosity, were less likely to vaccinate their daughters (Gordon, Waller, & Marlow, 2011). This vaccine elicited a greater level of concern than others. Among mothers who accepted and rejected the vaccine, almost all said this vaccine was the first that they really had to step back and think about and that the decision had become a dilemma (Gordon et al., 2011).

On the one hand, Jews learn that certain actions are expected to maintain health and that the benefits of disease prevention to the community are superseded by individual preference (Grabenstein, 2013). Vaccination is consistent with these ideals and expectations and public health recommendation On the other hand, children learn from an early age that they should not have sex before marriage and therefore they tend to delay vaccination until their children were older. Thus a perceived low susceptibility to HPV relating to strongly held religious beliefs shared by the community are tied to lower immunization rates.

While there are certain concerns over non-kosher products in vaccines, if it is diluted enough, it is deemed acceptable (Grabenstein, 2013). Jewish scholars do not believe vaccination interferes with any divine providence (Grabenstein, 2013). In fact, orthodox Hasidic Jews have volunteered in several important vaccine trials (Grabenstein, 2013). Despite the wide acceptance of vaccination as good for the individual and the community, some individuals may still oppose vaccination.

***Buddhism.*** Buddhists tend to favour vaccination, and there are few problems with vaccine uptake in Buddhist countries (Grabenstein, 2013). In fact, they have a historical involvement in preventing smallpox through a variolation that was a powder made of

ground scabs from an infected person with smallpox (Grabenstein, 2013). The Buddhist nun who created this powder blew it up the nose of a non-immune individual in order to induce immunity (Grabenstein, 2013). The acceptability has led to minimal religious-based objections to vaccination. There are no studies on the acceptability of HPV with Buddhists, however Buddhists tend to favour vaccination.

***Hinduism***. Hindus share a broad set of beliefs and like most religions, there is variance among different denominations (Grabenstein, 2013). Vaccination is widely accepted in Hindu countries (Grabenstein, 2013). However, there are no specific studies linking Hindu on HPV vaccination. There are no modern concerns with use of vaccines that contain traces of bovine despite the role of the cow as sacred in Hindu faith and traditions (Grabenstein, 2013). Bovine is not present in the HPV vaccine but is present in other common vaccines including DTaP, (diphtheria, tetanus and pertussis also known as whooping cough), hepatitis A, MMR (measles, mumps, rubella), rotavirus and varicella (chicken-pox) (Centers for Disease Control, 2015b).

***Islam***. Muslims tend to be supporters of vaccines, however, as with most religion there are certain subsets who have opposing views (Grabenstein, 2013). An Islamic scholar has made the point the immunization is in line with the Muslim principles of preventing harm, public interest and the law to protect life (Grabenstein, 2013). Grabenstein also added that the Qur'an uses a concept that refers to taking preventative action, which has a direct application to medicine through immunization (Grabenstein, 2013). As a result, when Muslims object to immunization, it is typically due to a mistrust of government or authority, rather than their religious beliefs (Grabenstein, 2013).

**Degree of religiosity.** Not only do the various religions have differing acceptance levels on vaccination, but degree of religiosity can have an impact too. For example, parents who identified as holding deeply religious views were less likely to accept the HPV vaccine (Barnack et al., 2010; Reynolds, 2014).

Certain conservative Christian groups have been hesitant to vaccinate against HPV, as it is a STBBI. Some hold a belief, unsupported by scientific evidence, that the vaccine will encourage sexual promiscuity (Zimet, Rosberger, Fisher, Perez, & Stupiansky, 2013). Another belief among some religious individuals is that vaccination is unnecessary because God will protect their child from disease, and if they or their child were to contract such a disease, it would be part of God's will and vaccinating would be wrongly interfering with that (Reynolds, 2014). One study found that religiosity had a significant impact on the intentions parents had to vaccinate their child for HPV (Barnack et al., 2010). Those with more religious parents were less likely to be vaccinated (Barnack et al., 2010). For example, "parents' intentions differed significantly between parents who rarely or never attended religious services and those who regularly attended religious services" (Barnack et al., 2010, p. 32). This means that some could identify as Christian but not practice the religion regularly; this has the potential to influence vaccination decisions (Reynolds, 2014). In contrast, a study that conducted surveys a predominantly Catholic community, found that religion and religiosity did not play a role in parents' intention to vaccinate their children for HPV (Reynolds, 2014).

The less frequent an individual is involved in religious activities, the higher the vaccine uptake (Reynolds, 2014; Shelton et al., 2013). More specifically, the more often an individual engages with religion, the more likely they are to decide against HPV

vaccination (Shelton et al., 2013). This evidence suggests that level of religion involvement and the HPV vaccination rates are inversely correlated. In addition, parental beliefs about age of HPV vaccination varied across frequency of religious attendance (Shelton et al., 2013). Parents who were frequent attenders of religious activities were more likely to oppose HPV vaccination altogether, and hold negative attitudes towards the vaccine, in comparison to parents who were not frequent attenders (Shelton et al., 2013). This is possible due to the unsupported belief that the vaccine encourages sexual promiscuity.

The belief that the HPV vaccine does cause promiscuity, while scientifically unsupported, does emerge in the media, and the most religious groups were concerned about this, for example the Catholic bishop from Alberta (Casciotti, Smith, Tsui, & Klassen, 2014; Guichon et al., 2013). Regardless of the validity of this relationship, the connection is perpetuated through media misinformation and remains a concern in the minds of some parents. As a result of this media-influenced misinformation, parents, and in particular, highly religious parents may be less likely to support vaccination for minors under their control. Those parents who do not believe that the vaccine would have an impact on the age of sexual initiation or the number of sexual partners their child would have, were significantly more likely to have strong intentions to vaccinate their child (Casciotti et al., 2014).

**Summary**

The awareness and acceptability of the HPV vaccine among male youth and their families can depend on gender. Due to the historical context, the HPV vaccine was originally targeted towards girls for the prevention of cervical cancer. Although the

vaccine has been approved and recommended for boys for several years now, the awareness of the vaccine for boys is not yet at the level it is for girls. In line with the lower awareness in boys, the vaccine is also viewed as somewhat less acceptable for males. As knowledge about the protective factors of the vaccine goes up, it is likely the acceptability of the vaccine will rise too.

Religion may play a minor role in the likelihood of an HPV vaccine recommendation and the uptake of the vaccine. Certain religious groups are more likely to accept vaccination and approval from community religious leaders could be paramount. Proper evidence-based education to the male youth and their families is necessary to enable families of male youth to make informed decisions about vaccination that do not rely on misinformation about encouraging sexual promiscuity, or sex at a younger age.

## Chapter 5: Methodology and Method

This chapter describes, justifies and demonstrates how I used the chosen methodology for my thesis, an instrumental case study approach. The methodology was selected based on my need for one that was congruent with my ontological beliefs and my epistemological stance. Throughout this chapter, I demonstrate how I designed and conducted this study. I approached my project from a critical realist knowledge paradigm, with a belief in the assumptions critical realists hold. As I framed my research questions, I was positioned to illuminate power relations and institutional barriers by collecting data from two different healthcare professionals (physicians and nurses) using two data collection methods (surveys and interviews).

### Knowledge Paradigms

Ontology, whether acknowledged or not, guides the design of a research project. Ontology describes a "core belief system about the nature of the world and its components" (Bryant, Dennis, & Rioux, 2010, p. 125). It characterizes the nature of reality and what we can know about our world (Bryant et al., 2010). As a critical realist, I believe that the world exists independent of our knowledge of it (Sayer, 1992). I value an awareness of my ontological and epistemological assumptions to help guide my research. Epistemology describes the justification of knowledge (Carter & Little, 2007). My epistemology has shaped how I create and understand knowledge (Bryant et al., 2010). At a macro level, my ontological belief informs my epistemic stance, which dictates that I identify a congruent methodological approach, which in turn guides the choice of the methods used to address my research questions.

Understanding ontology and epistemology and where I am theoretically located enabled me to identify the knowledge paradigm that best aligned with my view of the world. Once I was grounded in my understanding, I was able to find a methodology, i.e., case study, that is consistent with my view of knowledge construction, and appropriate to my research problem. As I approached my research project, there are particular items I kept in mind. While I sought to gain insight into physicians' and nurses' recommendations for the HPV vaccine towards male youth, I thought critically about how gender and religion might shape those views. I have situated this inquiry by critically examining how institutionalized power relations could play a role in this decision.

**Critical realism**. Critical realism views reality as "assumed to exist but to be only imperfectly apprehendable because of basically flawed human intellectual mechanisms and the fundamentally intractable nature of phenomena" (Guba & Lincoln, 1994, p. 110). Critical realists value an analytical approach to reality. This helps us get closer to observing the truth (Guba & Lincoln, 1994). On a more practical level, critical realism is "concerned with the identification and analysis of societal structures and how these determine the distribution of societal economic, social, and political resources" (Bryant et al., 2010, p. 124). Central to the application of this approach is utilizing critical social analysis (Bryant et al., 2010). This approach enables me to look at experiences of participants beyond the individual level at a structural lens.

As a critical realist, I considered how gender and religion shape HPV vaccination. While a truth may exist, it cannot be observed. Realism identifies "how economic and political structures interact with the existence of different classes, status groups, and associations in society to create difference in health and illness, and the evolution of

healthcare approaches (Bryant et al., 2010, p. 124). Seeking knowledge beyond the world of appearances and exposing these expressions of truth is congruent with critical realist epistemological assumptions and can sometimes lead to emancipation.

Beyond these strengths, critical realism does have some limitations. Using a realist approach can be criticized for exclusively focusing on power relationships (Crowe et al., 2011a). In addition, the researcher is sometimes placed in a position of privilege, which they may not be aware of, which could disorient the findings (Crowe et al., 2011a). My position of privilege to the physicians and nurses who served as my participants is the knowledge I had on this topic that at times superseded their professional awareness of the literature on HPV and HPV vaccinations. My personal expertise on HPV vaccination for male youth may have been perceived as threatening to their professional identity and practice territory.

I sought to mitigate these limitations by managing my power and privilege as a researcher and considering other factors outside of power relations. I consulted my supervisor throughout the one-on-one interviews with physicians and nurses to discuss when I may have experienced an imbalance of power. One instance of this consultative process was when a physician cited misinformation when making recommendations to patients about HPV immunization. I made the decision at the end of the interview to note current and updated literature, in contrast to what this physician had referenced. Following a post-interview email exchange, I sent the physician a copy of a recent peer-reviewed article on the cost-effectiveness of the HPV vaccine in the Canadian context. This exchange allowed for a free and open interaction throughout the interview, while

also allowing for a brief e-mail exchange about current evidence on the subject after the interview was completed.

My worldview is in line with a critical realist knowledge paradigm as a result of my life experiences and position in academia as a critical realist with a background in critical health studies. Additionally, I am policy-minded, and interested in how social and government institutions shape health policy and practice. I believe that identifying power relations and institutional mechanisms that may not be readily identifiable are key to evoking social change and legitimize the struggles many encounter.

Critical realism is also an appropriate approach for an instrumental case study design. Historically, Yin (2014) has noted that the case study approach is best aligned to realist and relativists. However, Yin's most recent text supports a critical realist approach to case study research (2014). Yin states,

> if you want to assume a realist perspective, your theory in designing a cases study may very well concern the way that you will capture the perspective of different participants, and how and why you believe their different meanings will illuminate your topic of study" (2014, p. 17).

While case studies are hard to define on their own due to their flexibility, the case itself makes this research approach definitive (Easton, 2010). "Case studies allow the researcher the opportunity to tease out and disentangle a complex set of factors and relationships, albeit in a smaller number of incidents" (Easton, 2010, p. 119). While working to untangle the messy social workings as I seek to uncover the truth, it is important to keep in mind that knowledge production is a social practice. As a result, "the condition and social relations of the production of knowledge influence its content"

(Sayer, 1992, p. 6). While the process is indeed complex and uncertain, this process of discovery can come the closest to revealing a truth, if not a universal truth.

Critical realism values both qualitative and quantitative methodologies (McEvoy & Richards, 2006). By using both approaches, I hoped to generate findings that were balanced and gave an accurate perspective of the issue. Critical realists study events, in my case, the event is recommendation for HPV vaccination (Easton, 2010). However, it is important to be aware that the data I collected were self-reported data explaining practices and knowledge rather than directly observing when/if the conversation around HPV vaccination for male youth is actually occurring.

**Methodology**

The methodology provides reasoning and structure to the research approach. The methodology is "a theory and analysis of how research should proceed" and justifies the method, rather than being the methods themselves (Carter & Little, 2007, p. 1317). It outlines a systematic approach to the methods and a rationale for their use. The methods, in turn, are the specific tools and techniques for gathering evidence.

I regard the methodology I chose for my project as a significant decision, as it directed the point of study. It rationalized the specific methods that were used as part of the research project (Carter & Little, 2007). My methodology served as a guide through the whole research process and helps my audience understand the applications of my research upon dissemination. My approach helps to demonstrate a theoretical purpose to why I am doing what I am doing, and how it benefits the populations that I am seeking the better understand.

**Case study as a methodology.** A case study approach involves "the study of a case within a real-life, contemporary context or setting" (Creswell, 2013, p. 97). This approach allows for in-depth research that explores elaborate issues (Crowe et al., 2011a). Issues that case studies examine cannot be fully understood through inquiry that only produces quantitative data. The case study approach has increased in popularity among researchers, as a result of the surge in mixed methods study designs (Hyett, Kenny, & Dickson-Swift, 2014). It values collecting data from multiple and mixed methods through a variety of lenses (Baxter & Jack, 2008). A case study approach is appealing to researchers like myself because it is one of the more flexible methodological approaches that allows the researcher adapt the methods they choose, to be appropriate for the specific topic they are studying (Creswell, 2013). Case studies place an emphasis on the value of questioning the how and the why and seeking to answer in-depth research questions about a particular social phenomenon (Yin, 2014). The how and why questions are consistent with the case study methodological approaches as well as qualitative research methodologies as a whole. While I identify as a qualitative researcher, I believe that using qualitative and quantitative methodologies helps to gather a richer understanding of mechanisms from multiple points of view.

A case study researcher must study a real life, contemporary bound system, known as a *case* (Creswell, 2013). Thoughtfully delineating, or binding the case generates knowledge that is context specific (Luck, Jackson, & Usher, 2006). A bound case is one with clearly defined and unambiguous boundaries that ensure the case is context specific with appropriate limitations (Baxter & Jack, 2008). A case can also be bounded by space and time, time and activity, or definition and context (Baxter & Jack, 2008). Binding a

case is key to ensuring the study is feasible, manageable in scope, and can be completed within a definite limit (Baxter & Jack, 2008). Discrete inclusion criteria also ensure a study's feasibility and value (Yin, 2014). Binding also important by ensuring there is appropriate justification for the case chosen. The success of a case study methodology is dependent upon providing a strong rationale for the decision around selection of the case and what you define as being included within it (Creswell, 2013).

I have bound my case by using some of the aforementioned strategies. My research question sought to understand the factors that physicians and nurses reported influenced their decision to recommend the HPV vaccine for male youth in NL. These factors make the research project one that is specific to the policy context of the province in the fall 2015 through winter 2016.

The case is also bound by the individuals invited to participate in this study. Physicians registered with the NLMA, and nurses registered with the ARNNL were included. This is because we obtained a partnership with these provincial professional organizations and they were able to help facilitate our participant recruitment and data collection. Without the support of these organizations, it would have been difficult to collect the data I did. A relatively small group of individuals are a part of this study. However, those who are included are key knowledge leaders in the population.

The original project proposal intended to survey physicians who specialized in family medicine, gynecology/obstetrics, oncology and pediatrics. In their American study, Barnack et al. (2010) reported that these specialities had unique perspectives and were more likely to encounter HPV and the vaccine in their day-to-day practice. Later I made the decision to include all NL physicians. While a physician's level of expertise on

this topic would depend on speciality, physicians are often viewed as knowledge leaders, regardless of speciality. Moreover, the total population of physicians in the province is relatively small, so selected specific specialties would have significantly limited my sample. The NLMA agreed to provide access to all physicians registered to practice in the province.

The inclusion of all nurses came after the decision to include all physicians was made. Like physicians, nurses work in a variety of specialties. Some clinical and professional environments are more likely to encounter the HPV vaccine on a routine basis. Despite likely differences in knowledge about HPV and HPV vaccination across workplace settings and specialties, all registered nurses and nurse practitioners are likely viewed as knowledge leaders in their communities. For this reason, and in attempt to constitute comparable datasets between the professional groups, all nurses registered to practice with the ARNNL who also indicated an interest in participating in research were invited to participate in a survey and interview.

The professional groups also bind the study. The NLMA and the ARNNL became partners at the proposal stage of this research. As previously mentioned only physicians and nurses registered to practice with the NLMA and AARNL, respectively were included in the study. As partners with these organizations they helped with recruitment and dissemination of the knowledge gained from this project. The ongoing support of these organizations demonstrates relevance and utility of the research product.

The temporal context includes the current policy in the province, and other factors that relate to the historic context of this issue, situated at this point in time. As the study is looking at physicians' and nurses' intentions to recommend the HPV vaccine to male

youth, the existing national recommendations, which often inform their practice, are important. In addition, the historic context may lead to a perception that the vaccine is not imperative due to the lack of provincial funding for it. The public may hold a belief that if the vaccine were truly relevant and necessary, the provincial government would step up and accept the expense.

A case study approach is also valuable when the boundaries are not clear between the phenomena and the context (Baxter & Jack, 2008). For example, the decision-making and recommendations that physicians and nurses make cannot be separated from the context in which they occur. The case study acknowledges the reality that recommendation would be different if the vaccine was part of routine immunization programs in schools and that practice cannot be separated from the environment in which they occur. Compared to some of the other methodological approaches that are largely theoretically based, case study research can lead to practical, applied solutions to contemporary, context specific problems. Case study research is appropriate for my study for a number of reasons. First, it allows me to understand the *how* and *why* questions. *How* do physicians and nurses recommend the HPV vaccine to male youth, and what prevents them from recommending the vaccine? Are there any barriers that the professional group perceives, and if so *why* are they considered barriers?

Completing a multi-method study, using qualitative data are comparable to getting a behind the scenes look at a movie production. The production is significantly more complex than the singular world presented on the screen. What is truly going on, takes further inquiry, which only qualitative methods can help us to understand.

An instrumental case study design uses one specific case to demonstrate what may be going on in more than one similar contexts (Stake, 1995). It uses a case to gain a broader appreciation of an issue or phenomenon (Crowe et al., 2011a). This design is used to accomplish something other than understanding a particular situation internally (Baxter & Jack, 2008). It surpasses the inside of the case to find an interpretation that provides value beyond the original case environment, that creates meaning that transcends the boundaries of the case (Baxter & Jack, 2008). An instrumental case study provides insight into an issue or helps to refine a theory. The case plays a supportive role; it acts as a mechanism to facilitate our understanding of something else (Baxter & Jack, 2008). If I can understand how gender and religion shape male HPV vaccine recommendations in NL, it can lead to discovery about this issue in other contexts, or shed light on how gender and religion have the potential to influence decision-making in preventative and sexual healthcare.

As a result of using an instrumental case study approach, I hope that this study will create meaning and knowledge that is internally relevant to the NL context. However, my ambition is that findings that are applicable to contexts that are similar to this bounded case – take away lessons learned from this study that may be used to improve HPV vaccination for male youth beyond this case. Some of the institutional barriers and facilitators to HPV immunization may impact other regions with a similar public health history and approach to sexual health care.

**Appropriateness of case study approach.** I have now shown that my decision to use an instrumental case study approach is supported by my ontology, epistemology and

research questions. While case studies have a number of noted benefits, there are criticisms to this approach.

**Critiques of case study research.** Whether or not case study research is a method or methodology has been disputed (Hyett, Kenny, & Dickson-Swift, 2014). There are distinct and valuable arguments for both. However, for the purpose of this research project, using a case study is being approached as a methodology that guides the specific methods to answer the sought after research questions.

Another criticism of case study is that it lacks as holding rigour due to its flexibility (Hyett et al., 2014). Qualitative research is oftentimes more difficult to evaluate, particular for those with experience research from a positivist paradigm (Hyett et al., 2014). To ease the evaluation of the study rigour, I have remained true to the case study approach and demonstrated how rigour was achieved.

The case study approach has also been criticized for a lack of generalizability, however, generalizability is not an aim of qualitative research, in general, or case study, specifically (Yin, 2014). While I do not aim for generalizability, I have transferable findings that may help us better understand similar contexts. Yin notes,

> Case studies, like experiments, are generalizable to theoretical propositions and not so present a sample, and in doing case study research your goal will be to expand and generalize theories (analytic generalizations) and not to extrapolate probabilities (statistical generalization)" (2014, p. 21).

So while statistical generalization is less relevant to my case study research project, the theoretical underpinnings of my findings can help make the results more applicable and useful to other populations and contexts. By using through description of the context in

which the research is positioned in, other knowledge users can weigh the context in comparison to theirs to determine the relevance of the research to their population.

**Methods**

Methods are the actions of the researchers and participants in a research project (Carter & Little, 2007). Case study research is conducive to multiple, and mixed method designs (Luck et al., 2006). The methods that case studies researcher may use are direct observation, participant observations, surveys, questionnaires, documentation, archival records, documents, structured and unstructured interviews, written account by participants, physical artefacts and research description of the context (Luck et al., 2006). Often having multiple sources of data improves the value and richness of the knowledge generated. The specific methods of data collection used in this study were an online survey and telephone interviews, and the sources of data were physicians and nurses registered with their respective professional college in NL during the data collection phase of the study. Mixed methods are therefore the ideal choice for this research project as it aligns with my critical realist grounding, and is best situated to answer my research questions and accomplish my research objectives.

**Research questions.** In line with case study inquiry, I wanted to understand *how* physicians and nurses recommend HPV vaccination for male youth, and *why* or *why not* they do it. I sought to:

> *(1) Gather information about NL physicians' and nurses' recommendations and or intentions to recommend HPV vaccination for male youth (9-18); and the factors that inform those recommendations*;

*(2) Investigate the role of gender and religion as social factor influencing physicians' and nurses' decision-making about HPV immunization*;

*(3) Identify ways to strengthen the intention of physicians and nurses to recommend and vaccinate male youth at-risk of HPV infections and HPV-related cancers in NL*.

**Data collection tools and analysis: surveys and interviews.** Surveys are used to gather large sums of quantitative data, and interviews are used to collect qualitative data from individuals to humanize and contextualize the findings. While interviews are often used by critical realists, some may criticize the use of surveys as inconsistent with this paradigm. While surveys are often used by positivists, they can be used within a critical realist paradigm. The methods by which data are collected is not linked exclusively to the philosophical standpoints that a researcher may bring to the analysis of their data (McEvoy & Richards, 2006).

*Physician surveys*. The physician questionnaire was developed by Barnack et al. (2010) as part of her doctoral research. The questionnaire (Appendix C) was modified for the NL context and was piloted through a judgment sampling. Judgment sampling "involves selecting units on the basis of certain judgments with respect to the make-up of the population" (Statistics Canada, 2012, p. 43). The individuals used for piloting this survey were physicians (n=2) I knew personally from other provinces with a similar policy context (British Columbia), in additional to Memorial University medical students (n=2), all of whom were ineligible to participate in the survey. The feedback from the pilot testing was used to refine the survey.

This project was conducted in partnership with the NLMA. This partnership facilitated access to the NL physician population. Jonathan Carpenter, the Director of Communications and Public Affairs, facilitated first e-mail contact with physicians registered with the NLMA and invited them to participate in the online survey (Appendix A). The email contained an attachment to the letter of information/consent form (Appendix B). The NLMA also posted the survey link on their website under the "Notices and Advisories" section of their website.

The survey was administered via FluidSurveys™ software. Due to initial challenges with recruitment, I extended the collection period by two weeks. In total, the survey was open for seven weeks, opening September 16, 2015, and closing on November 4, 2015. This extended period of time enabled me to collect significantly more physician responses.

Once the survey was closed, responses were downloaded into an Excel spreadsheet and sent to Sara Heath, a medical researcher at Memorial University. She was arms-length from the project and conducted the draw for the charitable gift certificates. The gift certificates were used as a modest incentive for participating. She removed all identifying data, cleaned the data and exported it to SPSS for analysis.

In SPSS, I coded each variable and summarized the data by descriptive statistics, and then ran a chi square analysis test. In the cases of high proportion of cells with expected frequency less than five in contingency tables, categories of a variable were combined and Fisher's exact tests were used. I used the test results to interpret crosstab results. I used the two tailed alpha results from the Fisher's Test to indicate if the two variables had a significant association. The accepted p value of less than or equal to 0.05

was used to indicate a significant result. The results of the survey were used to design an interview guideline to better understand the quantitative findings.

*Physician interviews.* On the last page of the survey, individuals who were interested in participating in an interview were invited to input contact information. This recruitment method was ineffective, producing two responses, neither of whom ultimately participating in an interview. NLMA sent out an invitation for physician participation in the telephone interview. This email contained a letter of information and consent form for the telephone interview (Appendix D). This strategy was largely ineffective producing no response. Finally, a senior faculty member and personal contact agreed to reach out to physicians in the Department of Family Medicine. Six of his colleagues contacted me via email to arrange an interview time. As I had previously presented at the Medical Education Scholarship Forum conference, many of these individuals were familiar with the project. To ensure no coercion, physicians contacted me directly if they were interested, and their colleagues did not know who did and did not participate. As a result of this recruitment method, the participants were exclusively family physicians, and only those associated with the Faculty of Medicine at Memorial University. This means the responses may reflect a perspective only relevant to the sampled group. If the project had a longer time frame, more funding, and if there were more personal and or professional contacts across the province, the sample might have been larger and more representative.

Six telephone interviews were conducted using a semi-structured interview guideline (Appendix E). Interviews lasted between 20-40 minutes and were audio recorded using the Call Recorder iOS application. At the conclusion of each interview, I recorded my reflections in my research notebook and used these field notes as a source of

data upon my analysis. The interviews were sent to a transcriptionist. The interviews were de-identified when they went to transcriptionist and pseudonyms were used for the interviewees from this point forward. Once I received the transcripts, they were promptly imported into NVivo™. This software facilitated and streamlined the data analysis process. My supervisor and I independently coded two interview transcripts using a pre-defined coding framework. The preliminary coding framework stemmed from the research questions. Beyond the preliminary framework, I used inductive reasoning to develop the rest of the coding framework. After this I compared and discussed these codes with my supervisor. When we reached consensus, I coded all interviews and created an outline of major themes and claims from the interviews to support these recurrent themes. We met and discussed the coding to satisfy the requirement of intercoder reliability.

The codes that were used to analyze the physician data were: Addressing sexuality in healthcare practices, barriers and facilitators to recommendation, considerations of cost, conversations about HPV vaccine with patients, culture of HPV vaccination acceptance for physicians, education factors, factors that make NL unique, gender gap in health services, male youth not accessing primary healthcare, improve awareness of HPV for males, motivations of vaccination, perspective on HPV vaccine, perspectives on risk-based approach, policy suggestions, role of evidence in decision making, role of religion, youth invincibility.

*Nurse surveys.* Similar to the physician surveys, the nurse surveys were adapted from the surveys created by Barnack et al. (2010). Barnack's survey was previously used for physicians, but not for nurses. I adapted the survey for the nurse population, and left it

to mirror the physician survey to make it easy to compare results. Initially, I attempted to pilot the nursing survey (Appendix H), however after a two-week period of nonresponse, I decided to move forward without feedback from registered nurses and nurse practitioners. The rationale for moving forward as I did was because I wanted the nurse survey to be analogous to the existing physician survey, and I was limited by time constraints of the project. At the time when the physician survey was designed, I did not know that I would also be studying the nurse population. Initially, I planned to survey parents of male youth, but I was unable to gain access to the population. After further research, I found I had support of the ARNNL and realized the critical role that NL nurses have on immunization policy and implementation in the province.

This project was conducted in partnership with the ARNNL. This partnership facilitated my access to the registered nurse population. Julie Wells, the Research and Policy Officer from the AARNL, was able to share a list of ARNNL members who had previously given consent for the ARNNL to give out their contact information for research purposes. I emailed all nurses on this list, and invited them to participate in the online survey (Appendix F). This email included an attachment to the letter of information/consent form (Appendix G).

The survey was administered via *SurveyMonkey*™ software. Due to initial challenges with recruitment, I extended the collection period by a week. In total, the nursing survey was open four and a half weeks, opening Monday, January 27, 2016, and closing February 29, 2016. Once the surveys were completed, they were downloaded into an Excel spreadsheet and sent to Sara Heath, a medical researcher at Memorial University. She was arms-length from the project and conducted the draw for the

charitable gift certificates. The gift certificates were used as a modest incentive for participating. She removed all identifying data, cleaned the data and exported it to SPSS for analysis.

The data were summarized and analyzed using the same method as those used for the quantitative physician data.

*Nurse interviews.* On the last page of the survey individuals who were interested in participating in an interview were invited to input contact information. This recruitment method was effective, producing eleven responses. This allowed me to contact the interested individuals to give them more information and set up a time for the interview including the letter of information/consent form (Appendix I). Enough nurses indicated an interest at the end of their survey that I did not need to resort to alternate recruitment methods. The interviews were completed based on an ethics approved interview guidelines (Appendix J). Eight telephone interviews were conducted using a semi-structured interview guideline (Appendix J). Interviews lasted between 20-40 minutes and were audio recorded using the Call Recorder iOS application. At the conclusion of each interview, I recorded my reflections in my research notebook and used these field notes as a source of data upon my analysis. The interviews were sent to a transcriptionist. The interviews were de-identified when they went to transcriptionist and pseudonyms were used for the interviewees from this point forward. Once I received the transcripts, they were promptly imported into NVivo™. This software facilitated and streamlined the data analysis process. The coding framework for nurses mirrored that of the previously agreed upon framework for the physician interview analysis, with the

exception of some additional codes that came up in the nurses' interviews that did not appear in the interviews with physicians.

The codes that were used to analyze the nurse data were: awareness of HPV vaccination for males, cost as a barrier for vaccination, culture of HPV acceptance among nurses, current recommendations, discussion about HPV vaccine, educational improvement, educational limitations, gender's role, perspective on risk-based approach, policy suggestions, role of school system, role of evidence in decision making, role of religion, strength of existing program and type of nursing.

**Rigour**

It is important to conduct high quality, transparent research that proves to be rigorous. As a mixed methods researcher, it is my responsibility to demonstrate to my audiences what I have done to ensure the findings of the study are trustworthy. In this section, I describe several ways that I ensured rigour was achieved in this project. I have frequently checked-in with my supervisor through the data analysis process, I have kept a notebook containing rationale for research decisions, and reported all findings honestly.

Data triangulation occurs when multiple data sources are used to justify the credibility of emergent themes (Creswell, 2014). If themes emerge from several sources, the study is viewed as more internally valid. By doing this, I ensured my method is appropriate to answer my research question (Crowe et al., 2011b). Triangulating data asserts that, "data collected in different ways should lead to similar conclusions, and approaching the same issues from different angles can help develop a holistic picture of the phenomenon" (Crowe et al., 2011b, p. 6).

To triangulate my findings, I conducted surveys and interviews across two separate professional groups. By collecting quantitative data, and qualitative data across professional lines with themes that permeate beyond professional boundaries, I have triangulated my data and increased the validity of my study beyond what it would have been if I had used one professional group or data collection method. Triangulation is a particularly important component of my research approach as it is valued by critical realists, thus aligning with my epistemology.

Saturation occurs when there are patterns of recurring themes or no new emerging themes (Fossey et al., 2002). In both the physician and nurse interview, I did my best to ensure saturation occurred prior to ending data collection. Unfortunately, I was limited by time and interested participants. So while the findings were mostly saturated with recurrent themes, there were some discrete themes that did not reappear across interviews.

In order to ensure rigour in the quantitative results, I self-audited the data coding between SPSS and excel after coding the variables. By randomly auditing variables, I was able to catch errors and ensure accuracy of both data sets.

**Ethical Considerations**

This project adhered to the Tri-Council Policy (TCPS2) for ethical conduct for research involving humans and was approved by the provincial Health Research Ethics Authority. I consistently referred to the guiding principles of the TCPS2, respect for persons, concern for welfare and justice (Canadian Institute of Health Research, Engineering Research Council of, Social, & Humanities Research Council of, 2010). I underwent a thorough examination and made all requested changes to ensure approval and research held to the highest possible standard.

In addition to provincial approval through HREA, I contacted the Regional Health Authorities to inquire about submitting a formal research review application. The project did not place any direct demands on the Regional Heath Authorities through use of facilities or human resources. When I consulted with the relevant leaders at the Regional Health Authorities, I advised them that all participation would be on physicians' and nurses' own time. By sharing this information with the relevant leaders, I was able to understand the needs of the regional health authorities and submit research review applications accordingly.

For the physician population, Western Health was the only RHA that requested an application for a formal research review. For the nurse population, Western Health requested and Central Health suggested the submission of formal research review. Central Health believed that nurses were more likely to participate in research approved by their regional health authority. For this reason, I submitted the formal application. All RHA research review requests were granted after submission.

Some of the existing ethical concerns that were controlled and mitigated were typical of this type of research. These concerns were linked to privacy, and we have done everything in our power to ensure all responses are anonymous. My supervisor and I were both aware of our responsibility for privacy protection. We both signed an oath of confidentiality and personal identifying information was not extracted from the data files. The consequences for breach of confidentiality were clear and understood through the mandatory Personal Health Information Act training. All computer files pertaining to the study were password protected. All electronic data will be saved on either Victoria Law's or Diana Gustafson's computer. Some data were stored on Dropbox™ using a

complex password. Any other physician and nurse data will be kept in Dr. Gustafson's office in a locked filing cabinet for five years after the publication of research findings, in alignment with the Memorial University policy.

There were also concerns over obtaining consent for interviews that would not be conducted face to face. We demonstrated we would ensure consent is obtained by a response from an invitation email which contains the consent form and letter of information. Additionally, prior to starting each interview I obtained verbal consent and reminded participants of ongoing consent and their freedom to withdraw, should they choose to do so. I value informed and ongoing consent as key to a consistent ethical approach.

The risks for participating in this research were mostly limited to privacy concerns and discomfort over answering questions pertaining to sexual health. Privacy concerns were addressed by taking additional steps to ensure there was no data breach as mentioned above. We mitigated this concern by ensuring participants that they can skip questions and terminate their participation at any time. As a researcher, I respect and value the ethical standards set for university researchers. I held myself to the highest calibre to ensure the participants and data were safe and used for the intended purposes.

**Summary**

To summarize, my research methodology and methods were intentionally chosen to produce credible and trustworthy results that could have the largest impact on policy and practice. As a critical realist, I chose a methodological approach that aligned with my epistemic stance and ontological beliefs. The instrumental case study approach enabled me to use this case as a tool to illuminate power relations that may occur in alternate

contexts where it is important for physicians and nurses to recommend the HPV vaccine for male youth.

Males continue to be excluded from publicly funded programs, which highlights the importance of this study. I conducted surveys and interviews with physicians and nurses. The surveys served as a data collection tool to answer the research question, in order to get an overview of current HPV recommendation practices in these two professional groups. The interviews were used to gather a more in-depth understanding of how and why physicians and nurses are making recommendations they are. I was able to generate findings that could lead to having a significant impact on policy and practice surrounding HPV vaccination.

I ensured rigour in my findings through multiple techniques. I obtained inter-coded reliability, data triangulation through multiple data sources and saturation in my qualitative interviews. In my quantitative data set, I completed a spreadsheet audit by ensuring the data coding was done correctly. Finally, I kept the three key TCPS principles: respect for persons, justice and concern for welfare at the front of my mind. This chapter presents the quantitative and qualitative data collected through surveys and interviews with physicians and nurses in Newfoundland and Labrador. The chapter starts by providing an overview of the participant population as well as physician and nurse HPV vaccination recommendations. Next the chapter transitions to the presentation of three key themes: addressing sex and sexuality in healthcare, individual and institutional barriers and facilitators to recommendation, and political considerations. These findings illustrate the commonalities and differences in physicians' and nurses' intentions to recommend the HPV vaccine. First, I begin with an overview of the participant

population and their perspectives on the HPV vaccines with respect to vaccine recommendations.

## Chapter 6: Results

### Population and Demographics

Of the 1,836 physicians registered with the NLMA, 111 took the survey, with a response rate of 6.04%. Of those physicians who completed 53.4% were family doctors and 46.6% were practicing in other areas of medicine. Over half (55.6%) of respondents were female and 44.4% were male. More than half (52.8%) were 40 or above, and the remaining 47.2% were between the ages of 20 and 39 years. The majority (70.4%) of respondents were married or common law, and 29.6% were either single, with a significant other but not living together, widowed, separated, or divorced. Most physicians (79.8%) had children with 68% having one or more sons. The vast majority (94.4%) of respondents identified as straight with 5.6% of individuals identifying as lesbian, gay or bisexual. Almost half of the sample (49.3%) identified with a religious group while the remaining 50.7% of individuals did not identify with a religious group. When asked about participation in religious activities, 19.7% of all respondents reported that they engaged in religious activities such as prayer, attending religious ceremony or reading a religious text, daily, weekly or monthly. The remaining 80.3 % of participants reported that infrequently, rarely and never engaged in religious activities. Six physicians participated in telephone interviews: five had clinical practices in the greater St. Johns area and one had a practice in rural Newfoundland. All interviewees were family doctors, four of whom were female.

Of the 6,338 nurses registered with the AARNL, 1,644 were invited to participate in the survey. This group of 1,644 RNs are those who agreed to receive information about opportunities to engage in research. The list of nurses was provided to me by Julie Wells

from the ARNNL. Of those nurses who were invited to participate in the survey, 314 began the survey and 250 completed the survey, with a response rate of 19.10% and a completion rate of 15.21%. Of those nurses who completed the survey, 26.2% were community health and public health nurses and 73.8% identified with other specialities. The majority (85.2%) of respondents were female and 5.8% were male and 0.3% were transgender. The respondents composed of 31.0% of individuals between the ages of 20 and 39 years, and 68.6% 40 years old and above. The majority (75.3%) of respondents were married or living common law, and 13.7% were either single, with a significant other but not living together, widowed, separated or divorced. Most nurses (81.8%) nurses had children with 67.5% having one or more sons. The vast majority (85.3%) of respondents identified as straight with 14.7% of individuals identifying as lesbian, gay or bisexual. Over three-quarters of the sample (76.4%) identified with a religious group while 23.6% of individuals did not identify with a religious group. When asked about participation in religious activities, 37.6% of all respondents reported that they engaged daily, weekly or monthly in religious activities such as prayer, attending a religious ceremony or reading a religious text. The remaining 62.4 % of participants reported that they engaged infrequently, rarely and never with religious activities. Eight nurses participated in telephone interviews: six worked in communicable disease control or public health. One nurse worked in labour and delivery and one worked in a hospital setting not involved with immunization. Six of the eight interviewees worked directly with immunization as part of their professional responsibility. One of the nurses was from Labrador and the remaining seven were from across Newfoundland. All the interview participants were female.

**Nurse and Physician HPV Vaccine Recommendations**

Physicians were supportive of recommending the HPV vaccine for male youth, however some are resistant to a publicly funded strategy. Of the physicians who responded to the survey, 96.9% agreed that youth (9-18 year olds) were at-risk for HPV infections, and 92.2% of physicians believed that it is important to recommend the HPV vaccine to parents of boys. In the 9-13 age group, 44.2% of surveyed physicians had recommend the vaccine for male youth in the past, and 84.6% said they would recommend the HPV vaccine for male youth in the future. In the 14-18 age group, 47.9% of surveyed physicians had recommend the vaccine for male youth in the past, and 87.7% said they would recommend the HPV vaccine for male youth in the future. This leads to a 40.4% and 39.8% disparity in past recommendation and future intentions to recommend in the 9-13 and 14-18-year-old age groups, respectively. It is striking that approximately 40% of physicians were not currently making a recommendation for male HPV vaccination, but planned to make that recommendation in the future. Despite the significant support for immunization, the large gap in current and future recommendations for male youth HPV vaccination is noteworthy.

Similarly, 97.3% of nurses believed male youth are at-risk for HPV infections and 91.7% of nurses believed that it was important to recommend the HPV vaccine to parents of boys. In the 9-13 age group, 29% of surveyed nurses had recommend the vaccine for male youth in the past, and 86.2% said they would recommend the HPV vaccine for male youth in the future. In the 14-18 age group, 27.9% of surveyed nurses had recommend the vaccine for male youth in the past, and 85.9% said they would recommend the HPV vaccine for male youth in the future. Similar to the physician data, there was a 57.2% and

58% difference in past recommendation and future intention to recommend in the 9-13 and 14-18-year-old age groups, respectively. The gap between nurses past recommendations and future intentions is more significant than the gap in the physician population.

**Addressing Sexuality in Healthcare Practice**

Among the respondent physicians, the vast majority (70.8%) agreed or strongly agreed that it was their responsibility to discuss sexual activity (oral, vaginal, and-or anal sex) with male youth. Despite this, few physicians adopted this practice. Only 16.6% always or often discuss the risk associated with being sexually active with 9-13-year-old boys. Less than a third (28.2%) sometimes discussed it and over a half (55.1%) rarely or never discussed this topic with younger males. These percent of physicians discussing the risks associated with being sexually active would likely have been higher if I had limited the survey to just family doctors and pediatricians. The conversation opens up slightly more often among the 14-18-year-old age group where discussions about the risks of sex is likely more immediately relevant. About a third (33.4%) always or often discuss the risk associated with being sexually active. About a quarter (23.6%) sometimes discussed it and less than half (43.1%) rarely or never discussed this topic with older male youth.

Physicians noted that sexuality is often not discussed in relation to HPV risk. Although being gay or bisexual can increase the risk for HPV infection and associated complications, this is not a component of the routine conversation that physicians reported having with male youth. For example, one physician discussed the very specific situation in which they may bring up sexuality.

> I mean I guess if the parent was coming and knew the child was gay or bisexual you would say this is more the reason they should get it, but in general you're talking to children about these things when parents are not in the room. When parents are in the room you're just very open and I just say before they become sexually active or early into their sexual lives as possible. I don't generally like follow it with a comment and especially so if they're homosexual (MD4)

This quote demonstrates the particularity of a situation where sexual health is addressed. Sexuality and the sexual preferences of a child were not a routine part of the HPV conversation, but more so an afterthought.

Physicians reported that conversations about HPV vaccination for male youth are infrequent in their practices. They noted some reasons for their resistance and reluctance to discuss the vaccine is because parents find these conversations uncomfortable. Some parents, physicians claimed, were uncomfortable having a conversation about their son's sexuality, especially if they believe their child is too young to get vaccinated, or they do not believe their child will become sexually active prior to marriage. For some parents, there may be a false belief that immunizing their child against HPV, is essentially giving them permission to become sexually active. For example, one physician noted:

> I think the difficult part with having the conversation with parents would be just if in the occasion that you have a parent that thinks that either the child is too young or not participating in sexual acts or the thought that perhaps by talking about it your kind of giving permission or some sense of security by having the vaccine that may you know may deter them from using other forms of safe sex i.e., condoms or abstinence (MD1).

One physician noted the importance of counselling parents on the evidence supporting vaccination and correcting misconceptions about increasing sexual promiscuity. The conversation about immunization needs to be clearly communicated to the parents and male youth. As one physician stated you just "can't talk riddles about it" (MD2). He stated that the discussion is a "front burner conversation" that needs to be addressed appropriately. He went on to say that parents have one of two reactions when this issue is raised. One reaction is that parents are glad that the physician brought it up, and the physician has broken the ice. The alternative reaction is defensive because they think that the physician is implying that their child is promiscuous or has permission to be sexually active (MD2). The physician commented that this is usually due to the fact that "the parent hasn't really matured in their own thinking to see their own children as sexually active people" (MD2).

Another physician noted that the conversation needs to focus on harm reduction with vaccination as a preventative measure (MD3). Another preferred to focus on cancer prevention, rather than sexual behaviour (MD4).

Among the respondent nurses, the vast majority (77.3%) agreed or strongly agreed that it is their responsibility to discuss sexual activity (oral, vaginal, and-or anal sex) with male youth. When nurses have patients in the 9-13-year-old age group, only 16.7% always or often discuss the risk associated with boys being sexually active. Approximately 13.7% sometimes discussed it, and over a half (69.5%) rarely or never discussed this topic for male youth. The conversation opened up slightly more often among the 14-18-year-old age group where discussions about the risks of sex is likely more immediately relevant. About a fifth of nurses (21.3%) always or often discuss the

risk associated with boys being sexually active, 15.8% sometimes discussed it and more than half (62.9%) rarely or never discussed this topic for male youth.

Nurses who were interviewed were comfortable with discussing sexuality in their practice. Talking about sex and sexuality was a normal part of their job and while their clients or parents of male youth may express discomfort on this subject, they did not experience significant discomfort of their own (RN1, RN2, RN3, RN4, RN5, RN6, and RN8). One nurse stated:

> I don't think there's anything difficult for me in terms of discussing that [sexuality] because I feel so strongly about it…they may feel uncomfortable with the discussion, just because it's around their child's sexuality or with a teen like discussing his sexuality and stuff like that but to me I'm not uncomfortable discussing that at all (RN1).

However, one nurse said that while she personally was "absolutely" comfortable discussing sexuality, she doubted that other nurses were as comfortable, saying, "a lot of people have their own moral or their own values or just because you're a nurse doesn't make you comfortable with talking about sexuality" (RN2).

Nurses observed that parents and male youth may feel uncomfortable discussing sexuality as part of the HPV vaccination conversation. While nurses were not uncomfortable discussing sexuality, one source of discomfort was being adequately informed so they could accurately answer patients' questions (RN4).

**Gender in health services.** My goal was to consider the role that gender plays in HPV vaccine recommendations for male youth. Among physicians, there is a strong evidence to suggest that gender does play a role is decision-making. 91.7% physicians

believed that the HPV vaccine was beneficial to the health of males and 99% believed it was beneficial to the health of females. There was statistical significance, with female physicians more likely to recommend the vaccine than their male counterparts (p=0.05). While physicians strongly believe that males would benefit from being vaccinated, gender appears to have a statistically significant impact.

Several physicians noted that male youth (9-18 years) do not access primary care for preventative services in the same way that female youth routinely seek care for menstruation, birth control, and preventative services relating to sexual and reproductive health such as a pap smear (MD1, MD2, MD4, MD5). Because males do not routinely present themselves for care, physicians have fewer opportunities to make a direct recommendation to the male youth and their families.

> Honestly we don't see boys at that age like we hardly ever see them. We see them when we're sewing them up in the emergency room. We see them when they break their bones, they do not come to the doctor at that age. (MD4).

This statement suggests that physicians have limited opportunity and experience providing sexual and reproductive healthcare to male youth in their offices, and this limits their ability to either have a discussion on the benefits of the vaccine or to recommend and administer the HPV vaccine to young males.

A physician observed that the annual screenings and check-ups with male patients do not include a discussion around sexual health, and in particular for this age group. "Our annual screening isn't really set up to have the focus of an appointment around issues that would include sexuality with men unlike women" (MD2). For males, annual appointments do not routinely address sexual health. As one physician stated, "I mean

girls come for all kinds of reasons they're having trouble with their menstrual cycle or they want birth control or whatever so boys often don't come (MD4). Physicians do not consider male youth as having the same need to consult their physician to address their sexual health. Despite this, most physicians interviewed believed that gender did not have a significant impact on HPV vaccine recommendations for male youth (MD1, MD3, and MD5).

Gender also played a significant role in physicians' belief about the importance of being vaccinated against HPV prior to sexual onset. When responding to the statement, *It is important that all boys ages 9-18 are vaccinated against HPV before they become sexually activity (engaging in oral, vaginal, anal and-or other sexual behaviour)* 90.7% of physicians agreed or strongly agreed. When asked to respond to the same statement about girls, 98% of physicians agreed or strongly agreed.

The survey did not ask directly if physicians recommended the vaccine for girls, but the question was asked about boys. Specifically, it asked physicians if they *believed it is important to RECOMMEND the HPV vaccine to parents of boys*. Of the physicians who answered, 92.1% agreed or strongly agreed with the statement. However, there was no statistical significance demonstrating that physicians were more likely to recommend the HPV vaccine to females than males, when comparing their answers to question about recommend the HPV vaccine for female versus male youth ($p=0.08$).

Similar to the physicians, I discovered that nurses were not significantly more likely to recommend the vaccine to girls versus boys using the same questions from the survey as variables. This lack of relationship could be due to the relatively homogenous participant group. The physician respondent population was 44.4% male and 55.6%

female. In comparison, the nursing population surveyed was only 6.6% male and 93.4% female. This gender imbalance in nursing could account for the difference between genders. There was no statistically significant relationship between nurses' gender and recommendation.

Nurses interviewed have a difference of opinion on the impact of the practitioner's gender regarding HPV immunization recommendations. One nurse speculated that male nurses would be more likely to recommend the HPV vaccine for male youth whereas others believed female nurses would be more likely to recommend. The suspected rationale behind female nurses being more likely to recommend the HPV vaccine could be because female nurses tend to be more aware of reproductive and sexual health issues including HPV, its related cancers and pap smears (RN 7).

Despite this, most did not see gender interfering with recommendation practices, especially those who work in public health who are presented with the same evidence to disseminate to their regions. Most interviewed nurses seemed to share the belief that males and females should be treated equally in the HPV immunization strategy:

> I have an interest in it myself, so I'd just like you to know and I think that I've always felt that about the HPV that you know it shouldn't just be we shouldn't exclude protecting our young men and we shouldn't have the whole burden of the disease and the infection just on the shoulders of the young women either (RN4).

**Recommendations and awareness of HPV vaccine for males.** Most physicians (91.7%) would have their son vaccinated against HPV. Most physicians (69.4%) surveyed indicated they agree or strongly agree that they *have sufficient knowledge about the benefits and risks of the HPV VACCINE to counsel parents and their male children.* At

least one physician interviewed noted that her peers may lack awareness of HPV and its connection to cancers that affect men.

> I don't think they are very well in the know which I think is a huge contributing factor to why that they don't recommend the vaccine, because they don't know that the virus can have a major role in males unlike what they do know…It's quite common knowledge and common place to know that cervical cancer is a result of the HPV virus (MD1).

Physicians identified that a general lack of public awareness of the vaccine may be an institutional barrier to immunization, one physician pointed out only a small sub-group of the population getting vaccinated. For example, one physician stated "I have had young male patients who their parents, mother's in particular, who have brought them in to get the prescription for the HPV vaccine Gardasil and purposely for that visit but they're pretty few and far between" (MD1). Only the male youth with extremely well-informed mothers with the ability to pay are the ones getting vaccinated. While physicians may be aware that the vaccine is recommended for male youth, but that they have not taken enough time to research the subject to become adequately informed about this vaccine and to be comfortable recommending it to their patients. Physicians may be resistant to invest time into understanding a vaccine recommendation if they do not think that it would be relevant to their patient population, in particular when they have many demands on their time and they must adequately prioritize (MD1).

Of nurses surveyed, 97.3% agreed/strongly agreed that youth were at risk for HPV infections and 91.4% agreed or strongly agreed that vaccination against HPV was beneficial to the health of males. Nurse interviewees who work in public health and

communicable disease control reported a high degree of awareness about the importance of vaccinating male youth against HPV. As one nurse put it, "I would likely suspect that most nurses that are providing vaccines to children, or school age kids as well, are aware of the recommendations that boys should be vaccinated" (RN1). Nurses working outside public health may not be as well informed. Of the nurses surveyed, 43.2% agreed or strongly agreed that they had sufficient knowledge about the benefits and risks of the HPV vaccine to counsel parents and their male children. There appeared to be a consensus among nurses interviewed, that if immunizing patients was not part of their daily practice, they were less likely to be aware of current vaccine recommendations. This could explain why only 43.2% of nurses agreed or strongly agreed they knew enough about the HPV vaccine to make a recommendation.

The vast majority of nurses surveyed (91%) noted that they would recommend the vaccine. Most who were interviewed said they would have their own sons vaccinated (RN1, RN2, RN4, RN5, RN6, RN7). One nurse stated in her interview that she knew nothing about the HPV vaccine for boys until she received the survey. She was disappointed with her own lack of information as she has a son in the age group recommended for immunization (RN3).

One nurse noted that she would not discuss specific people at high-risk behaviours unless prompted and would not go out of her way to recommend the vaccine specifically based on the child's sexuality. She stated, "I wouldn't even go there unless they asked. I wouldn't discuss it. I wouldn't recommend it based on someone's sexuality" (RN2). Another nurse stated that because the nurses who are involved in the public health immunization program, they must be careful about promoting the vaccine. She stated:

> Nurses can't be out there promoting it as part of their work – everyday work area – in their work area because then we're seen as 'okay they're promoting it and you need to fund it' but if they're speaking with high-risk clients or if parents are coming in and asking or if teens are asking they do have enough knowledge then they would recommend it (RN2).

Another nurse noted a recommendation with some hesitation. She said, "the biggest issue is that the vaccine is not currently available in this province and when it becomes available as a publicly funded vaccine and I'm an employee of the public health system, I'll be recommending it" (RN8). Under those conditions, this nurse said that that she would have a full discussion of the risks and benefits and whether the vaccine would be appropriate for that individual (RN8).

**Individual and Institutional Barriers and Facilitators to Recommendation**

There are many reasons why physicians and may not be actively recommending the HPV vaccine in their practice. The surveys did not ask about barriers and facilitators to recommendation, but I used the telephone interviews to gain an in-depth understanding of these issues. The reasons are diverse and may differ from practice to practice but some barriers were identified more frequently. Cost as a barrier, knowledge, awareness and role of decision making were all highlighted as potential barriers. In addition, sources of information, the culture of acceptance and the strength of existing programs in NL all served as factors that could influence recommendations of the vaccine for male youth. A few physicians felt disconnected from the topic because NL has a public health immunization strategy offered through the schools. This institutional barrier prevented

them from engaging in vaccine recommendations as a frequent part of their practice. For example, one physician said:

> So if I was seeing young girls in my office and giving them this vaccine and not seeing the boys I'd be saying well how come the boys aren't here, right? But I don't see the young girls. So the problem for me really is that we're a little disconnected from the immunization scheduling and administering the way our system works in Newfoundland (MD3).

Thus physicians are not regularly encountering this issue in their practices.

Another barrier to recommendation relates to the time to address the vaccination question in a busy practice. For example, one physician noted that:

> If you're in a pay-for-service practice where you have a busy practice and you know you're a busy clinician, then taking the ten or fifteen minutes that it may take to kind of open up that conversation and unpack what any questions or concerns might be you know is just an added I guess level of complexity or an added task into an already busy day right (MD1).

With mixed messages about cost-effectiveness and need for the targeted population, the vaccine becomes a lower priority (MD4). One physician noted that there is confusion and lack of knowledge surrounding the vaccine. Over 30% strongly disagreed, disagreed or were neutral when asked if they had enough knowledge to make a recommendation.

Finally, a physician noted a desire to see a better process for vaccine recommendation. Currently, each province and territory designs its own vaccine recommendations and immunization schedule based on their interpretation of the

guidelines from the NACI (MD6). This redundancy with sometimes conflicting recommendations can be challenging to navigate. This same physician expressed concern about the role of for-profit pharmaceutical companies promoting their vaccine as part of national recommendation. He stated, "There's the profit factor that affects these decisions. A lot of the marketing material, a lot of the groups that make clinical practice guidelines they recommend these interventions are heavily influenced by pharmaceutical companies" (MD6). This comment points to the existing suspicions around the rigour of the existing recommendations that doctors use to inform their clinical practice.

**Cost as a barrier.** Cost appeared as a common issue with every physician who was interviewed and could be viewed as both an individual and institutional barrier that impeded HPV vaccine recommendations, based on the perspective of on the individual. Physicians took interest with the cost and all addressed the cost at the individual level while a couple also addressed the cost issue at the provincial (institutional) level. There was a consensus that cost would have a significant impact on recommendations. Many patients served by the physician interviewees are on the Newfoundland Drug Formulary. These physicians recognize that cost is a significant limitation for a low-income population. One physician talked about how the significant cost would make him consider the necessity of discussing this vaccine with his patients based on concern about imposing additional guilt on parents for not being able to provide for their children. This physician stated,

> I definitely think that cost would make me reluctant to recommend this to certain people because of the pressure it will put on them. You know if it was 'are we going to pay the heat bill or are we going to buy this vaccine for this month?', I

don't know if I should be giving them that, putting it that way. So I'd have to be pretty careful how I brought it up if I was going to bring it up right (MD3).

Another physician noted the relative priority of this vaccine, and expressed a concern over cutting other potentially more beneficial health program than funding the HPV vaccine for male youth. For example, one physician speculated that investing in healthy eating and physical activity program for kids would likely be dollars better spent than funding the HPV vaccine for male youth (MD6). There is a desire to find the most cost-effective way to spend limited preventative healthcare dollars.

There is also an existing equity issue surrounding the vaccine. This equity issue supposes that if only middle- and high-income families can afford their children's vaccination due to the out of pocket costs, this could lead to a disproportionate prevalence of HPV-related cancers and genital warts in low income individuals in years ahead. However, one physician had an alternative argument to this issue. He suggested that if the healthcare system continues to overspend in the way that it currently is, more people will be pushed into the private system. This driver of individuals into the private system, essentially creates two-tiered healthcare, which means more individuals could be moved towards the private system because their healthcare needs cannot be met. This is an alternate viewpoint of how funding the vaccine for boys could become an equity issue on the other side (MD6).

While physicians tended to consider the cost of the vaccine for the individual or family, nurses viewed cost as a barrier to vaccination at the policy and provincial level (RN1). One nurse noted that if the government supported immunization, this would remove cost as a barrier for individual decisions. However, the client cost was noted as a

barrier, in particular to those who do not have insurance coverage (RN2). Several nurses did acknowledge that cost was an important consideration (RN1, RN2, RN3, RN4, and RN7). For example, one nurse stated "in this particular population where I am, I think the most difficult thing would be the cost if parents were paying this out of pocket" (RN4).

**Knowledge, awareness and role of evidence in decision-making.** As previously mentioned, a greater percent of physicians (69.4%) felt they had enough knowledge to recommend the HPV vaccine for male you in comparison to nurses (43.2%). Despite this, there are notable educational limitations that physicians must face to feel confident in recommending the HPV vaccine for the male youth population. Several of physicians (MD4, MD6) noted that physicians were moderately informed on the issue, but not well informed. Another stated that physicians are not well informed on this issue and this could be a rationale as to why a large proportion are not recommending the HPV vaccine for male youth (MD1, MD2).

Physicians and nurses face the challenge of keeping up on a high volume of emerging medical information. For physicians, the educational priority may come as an individual barrier whereas for nurses the educational component is more of an institutional barrier.

A few physicians noted that as family doctors they have a responsibility to keep up on so much information that they must prioritize based on the patient needs. If a physician does not feel the vaccine is relevant to a large portion of their patient population, they may be less likely to be actively thinking about vaccinating male youth for HPV and educating themselves about the vaccine. Physicians must set learning

priorities depending on their practice. It just is not the same priority as other issues they need to become informed about. One physician said:

> Unless you're working in a population that has a disproportion, you're going to be faced with that all the time.…there's a greater percentage of patients you're seeing that just have other kind of common things that you need to be spending your time educating yourself about. So like if you had to get the most bang for your buck and prioritize I would say that you know educating oneself about the HPV vaccine for male youth is probably a lot lower on the totem pole (MD1)

Evidently, there are many urgent issues physicians face in their day-to-day practice. This perceived lack of relevance may speak to a knowledge gap in understanding the value of this vaccine. This gap may be related to the lag that some physicians noted between research publication and evidence informed recommendations ultimately leading to uptake by changing clinical practice. Physicians are most likely to use research that has practical implications for their clinical practice (MD3). This means that when physicians are setting their educational priorities, they will individually determine the best way to spend their time to keep up to date on the most current evidence based on their own clinical practice needs.

Nurses often receive educational directives from their superiors. Public health nurses, for instance, receive their information from the provincial Department of Health to ensure educational needs are met and content is standardized across the provinces. One nurse demonstrated how this process works:

> There's a network for public health nurses who are involved in the administration of vaccines and that's coordinated at the regional level by the nurses who do

> communicable disease control and it also coordinated at the Department of Health level to ensure that proven messages are standardized and that the opportunities are there to facilitate, coordinated, in-servicing, the professional development and messaging for the nurses who deliver the service (RN8).

Nurses differ from physicians, in that physician education is generally more self-directed than that for nurses. For nurses, the information is sent on a needs-based approach. For example, a surgical nurse would not need to be informed about current vaccine recommendations as it is not a part of their day to day practice. Public health nurses, on the other hand, need this information and it is disseminated from the top down to community networks. If the information is not presented to public health nurses as part of an educational directive, for example the HPV vaccine for male youth, the knowledge levels vary from nurse to nurse. This is why the educational needs serves as an institutional barrier, as they are not informed that learning about the HPV vaccine for boys is a meaningful way to spend their time.

**Sources of information.** Some physicians have knowledge about HPV from their own medical education (MD1). A physician stated that they would use the product monograph to learn about the vaccine and aid in decision-making (MD1). Another noted the belief in her responsibility to communicate the clinical and cost-effectiveness information to patients when making a recommendation (MD4). This physician considered how she would utilize the evidence to inform her decision. She stated the confusion around the existing evidence can make it challenging to make decisive recommendations on the vaccine. The consequences of not vaccinating and expectations

need to be clearer. Here this physician makes an analogy of her recommendations to laws about speeding:

> Most people don't speed because they don't want a ticket from the RCMP. There's a rule and it's very clear and the consequence is very clear and what not. When things are not so clear people waffle a little bit like the population, physicians and medical associations. So the medical association is not going to take a clear stand until there is some clarity (MD4).

While there is some confusion, a physician noted that national guidelines and recommendations as well as provincial regulations are primary locations to find evidence and guidelines for vaccine recommendations (MD3). These easy to access, reliable and trustworthy sources of information are important for family doctors. One of the largest career challenges physicians face is a responsibility to know a little bit about everything and keeping up with all the emerging information (MD6).

Like physicians, continuing education is an important factor in the decision-making process for nurses regarding HPV vaccine recommendations for males. Appropriate education can lead nurses to make more evidence informed decisions. Nurse education on the topic of HPV vaccination for male youth should be emphasized for those who are directly involved with vaccine delivery for children. By focusing on this sub-population of nurses the educational initiatives would be narrowed significantly (RN1).

There are a number of opportunities to help improve education on this topic that already exist. Nurses receive a large volume of emails, with information about webinars from internal provincial sources as well as national sources from the government. Ultimately the nurse can filter through the information and self-selects what is relevant to

her (RN1). All NL community health nurses get together once a year for provincial or regional meetings to hear presentations on relevant information (RN1). In addition, nurses who work within the provincial immunization strategy, have mandatory webinars at least once a year, where they will be notified of changes to the Canadian Immunization Guide (RN 1).

Nurses learn about new vaccine recommendations about through a variety of resources beyond the annual webinar, directed at those who work directly with immunization. Mandated education comes to public health nurses through the Department of Communicable Disease (RN5, RN6), then the public health nurses disseminate the information to their communities. Nurses also reported learning about the HPV vaccine for males through the Canadian immunization guide, www.immunize.ca (RN1, RN2), Public Agency of Canada website and other webinars (RN1, RN2, RN5). According to a senior nurse, information that is disseminated from the top down is highly controlled to ensure evidence quality, as:

> There's a network for public health nurses who are involved in the administration of vaccines and that's coordinated at the regional level by the nurses who do communicable disease control and it also coordinated at the Department of Health level to ensure that proven messages are standardized (RN8).

Nurses who work outside of immunization in their practice learn about the HPV vaccine through the same domains as the general public, through the media and through information provided by the schools when girls are immunized (RN1, RN2, and RN7).

When nurses were asked if it was important to recommend the HPV vaccine to parents of male youth, they were neutral, disagreed or strongly disagreed (8.3%) while the

remaining majority agreed or strongly agree (91.7%). Some of the interviewed nurses offered some possible explanations. One public health nurse noted that some nurses were uncomfortable with giving a lot of vaccines, but this needs to be corrected through appropriate education to this population of nurses (RN1). Another stated that there may be a simply lack of understanding regarding the relevance of the HPV vaccine for male youth (RN2). Another speculated that those who were opposed were likely not public health nurses, and had not witnessed the benefits of vaccination on a daily basis (RN5). She went on to say that if these were public health nurses then specific education was needed to resolve this (RN5). Another nurse spoke out against the existing gender-based policy saying, "I think it is foolish to vaccinate part of the population. It should've been done years ago" (RN6).

**Culture of acceptance.** When there is no culture of recommending the HPV vaccine for male youth, there could be a systemic pushback on recommendations and this may constitute an institutional barrier to recommendation. Most physicians accept the HPV vaccine and were open to vaccinating if not all youth, some of them. As previously stated 92.2% of physicians and 91.7% of nurses believe it is important to recommend the HPV vaccine for male youth. For physicians, there was no statistically significant difference in recommendations based on age ($p=0.417$). For nurses, there was also no significant relation ($p=0.624$). One physician noted the possibility of young physicians as more open to this vaccine as they are more closely tied to their education at medical school and tend to be more open minded (MD5). On the other hand, some physicians may not be as open to accepting change. While most physicians had discussed the vaccine with colleagues, some did not. This omission of the conversation among peers speaks to

the possible perceived lack of relevance the vaccine has to the general population of family physicians.

For the nurses who work in public health, there was a belief that other nurses share their opinion on the acceptance of immunizing male youth for HPV (RN1, RN3). For example, "I think other nurses that I work with I know share my opinion in this" (RN 1). Others who did not work directly with immunization did not know what their peers thought about the vaccine. This lack of information may be due to a lack of mainstream knowledge about the HPV vaccine for male youth.

*Perceived male youth invincibility.* A significant barrier that physicians in particular faced was that male youth did not show up in their offices for preventative healthcare, when the opportunity would best suit a conversation about HPV vaccination. The culture of discussing sexual health and prevention is simply not present in the relationship between physicians and male youth. Most primary care physicians noted a perceived invincibility in male youth where their professional recommendations are ineffective. This population often does not believe anything will happen to them, and thus cancer that could impact them decades later does not seem relevant enough to them to take immediate action. One family physician noted,

> I think the population you're trying to target typically is not in a prevention health promotion mode I mean it's the nature of the beast at that age you think you're invincible and that bad things will happen to someone else and not you so it's not high on their priority list…they just really want to talk about why they came that day (MD 4).

This perceived invincibility can make it difficult to communicate the importance of HPV immunization when patients make the vaccine a low priority. Male invincibility did not come up in the nurse interviews as the nurse practice does not often see males in this context in their clinical and community practices.

**Strength of the existing vaccination programs in NL**. NL is a unique province from a social and cultural level, but also at the level of healthcare. The existing vaccination strategy through public health nurses has proven to be a systemic enabler for vaccine uptake, and including HPV for males could in the program could have a tremendous impact on immunization rates in male youth. NL has a systematic approach to vaccination and was a speculated reason for high HPV vaccine uptake in the girls-only school-based program (MD6). One physician also noted that individuals from NL are also more satisfied with the healthcare system than those from other provinces. He suggested that this satisfaction leads to trust in the healthcare system that ultimately leads to heightened uptake of the HPV vaccine for females (MD6). The unique public health immunization program was suggested as a significant success, and something that should be utilized in future immunization campaigns. One physician noted that provincial funding of the vaccine is critical to uptake. The lack of funding imposes a strong institutional barrier to recommendation.

> I do think that it is like the male population is definitely lagging in that you know information would be helpful but funding is really going to be critical because a lot of people can't afford it right. So before it's funded wide uptake is unlikely (MD5).

Like physicians, nurses consider the public health system to which they are responsible for, as highly effective and efficient system. There are many reasons why nurses may not be actively recommending the HPV vaccine in their practice. The reasons are varied and largely dependent on the type of nursing and individual practice. However, there are some barriers to recommendation that exist for many nurses.

The nurses whom I interviewed were from across the geographic regions in the province. They noted the strength of the current program and attributed this program to the success of the HPV immunization program for girls. The public trusts the current public health system with the existing infrastructure and education (RN 2, RN6). Unlike any other program, the public health system follows up with families to ensure full vaccination (RN5). It seems nurses are confident in the immunization strategy run by public health nurses because the program is well organized and the public puts trust in the program (RN2, RN5). One nurse described the system as:

> A network for public health nurses who are involved in the administration of vaccines and that's coordinated at the regional level by the nurses who do communicable disease control and it also coordinated at the Department of Health level to ensure that proven messages are standardized and that the opportunities are there to facilitate, coordinated, in-servicing, the professional development and messaging for the nurses who deliver the service. (RN8)

From the perspective of the nurses interviewed, it is clear that the immunization program is effective, is trusted by the public and works with great efficiency.

**Factors Influencing HPV Uptake**

There are a number of factors that could influence the uptake of the HPV vaccine beyond the stated evidence and existing recommendations. The first factor was a risk-based immunization strategy. This potential policy option had limited support from physicians and nurses. The second factor was the role of religion in physicians and nurses' intentions to recommend the vaccine. This study found that the role of religion is negligible. The third factor is gender and the specific policy and strategic suggestions to improve HPV vaccine uptake across the gender spectrum.

**Support for risk-based vaccination strategy.** I asked the interview participants about their perspective on a provincial risk-based vaccination strategy. If a risk-based immunization strategy were implemented, only those at an elevated risk for HPV would have the vaccine cost covered for them. There was not a broad support for this approach among physicians and nurses. Several physicians believed that the vaccine should be offered to all individuals regardless of gender or sexual preference and not just those who are at a heightened risk (MD1, MD 2, MD3, and MD5). Generally, physicians were hesitant to recommend a risk-based approach for a publicly funded HPV vaccination programs. One physician noted the ethical dilemma of who gets to consider which individuals are at-risk and the additional burden put on the high-risk youth to self-identify:

> Yeah I wouldn't recommend that [risk-based] approach. I think it leads you into a real problem of who's deciding at-risk and picking out kids who may be actually going through a process of gender identity you know trying to find out where they are and I just don't think we should be doing it that way I think we should just

> give it to everybody. It's not harmful, give it to everybody and that way you're not you know see the problem with risk identification it can be a form of discrimination right and so it's like universal precautions I mean I shouldn't be just putting gloves on for people I feel are risky. That's you know that discriminating against people (MD3).

The risk-based approach is contextualized as an alternative to not vaccinating for all boys in tight budgetary times. Some physicians interviewed were mindful of the fiscal climate and acknowledge to possible financial benefit for only including males in the high-risk category. If only high-risk boys could be vaccinated due to provincial financial limitations, some believed that partial immunization of the male population, was better than leaving the entire male population unprotected (MD1, MD2, MD4, MD6). Another physician had a different approach: "You know you either do it for everybody or do it for nobody but that to me is you know the situation you bring up is another argument for just universally vaccinating right" (MD 3).

Beyond simply the choice of implementing this policy, physicians also noted that it would likely be messy to implement this policy. These complexities of the implementation of a risk-based strategy were noted:

> I kind of feel that it should be universal because for someone to have to identify themselves as practicing certain preferences that's very personal and I don't think It's appropriate to have to identify that in order to get it. We know that confidentiality is ideal but you might know the nurse giving it to, you might you know like people shouldn't have to explicitly state their preferences in order to get

> a potentially a life altering preventative treatment you know. I think that it's not practical and it has a lot of potential flaws (MD5).

The practical groundwork that would accompany a risk-based strategy in the NL cultural environment could be extremely challenging. This point was articulated by physicians both in favour and against the possibility of a risk-based program. For example,

> Like I don't know how to operationalize that from a societal perspective by taking the higher risk benefit I guess it would have to be maybe not in school setting it would have to be in like a nurse practitioner in a physician's office. How do you get coverage? Where do you write/send the letter to claim that you're high risk or your potentially high risk or you don't know you're sexually preferences so I might be high risk because I don't yet? Like just from an operational point of view I don't know how to administer that (MD4).

In contrast, almost all nurses interviewed were opposed to a risk-based strategy. Nurses noted in interviews the challenges of taking this approach. They were hesitant to recommend any kind of risk-based approach, and noted a serious flaw in this approach. The flaw is that identifying high-risk males at the ideal age for vaccination would be nearly impossible. One nurse cautioned that she didn't want to see HPV garner a stigma similar to HIV where it became labeled a "gay disease" (RN2), because in fact, everyone is at-risk. The nurses noted that it is not fair to these boys to be forced to identify themselves in order to get a vaccine to which they are entitled. One nurse even acknowledged that she would be opposed to administering that approach in her practice. She stated,

> Actually as an immunizer I would very strongly oppose even administering that approach in my practice. That would be against everything I would believe in. To go in and make a 12-year old child identify himself publicly it's just as well to say 'you know, no. I don't think it's right.' We're not identifying the girls as like if they're homosexual or bisexual I guess we only need to vaccinate one of the partners really like it's a silly argument. (RN 1)

When commenting on the existing risk-based program in British Columbia, one nurse pointed out that as a whole, BC is more "gay friendly" than NL, pointing out that there was more acceptance and a larger visible presence of the gay community. In contrast, being gay in NL, particularly in rural areas, continues to be highly stigmatized (RN 2).

The sentiment that the whole cohort is at-risk seemed very important to the nurses, and that you don't want to leave parts of the population unprotected (RN3, RN4). The fact that a lot of people in that age group do not know their sexuality, or haven't admitted it to anyone or even to themselves was seen as an unfair burden to place on the youth population (RN5, RN7).

The sole nurse who was in support of a risk-based program rejected implementing risk-based program in schools suggesting instead community-based clinics where male youth may feel comfortable self-identifying as engaging in same-gender sexual activities. This proposed program would be a "no questions asked" program. However, for an individual to self-identify to a healthcare provider it is likely they have already had sexual exposure and therefore may already have been in contact with HPV (RN8).

Generally, NL physicians and nurses were not in favour of a risk-based policy, based on the qualitative interviews. No questions were asked on risk-based policy in the

surveys. Both groups identified the logistical complexities of this program. Physicians identified discomfort with the prospect of being responsible for identifying who is "at-risk" and thus eligible to get the vaccine for at no cost. Nurses experienced a similar uneasiness, and felt an ethical dilemma with being asked to implement this program in schools and considered the program with the high likelihood that many of the at-risk youth would be missed due to problems with identifying the population.

**Role of religion on recommendation.** Religion is the second key factor I sought to understand with its relationship to recommendation. Gender plays a role on two separate levels. First, the practitioners' religion and its impact on the intention to recommend; and second, practitioners' perceptions of the role of that religion plays in parents' acceptance of vaccination for their sons.

There is no evidence, that frequency of religious engagement, or religiosity has an impact on physicians' intention to recommend the HPV vaccine ($p=0.09$). Religion has the potential to play a role on recommendation rates, but physicians noted that it is unlikely to have a significant role. Physicians noted that the only time religion could plausibly interfere with uptake, would be when they are communicating a recommendation, and a parent does not accept their recommendation. For example, one physician stated that:

> If there is a more traditional or religious background that might make the parents not want to vaccinate because they don't think their children will be at-risk, then that can be difficult to I guess it can be difficult to meet eye to eye in terms of like that expectation that their children will be abstinent until marriage and they'll only

have one partner because that's really what is happening for the most part out there. (MD5)

This scenario in which several interviewees speculated that religion could have an impact on physician decision-making could be in a case where a physician objects to an intervention for religious reasons. One physician made this comparison:

> It's along the same lines of arguments or situation as a physician who doesn't believe in contraception or a physician who doesn't believe in abortion or a physician who doesn't believe in blood transfusions or what not you know if it's part ethically and morally outside of what they themselves practice as you know in the way of religion or faith then it might be hard for them to or impossible for them to recommend or discuss it with their patients (MD1)

Despite the possibility of this interference, all physicians agreed that if this were ever present, it would be rare.

In the nurse population, there is no evidence that religiosity impacts likelihood to recommend the HPV vaccine for boys ($p=0.641$). None of the interviewed nurses had any direct experience with religion limiting HPV vaccine recommendations. Most were resistant to the idea that religion interfered with their recommendation (RN1, RN3, RN4, RN5, RN7, RN8), but one believed religion had the potential to interfere at some level (RN7). A nurse working outside public health speculated religion may play a role if they were not confident in their knowledge on this subject (RN7). However, this same nurse noted that the vast majority of nurses keep their religious and personal beliefs separate from their practice (RN7). A couple of nurses noted that religion is likely more relevant in

the American context, rather than the Canadian context. Nurses don't know the religion of their patients (RN6) and therefore it is unlikely to have an impact. One nurse noted:

> It may play a bit more of a role in the parent making the decision but you know then again part of your role as a nurse is to educate and make them understand that there's no indication that people will be more sexually active because they're vaccinated against a disease that can be transmitted sexually (RN6).

In sum, there was no evidence that religion played a role in physicians' recommendation and no direct observation of religion playing a role in nurses HPV vaccine recommendations for male youth.

**Policy and strategic suggestions.** There are a number of reasons why physicians recommended an improved awareness of HPV vaccination for males and this increased awareness can take place through various policy initiatives. A few physicians noted that a public mass media campaign as a strategy to encourage a heightened awareness of the HPV vaccine for male youth (MD1, MD2, and MD5). One physician noted that it is helpful to put up posters and stamp pads in their office to remind their patients and themselves to have conversations on various topics, such as male HPV immunization (MD2). Another physician noted a potential advantage of a public campaign as an increased public awareness, which could lead to increased advocacy among the public to get the vaccine funded for boys (MD1). A separate physician thought it would be unethical to encourage NL residents to get vaccinated when it is not covered by the provincial government (MD4).

Individual physicians obtain their information about the HPV vaccine from a variety of resources: There are point-of-care reference tools available for mobile and

desktop applications such as Up to Date and DynaMed (MD3). Others found information through the CDC and the PHAC websites (MD3 & MD4). They value web-based sources because they are reliable and easily accessible and evidence-based. Consideration of these access points could lead to insights about how to improve awareness and empower physicians to recommend the HPV vaccine for male youth. One potential policy to improve education on this subject could be mandatory or recommended education modules for general practitioners, family doctors, pediatricians, gynecologists, oncologists, and those with related specialities such as infection control or communicable diseases, and those with public or community health portfolios whose responsibility is to recommend vaccines.

Physicians noted some other policy suggestions that could lead to a systematic way to increase uptake of the HPV vaccine for the male population. Most who were interviewed believed the NLMA should go back on their original resolution and recommend the NL government provide the HPV vaccine to all boys. However, they must also work within the existing policy context. The challenge of the male youth population simply not accessing primary healthcare demonstrates a need is reiterated in the policy that speaks to the difficulties of recommending the vaccine on well-visits for male youth. The current province-wide public health immunization program is a "well-oiled ship" (MD 4). It works very well, but HPV vaccination for males is simply not a part of it. This issue needs to be a priority, but the effective system that currently works is not putting the responsibility on physicians. Challenges to recommendation are prevalent, and most physicians acknowledge that the ideal solution is to include male youth in the effective school-based program that already exists for girls. As a result, policies need to

reflect this at a government level, and these polies require intersectoral collaboration and support.

The nurse population also had insight about changes that need to occur at the policy level. One nurse who worked in labour and delivery, and therefore was not a part of the immunization program had a perspective about the way in which the school system should be involved. This nurse had insight about a potential education strategy. At the very least, she felt the schools should take on the responsibility of disseminating information regarding the benefits of the HPV vaccine to parents of male youth. Schools could do this, while also noting that the province had decided they would not currently fund the vaccine. This nurse was disheartened that the school system had not informed to at least give her the opportunity to make her own decision about this vaccine (RN 3).

Nurses had policy suggestions stating that they believe that both males and females get vaccinated (RN1, RN5, RN6, RN7). They did not agree with the existing suggested policy by the NLMA to only include high-risk boys in a publicly funded strategy. One nurse reiterated that the disease is spread through any sexual contact, which demonstrates the importance of public funding of this vaccine for all (RN 7). One nurse was not in support of the ARNNL taking a position on the issue, stating that the organization does not have the authority or expertise to be involved in advocacy or decision-making (RN 8). So while most were in support of the ARNNL taking a position, there was very limited opposition to this approach.

**Summary**

Physicians and nurses share many similarities in their perspectives towards HPV vaccination for male youth on their attitudes, their beliefs about how religion and gender interact with recommendations, and beliefs about policy. Physicians believe that it is their responsibility to recommend the vaccine for male youth, and that the vaccine is a key component of reducing HPV-infections that can cause cancer as well as genital warts. Physicians also noted that sexuality is not often discussed with respect to this vaccine, although it has an impact on risk status. Registered nurses had no discomfort with discussing the HPV vaccine, and believed it was their responsibility to discuss sexual activity and sexual health with their patients.

Physicians and nurses also faced both individual and institutional barriers that prevented them from recommending the vaccine. Intuitional barriers such as a lack of engagement in the provincial immunization strategy and not seeing male youth in their office prevented them from making recommendations. Cost was often viewed as a barrier to recommendations at an individual level from the perspectives of physicians, and at an institutional level from the perspectives of registered nurses. In addition, religious institutions have the potential to shape the thinking of healthcare practitioners, as well as patients and their families.

Both nurses and physicians appreciated the value of immunization, and believed the existing infrastructure of the immunization program in the province was strong. The findings also highlight the differences in approach to caring for patients between the two professionals. Generally, physicians are most interested in the individual approach

whereas nurses are often more engaged in community health and considering health at a more widespread model. These perspectives are reflected in the results.

At the political level, both physicians and nurses were opposed to a risk-based strategy. However, in the qualitative interviews, a few physicians and one nurse saw the value to this approach as an cost-savings measure when funds are limited and perceived availability of evidence for the general population was deemed limited. Religion was another dimension that was viewed as potentially playing a role. There was no statistical relationship between religiosity and recommendation in physicians and nurses. The qualitative interviews reinforced that it is unlikely that religion plays an overt role in HPV vaccine recommendations. From the qualitative interviews, physicians and nurses believed their respective professional organizations, the NLMA and ARNNL should support vaccination for all individuals.

## Chapter 7: Discussion

In this project, I sought to answer three research questions. First, I wanted to understand if and why physicians and nurses recommend the HPV vaccine for male youth, and what the barriers and facilitators are to a recommendation. By understanding these recommendations, I could gain insight into how effective the current program is for male immunization. The existing program requires individuals to seek out the vaccine on their own and pay out-of-pocket. Second, I wanted to understand more directly how the social factors, such as gender and religion, could play a role in HPV vaccine recommendations. Gender and religion are of particular interest for this vaccine due to its sociopolitical positioning. The current policy is gendered, and there have been contentious issues in the media and literature about how the HPV vaccine and religion interact. Thirdly, given the answers I found through the first two research questions, I sought to provide insights to increase the number of recommendations provided to male youth in NL. To accomplish this, I aimed to strengthen the intentions of physicians and nurses to recommend the HPV vaccine for male youth, while also considering policy options to aid in this effort.

I use the theory of planned behavior to frame how attitudes towards the behavior, subjective norms and perceived behavioural control play a role in forming intentions and ultimately behavior. This theoretical framework serves as a tool for generating policy suggestions and creating recommendation along these three primary elements. This could lead to increased intentions to vaccinate and ultimately to the action of carrying out the behaviour itself.

## Physician and Nurse Recommendations

The recommendations of physicians and nurses are a central component of this study. They play a significant role in the uptake of the HPV vaccine; in particular, for those who are not offered the vaccine through the publicly funded program. The importance of physician recommendation for HPV vaccination is a primary determinant of uptake, and is strongly demonstrated in the literature (Allison et al., 2016; Brewer & Fazekas, 2007; Darden & Jacobson, 2014; Krawczyk et al., 2015). If physicians and nurses have positive attitudes towards the behaviour, there are positive subjective norms and they have high perceived behavioural control over recommendation, these factors will likely lead to intention to recommend the vaccine and as a result a recommendation as demonstrated through the Theory of Planned Behaviour.

**Physician HPV vaccine recommendations.** Several barriers to recommendations appeared in the results, and certain factors enabled recommendations. The primary healthcare compensation and incentives system can inhibit physicians from doing their jobs effectively. When physicians have a full practice, and are paid on a fee-for-service basis, they do not have an incentive to open the discussion about HPV vaccination for male youth, especially when there is no billing code for this service. Bringing up an additional issue to discuss can be difficult in a busy primary care practice Many physicians have a "one problem per visit" policy which can make it difficult to bring it up on both sides for both the physician and patient (College of Physicians and Surgeons Ontario, 2011; Fullerton, 2008; Luscombe, 2012). It can be difficult to add an additional time-consuming (and potentially sensitive) issue to discuss in a busy practice, if physicians do not address the issue in an office visit, it is unlikely the issue will arise in

an alternate context. It seems the primary healthcare system is set up in a way that discourages physicians from addressing HPV vaccination for male youth. While this is not necessarily the fault of well-meaning physicians, the system is designed to be reactive, and not more focused on preventative health services. This time constraint has the potential to impact on physicians' perceived behavioural control over recommending the HPV vaccine for male youth.

A physician I spoke with in an interview identified several reasons why the HPV vaccine may not be discussed in a visit. First, the cost to the patient family was a barrier given that the vaccine can be hundreds of dollars. Second, a physician may feel like they do not want to impose guilt on parents for not being able to provide the vaccine for their child. I challenge how we can make primary healthcare a better system that encourages physicians to address HPV vaccination with their patients and families, as well as engaging male youth in caring for their sexual health at a young age.

One option would be to incentivize physicians to discuss HPV vaccination and sexual health with their male youth patients; however, there is no billing code associated with this practice outside of a general consultation (Department of Health and Community Services, 2013a). This means physicians must prolong a visit, yet are unable to be financially compensated for this additional strain on their time. In a busy practice, with many patients to see, it is understandable why the HPV vaccine may not be a top priority for an office visit. Physicians are also reluctant to recommend the vaccine when they know the patient or their family cannot afford the vaccine. Unfortunately, this issue is unlikely to change before the vaccine is publicly funded. However, physicians should keep in mind the ethical implications of recommending the vaccine, or not recommending

it, in particular to those who come from a lower socio-economic status. If physicians had an incentive to recommend the HPV vaccine for male youth, it may lead to a more positive attitude towards recommending the vaccine and a higher perceived behavioural control over making the recommendation.

When physicians work under a fee-for-service practice, they may feel a disincentive to do work they will not be compensated for. Fee-for-service is the most common way to pay form of physician payment in Canada (Blomqvist & Busby, 2012). In a fee-for-service model, physicians are paid a fixed fee for each service they perform from an approved list. Alternatively, when physicians are salaried, patients are paid for a fixed amount of time, regardless of how many patients they see. The third primary payment option is capitation. In this plan, physicians are paid a fixed amount per month for each patient who has registered with his or her practice, regardless of the services the patients has received. The essence of capitation is that physicians will be rewarded for the good health of their patients. There is evidence that paying for performance improves patient outcomes (Blomqvist & Busby, 2012).

Physicians are more likely to be invested in their patients' outcomes if they will be compensated for it (Bardach et al., 2013; Torgan, 2013). Pay for performance has been proven to improve cardiovascular care outcomes, as there is a shift that moves physicians from providing a basic quality of care, to a high quality of care. The proven benefits of improving cardiovascular care relating to chronic disease could be translated to preventing and managing HPV, which could be turn into a chronic infection, or cancer. A pay for performance approach encourages preventative care and health maintenance,

whereas the other payment model do not financially incentivize this behaviour (Blomqvist & Busby, 2012).

I found the variance in physicians' recommendations interesting. One physician, clearly articulated her difference of opinion for recommending the vaccine on an individual basis. This individual was supportive of recommending the vaccine to individuals, but did not believe that funding the vaccine for boys should be a government priority. This paradox is interesting, as the basis of immunization is to benefit the individual and to provide protection on the population level (The National Institute of Allergy and Infectious Disease; Flannigan, 2014). While I understand the fiscal and economic restrictions that this physician was expressing in an economic environment with large cutbacks, this position does seem to contradict the whole basis of how successful immunization strategies work. This physician would recommend it to an individual patient; however, would not recommend the vaccine to the population as a whole. This position is challenging to make sense of. It may be because she believes in the assessment of risk behavior, or she may believe in privileging individual healthcare based on ability to pay. For example, the physician may believe that the vaccine could be of benefit to male patient, but does not believe the public cost is worth it to the provincial population. While physicians and nurses often consider both the health of the individual and the community, family physicians are often focused on care of individual, whereas public health nurses are situated towards community health (Canadian Medical Association, 2015; Canadian Public Health Association, 2010). This difference in approach to patient care could account for this difference.

For HPV vaccination, the current system privileges individuals who come from families of a higher socio-economic status. As most physicians are not recommending the vaccine on a routine basis, it often takes an informed parent to go out of his or her way to get their son vaccinated. The logistics of getting the prescription for the vaccine to administration of the vaccine can be challenging. If physicians are not actively recommending the HPV vaccine to male youth, then the majority of the few youth getting vaccinated are those with "mothers on a mission" to get their sons protected against HPV.

The path to immunization is not so simple when it is not a part of the school-based program. The logistics are time-consuming and complicated, especially for working parents. Aside from the process of getting the vaccine, the cost to individuals should be continually considered as an unnecessary burden placed on families with sons in their household.

In addition, there is a persistent gap between physicians who are currently recommending the vaccine for male youth and those who plan to recommend the vaccine to this population in the future. This gap has been contextualized by issues that emerged in interviews. I now understand that cost, time, and limited involvement in the immunization program in this province could be standing between physicians and their recommendation of HPV vaccination for male youth.

Physicians are viewed as the most senior health professionals and have earned the autonomy to make informed medical decisions. Families and patients rely on their professional opinions. This is likely why a physician's recommendation for immunization is frequently cited as a top reason for vaccination (Allison et al., 2016; Barnack et al., 2010). Physicians hold an overwhelming amount of power over vaccine uptake through

recommendations, especially while the vaccine is not publicly funded. This significant influence is something physicians should be reminded of in order to ensure they are using their professional recommendations to promote health and reduce future male HPV-related cancers. A heightened awareness of this power could make a significant difference in HPV vaccine uptake, through a greater number of HPV recommendations for male youth in NL.

**Nurse HPV vaccine recommendations**

Physicians and nurses differ in their perspectives towards the HPV vaccine for male youth. While most of both professions view the vaccine positively, nurses have different experiences with immunizations, especially in NL.

NL nurses play a unique role in the provincial immunization program; they have a distinct perspective in comparison to physicians. Nurses, in particular, public health and communicable disease nurses, are in charge of the implementation of the provincial immunization strategy which is population health based. The strength of the public health immunization program is easily demonstrated through statistics showcasing NL as the province with the highest immunization rates in all of Canada (Busby & Chesterley, 2015). This trusted system of well-informed professionals has an important role to play when considering how the HPV vaccine is recommended, and how intentions to recommend the HPV vaccine for male youth can be amplified.

Several nurses found discomfort in the current strategy of vaccinating only half the population when the whole population is at-risk, regardless of gender. There was strong wording to go around this policy, citing it as "foolish". Public health nurses are concerned about the health and well-being of the public, and this is likely why most were

largely in support of vaccinating the whole population. As a result, this sentiment demonstrates that these nurses have positive attitudes towards the behaviour of recommending the HPV vaccine for male youth

Given the day-to-day practice of nurses, they were less concerned about individual vaccine costs than physicians. They infrequently counsel patients on immunizations outside the provincial schedule. Nurses view the public health system as a whole, and are often not actively recommending vaccines that are not part of the publicly funded immunization schedule as professionals, even if they would personally recommend it off the job. Nurses who work for the government are largely limited in what they can say when working for the province or health authority. In private, nurses can freely share their opinion as they see fit. While it is evident that the current immunization schedule is successful, it may be of benefit to the health of the male youth and male population that nurses are able to publicly recommend vaccines outside the provincial schedule. Nurses also would have a responsibility to disclose that even though the HPV vaccine for males is recommended by national organizations, such as the NACI on Immunization, the provincial government has not chosen to fund the vaccine at this time.

One nurse I spoke with, who did not work directly in immunization was open to discuss her perspective and knowledge about the vaccine, although she did not immunize as part of her clinical practice. This nurse was shocked since she was unaware that the vaccine was recommended for males. She was also disappointed as a parent that the school had not at least informed her that the vaccine was recommended and available for boys, but not funded by the provincial government. From her perspective, at the very least, the government should have given consideration that parents of boys deserve a one-

pager on the vaccine. This document could educate parents why the vaccine is relevant to the male population and how your son can get it, even though the provincial government has not chosen to fund the vaccine at this time. It is clear that nurses had positive attitudes towards recommending the vaccine and there were positive subjective norms among their peers. According to the Theory of Planned Behaviour the focus needs to be on strengthening nurses' perceived behavioural control to heighten their intentions to recommend the HPV vaccine for male youth.

**Contrasting physician and nurse perspectives**

Both professions viewed the vaccine positively, with a noticeable difference between professionals regarding policy implications. Both physicians and nurses did see the MSM group as a priority for vaccination, while most believed that the vaccine should be implemented to the provinces male youth as a whole, not just those identifying with high-risk characteristics. Nurses seemed to be approach the issue from a public health and population level perspective whereas physicians tended to approach the issue from a more patient centric lens. These findings may reflect the self-selection bias in interviews.

**Unspoken group**

There is another group beyond those who accepted the vaccine that I think has some important implications. From the interviews, there was one nurse and two physicians that held opposing views in comparison to the majority of other individuals whom I interviewed. This unspoken minority believed that vaccinating the entire population for HPV was not an ideal way to use the limited funding the government has for healthcare delivery. This group is an important component of the population that I was offered a glimpse into their perspective. With a larger sample size for interviews, these

perspectives may have been more common than demonstrated. However, individuals who are not supportive or disinterested in HPV vaccination may have been less inclined to participate in this study.

One nurse pointed out that there was no research to show an actual reduction in cancers for men. However, given that this link was only recently discovered, it is difficult to have long-term studies to demonstrate that the vaccine will prevent cancer. While this may be true, there is already evidence that the HPV vaccine has positively affected female rates of HPV infection demonstrating that there have been fewer observed precancerous lesions (Hoffman, 2016; Markowitz et al., 2016). There is a definitive link between the strains of HPV covered by the vaccine and certain cancers. This evidence has been published by different studies and journals, further reaffirming the point that the HPV vaccine is efficacious for males (Giuliano et al., 2011; Goldstone et al., 2013; Haupt & Sings, 2011). This group is unlikely to recommend the vaccine freely and they generally have negative attitudes towards vaccinating male youth, which would likely mean they do not intend to recommend the vaccine for male youth.

**Intentions of physicians and nurses to recommend the HPV vaccine for male youth.** In order to increase uptake of the HPV vaccine for male youth, one of my research questions sought to consider ways to strengthen intentions of physicians and nurses to recommend the HPV vaccine for male. This research question is answered based on a synthesis of the knowledge gained by considering why physicians and nurses recommend the HPV vaccine for male youth and what hinders these recommendations. By considering the barriers and facilitators I can identify ways to overcome barriers, utilize

facilitators and ultimately strengthen intentions to recommend the HPV vaccine for male youth.

Physicians largely observed that capturing the male youth audience would be considered a serious challenge. As the male youth population often does not consult primary care for preventative services, this could be overcome by recommending the vaccine to males at a younger age before there is a reduced likelihood that they would present themselves to the primary care physician. Thus, while physician may have positive attitudes towards the behaviour and there are favourable subjective norms towards the HPV vaccine for boys in the medical community there may be a low perceived behavioural control to carry out to recommendation. Physicians often have no particular reason to bring up sexual health with male youth. This vaccine could lead physicians to open up the conversation about sexual health at an age appropriate level. This way the conversation is open and the dialogue around sexual health is pre-existing. This could lead to a greater uptake of the HPV vaccine in addition to a more even distribution of the care of sexual health between genders.

Nurses generally believed that the HPV vaccine for male youth was a good idea, but some felt they had a limited platform to recommend the vaccine as it was not part of the provincial immunization schedule. As a result, nurses oftentimes felt they needs to "keep to the script" which left them with limited perceived behavioural control over their ability to carry out a recommendation.

**Social Factors Impacting Recommendation**

I considered two primary social factors that could impact HPV immunization recommendations. The first is gender, and the second, religion. The way gender and

religion shape health, healthcare policy can be quite profound. Both have historic ties to major social institution and expectations. There are social expectations regarding how a girl is supposed to behave. Marriage as an institution has reinforced gender roles and put women in the position of being responsible for the sexual health of themselves, and their partners. Religion has been tied to schools and hospitals which may have shaped the perspectives of individuals in these institutions, although some of these sentiments may actually be occurring below the surface.

**Gendering of sexual healthcare**. The way in which the HPV vaccine is recommended for male youth offered insight into how the responsibility for sexual health and thus sexual healthcare is gendered. I first discovered the issue when I heard a physician interviewee discuss that female physicians were probably more likely to recommend the HPV vaccine for male youth because they encounter sexual healthcare and HPV more frequently in their practice. This is in line with the rational that female physicians are more likely see more female patients. When a physician has a larger cohort of female patients in their practice, they will be thinking about HPV more frequently given the relevance of the threat of cervical cancers to her patient's cohort. HPV has been known as the primary casual factor in cervical cancer for decades, and has likely become a regular part of conversations regarding sexual heath.

Beyond the simple HPV and cervical cancer connection, I garnered a greater understanding about how sexual health is largely taken care of by women. The gendered HPV vaccine recommendations re-entrenches this idea. Sexual health is a burden on females and requires the female population to take on an additional responsibility, carrying more than their fair share. Women have been viewed as more responsible for

sexual health historically, and the way the HPV vaccine uses the herd immunity of girls to protect the population as a whole only further embeds this unfair social expectation.

There are many reasons why females have taken on the responsibility of sexual health for the population as a whole. First, females may view that they have more at stake by not taking responsibility for their sexual healthcare. From a relatively young age, girls know that a lack of sexual health could lead to infertility, and reproduction is socially reinforced as a part of womanhood that is central to the female identity. Males do not have this same risk by not engaging in sexual healthcare. In particular, when they entrust their sexual health into their partners who have been told it is their social responsibility to maintain their sexual health.

Females have the responsibility to engage in sexual healthcare as well because males are not taught to value conversations with their health practitioner in the same way that females are taught to. There are no routine sexual health check-ups that males encounter in comparison to the routine "well woman" visits. In the interviews, physicians noted that females more frequently presented themselves as individuals who feared they may have an STBBI. Females also come into their physician's office over concerns about their menstrual cycle, pap smears, and requests for birth control. There is no male equivalent that encourages an open dialogue about sexual health between a man and his physician.

Some participants from both medicine and nursing noted that there may be a public outcry when the public realizes that the vaccine benefits boys but the province is not funding it. One nurse noted that she believes the public reaction would be very different if males were receiving a vaccine that would be of benefit to girls, yet the

province has not funded it. This may be due to historic activism over women's health or a perception that women need to be protected to ensure they maintain their reproductive capacity.

As a high percent of girls (90%) are currently immunized for HPV in the province (Department of Health and Community Services, 2013b), there seems to be a lesser necessity to immunize the male population. This is because MSW are mostly protected by the female herd immunity. This sentiment of the herd immunity protection leading to the reduced necessity to cover boys appeared in the interview when considering cost-effectiveness in the NL context. In NL, this seems like a rational decision. Why use precious healthcare dollars on an intervention that will have minimal impact? I argue that not only does this short-sighted policy have a negative medical impact, but also a negative social impact.

This practice of using the girls to protect the boys can have significant unintended consequences. The results from this study demonstrate that the maintenance of sexual healthcare and well-being is a practice largely reserved for women. While this action may not be overt, it is present and has persisted throughout decades. Physicians shared with me and the quantitative results confirm that they are significantly more likely to recommend the HPV vaccine to females than males. The logical response to this finding would be that the HPV vaccine was originally targeted exclusively to girls and the province only funds it to girls, therefore, it makes sense that girls get more of the vaccine recommendations. However, I would like to take this finding further. By recommending the HPV vaccine to girls more than boys, there are implications to this action. While the positive impact is that girls are protected from psychologically damaging genital warts

and potentially fatal cervical cancer, they are also carrying the burden of vaccination itself. They must undertake the, albeit minimal, risks of vaccination, in order to protect the male population.

Prior to 2012, HPV vaccination was just targeted to protect females. However, in the four years since the demonstrated link between HPV and cancers that affect all individuals, the high immunization rates are used to how to rationalize not vaccinating boys (Kim & Goldie, 2009). This argument is based on the fact that herd immunity from the girls will protect the boys. Now that the vaccine is recommended to all individuals, but NL is only publicly funding the vaccine for girls, the issue is problematized further. It leads to the slippery slope of using females to protect the bodies of males, their children, and society as a whole.

Women's bodies have been the site of control and management for a long time. Historically, women have been viewed as responsible for ensuring that not only they themselves are healthy, but are responsible for the health of their families and partners. Many women have worked hard to care for their physical state, however it is often for the benefit of the family more than for individual (Sherwin, 1998, pp. 54-55).

This deviance is an often cited as the reason why there is a historic exclusion of women from clinical trials (Institute of Medicine (US) Committee on Ethical and Legal Issues Relating to the Inclusion of Women in Clinical, 1994; Mc Carthy, 1994). There is a long history that demonstrates the way that women's bodies have been managed to take care of themselves and others. We can see this current theme of female responsibility for health permeating into the current HPV vaccination policy, through professional recommendations and social expectations for the health and well-being of society. While

not directly obvious at the surface, there is meaning behind why the way the policy is practiced as it is and the implications need to be considered.

Another issue that factors into physician recommendations of the HPV vaccine for male youth is that this population is simply not frequently captured by primary care. Male youth do not frequently access primary healthcare. This is an automatic barrier to primary care physicians, given that these individuals are not even presenting themselves in the offices of family physicians.

Evidently, it is difficult to recommend a vaccine to a patient who does not visit the office, or who shows a lack of interest in it. This finding of male youth not accessing primary care is consistent with other literature that has shown male youth only visiting the physician for acute issues (Sussman et al., 2015). Girls, on the other hand, are given ample opportunities to get vaccinated, as it is conveniently done during the school day. Girls are not limited by the financial cost of the vaccine the way boys are. The vaccine is easily accessible to the female population. While I value a safe, effective vaccine that can prevent genital warts and cervical cancer for girls with herd immunity carried over to boys, I do challenge how fair and ethical this program is. The girls of the province carry the responsibility to ensure their heterosexual male counterparts are protected, but not those who do not conform to traditional gender norms and expectations of sexual preferences.

Our system is designed to ensure women manage their sexual health properly for the benefit of themselves while these benefits are extended to their male partners. This leaves males to believe they do not need to take care of their sexual health as societal sends them messages that their female partners will take care of it if they do not. While I

recognize that this a broad generalization, it demonstrates the system is designed to encourage females to appear in their physicians' offices to get pap smears, urine STBBI tests, and renewals of birth control pills. Males, on the other hand, have no reason to promptly speak to their physician about sexual health in their youth. This habit that begins in youth, then persists into adulthood and become engrained as social expectations.

*Perceived Male Youth Invincibility*

Beyond the gendered expectations of managing sexual healthcare, physicians noted that when given the opportunity to recommend the vaccine to male youth, their patient population did not view themselves vulnerable to illness. Most physicians commented on male youth invincibility, which is a unique social factor of this age group when considering an intervention that could be of significant benefit that is decades away. Physicians noted that when this group is captured in their office, there is a belief that "nothing bad will happen to me". This belief manifests in postponing the vaccine until it seems more relevant, however at that point the individual will have lost their opportunity to derive the most benefit from the vaccine, and often they will be required to get three shots, instead of two if they are over fourteen. There are many reasons why male youth may believe they are invincible to HPV, however a social context that does not encourage them to manage their own sexual health and tells them that the female population's herd immunity will protect them could be a leading cause.

Gender has shaped the attitudes that physicians and nurses hold on HPV vaccination for male youth. While there is a general agreement that vaccinating male youth for HPV is good, there is differential perspectives, beliefs and attitudes that could shape their approach. The attitudes individuals hold are shaped by their life experiences

and their life experiences influence their risk perception. In addition, gender has played a role in the perceived behavioural control of physicians to actually make the recommendation. Their ability to have control over making recommendations to male youth is significantly reduced when physicians do not see male youth in their offices and when nurses do not have the opportunity to discuss the vaccine with male youth and parents in schools and in the community.

**Religion in healthcare**

In the current context of Canadian society, most would hope that religion does not interfere with healthcare decision-making at an individual or systemic level. The literature identified that certain religious groups faced discomfort with the HPV vaccine, in particular due to its ability to protect youth from HPV, an infection that is transmitted sexually. This link made me question how religion could currently be playing a role in physician or nurse recommendations for HPV vaccination, especially in Canada's most religious province. There was no link between religion and likelihood to recommend the HPV vaccine in either the quantitative or qualitative data collected from nurses and physicians. Among the physicians and nurses, there was no evidence to suggest that religiosity, or frequency of engagement in religious activities had an impact on immunization recommendations.

Most participants in the interviews only speculated that religion could influence recommendation from nurses and physicians. It seems that given the design of the public health vaccination program in NL, it would be difficult for nurses to use their religious perspectives in their own recommendation, or recommend the vaccine based on the religion of their patients and their families. Materials mostly come from a "top-down"

approach, where nurses are handed preapproved materials to present to their communities.

Physicians often practice with more autonomy than nurses. In a physician's practice, their recommendation is often based on the evidence and their own clinical judgment. For physicians, a recommendation can change based on individual circumstances. In comparison, public health nurses are given preapproved materials to present to the community based on evidence. Nurses have less autonomy with their clinical judgement to make recommendation to patients than physicians. It seems doctors do not believe their decision-making is not influenced by religion.

Several speculated that hypothetically it could happen in the sense that "anything is possible", but suggested that religion interfering with professional healthcare decision-making was no longer culturally relevant. Another nurse cited that religion and personal beliefs are not expressed on the job and that it would be unethical for these things to interfere with the care provided to a patient or client. Another key feature to note is that both physicians and nurses noted that it would not be normal for them to know the religious affiliation of the patient or client family. As they do not know, it would mean that making a decision around religion would be quite difficult.

What may be occurring which was not observed in these data could be religion impacting decision-making at a higher level, possibly even at a subliminal level. Policy makers could believe the provincial MSM population is low, or that it is a sin to be gay or transgender and therefore these people should not be protected. While this interference of religion with policy is rather farfetched, NL is the most religious province in the country and these values are largely Christian-based. So while NL is a religious province, based

on my findings it is unlikely that religion has a direct impact on recommendations at the level of 1:1 patient interaction.

Based on the Theory of Planned Behaviour, it seems that religion has not had any significant impact on either side impacting attitudes towards recommending the HPV vaccine for boys, the subjective norms and perceived behavioural control. Thus religion does not need to be a primary consideration when considering how to increase the number of recommendation physicians and nurses are making.

**Policy Implications**

There are two major issues when framing the results and considering future policy options. The first issue is the cost-effectiveness dilemma in NL context, and the second is the moral and ethical debate of only vaccinating part of the population. There are several ways that this project can have policy implications. The results of this research demonstrate a need to make public awareness and education about this vaccine a priority.

First, physicians and nurses noted a general moral and ethical conflict with the use of a risk-based strategy for a male risk-based immunization program. The interviewed professionals also made apparent that a mass media campaign could increase the awareness of physicians and nurses across the province. The media strategy was viewed as a potentially effective way to raise the awareness of the public and healthcare professionals. A second policy implication is that the NLMA and ARNNL can use the findings of this research to empower them to consult the government and lobby them to consider funding an HPV awareness or comprehensive immunization program for male youth. The collective power of these two professional groups has the potential to make a significant impact.

**Considering vaccine cost at the policy level.** The cost to the individual for HPV vaccination is significant, especially to those with less financial means. By recommending the vaccine, some believe there is a difference in the individual cost, versus the collective cost. This seemed evident in the nurse and physicians who indicated a less interest in recommending the vaccine. Undeniably, cost, quality adjusted life years, cost-effectiveness and other health economic measures matter when the government is considering funding a vaccine. However, I challenge these professionals to think about if all healthcare decisions are solely based on cost, this is not the case. Many factors are taken into consideration. This argument has competing perspectives regarding cost-effectiveness in the literature. The data on this issue is constantly being updated as new studies are published. This is especially true as the recommended dose of the vaccine requires two shots, instead of the previously required three. Right now, researchers can provide evidence to support both sides of this debate. However, the most recent evidence indicates that the vaccine is cost-effective. Beyond this, more and more provinces across the country have determined that funding the vaccine for male youth is a worthwhile investment.

***Moral and ethical debate*.** The alternative overarching debate is that of a moral and ethical issue. Physicians and nurses have a duty to provide care and access to resources as per the professional codes of ethics that these healthcare professionals practice by. This is an issue independent of the cost debate. We have strong evidence to support that genital warts are prominent in males. Oropharyngeal cancer is on the rise and expected to surpass cervical cancer (Chaturvedi et al., 2011). Anal cancers is another HPV-related cancer that is prominent in males (Huang, Eng, & Crane, 2011). Canada is a

country that is built on the values of universality to healthcare through the 1984 Canada Health Act and non-discrimination through the Canadian Charter of Rights and Freedoms (Government of Canada, 1984). Based on this, why we are excluding boys from the publicly funded program? Canada as a national holds itself to a high standard considering accessibility to healthcare, and asks the provinces to abide by the principles entrusted through the Canada Health Act. Researchers from McGill wrote a feature article in the Globe and Mail that reminds us that we do not separate girls based on race and the ethnic group even though the evidence makes it clear that some minorities (Blacks and Hispanics) are at a higher risk (Shapiro, Perez, Guichon, & Rosberger, 2015). As Canadian's we hold ourselves to a higher standard about health policy and services. If it is a priority, we can make it happen. The government should be clear in their rationale. Exclusionary policies do not have a place NL.

***Risk-based approach***. Risk-based approaches are seen as a cost cutting measure that can ensure part of the population, who is most at-risk can become protected against HPV. However, the majority of both physicians and nurses were against this approach.. They did not want to see individuals forced to self-identify their sexuality at a young age and the logistics of rolling out this program would be complicated across the province. The risk-based approach was one that the physicians and nurses both advised their respective medical organizations take a stand against. Physicians and nurses want the best for their patients and the population as a whole, and the risk-based approach could miss large amounts of high-risk individuals and could violate the first component of the Hippocratic Oath, "do no harm."

It is particularly important to consider the universal vaccination of boys due to the public health benefits. Many males, who identify as a MSM later in life, do not identify in this way in their youth, at the time that the vaccine is recommended (Brewer & Calo, 2015). These are important considerations when investigating a policy for this particularly vulnerable group.

The social stigma that could come from making the HPV vaccine a risk-based vaccination strategy could also prove to backfire in the future, by creating a perception that only people of a certain profile are at-risk. Although MSM do carry a higher risk, it does not mean that males who do not identify as MSM are immune from the possibility of a HPV infection and related illnesses. People of all sexualities and gender identities carry a risk of developing complications related to HPV. As NACI states, there is a risk for all men to develop AIN grades 1, 2, and 3, anal cancer, and anogenital warts as well as preventing penile, perineal intraepithelial neoplasia and associated cancers (Langley et al., 2012). These men are at-risk, and their sexuality should not influence vaccination, as it is both discriminatory and could lead to further stigmatization and negativity surrounding the vaccine. Hence, policies should be gender neutral.

***Mass media campaign.*** A mass media campaign is one option to increase the awareness and uptake of the HPV vaccine for male youth. This technique to increase awareness and improve attributes was first suggested by physicians. Several practitioners suggested this option as one that would help increase the awareness of the public about the HPV vaccine for male youth, but also that it would bring this issue to the forefront of their conscious if it is advertised in the media and there are posters or reminders in the office for the physician, nurse or patient/patient family to bring up this issue.

The use of mass media has been effective in the past for cervical cancer screening awareness through television advertisements (Robinson et al., 2014) and to help improve HPV immunization among preteen boys through social marketing techniques including poster and brochures through country health departments, radio public service announcement and online continuing medical education training (Cates, Diehl, Crandell, & Coyne-Beasley, 2015). The government could invest in raising the public awareness of HPV vaccination for male youth, while noting their inability to pay for the vaccine in tight fiscal times. The public could be empowered to know the option is there and physicians and nurses may feel more comfortable about opening a conversation on this in their community.

A few physicians did note the use of a public media campaign in their interviews, another physician spoke in opposition to the use of this idea. This physician's rationale was that it would be unethical to impose a mass media public education campaign on HPV vaccination for boys if the province was not going to cover the cost of the service.

A public campaign could also come in the form of educating parents of boys in the schools, at the same time when forms go out for the female students in the classroom. This resource light strategy could be a simple way to expand the awareness of the existence of this vaccine and how it could protect the male youth in the province.

Given the current policy context, people have the right to be informed and educated by their government about existing medical interventions that could be of benefit to them or their families, even if it is not publicly funded. There are several ways to go about a public health, mass media campaign one of which could be designed by the nurses who are the ones that run the immunization program across the province. Social

media platforms such as Twitter, Instagram and Facebook are all ways that the message could be broadcasted to the population of the province. When the public is appropriately educated on this issue, regular citizens could help set the agenda about how high of a priority covering this vaccine is for the public. Given the constructs of the Theory of Planned Behaviour, a mass media campaign could have a substantial impact on attitudes towards the behaviour and influence the subjective norms of the public as well as practitioners.

***Role of the NLMA and ARNNL.*** The NLMA and ARNNL represent thousands of physicians and nurses from across the province. Their professional opinions and recommendations strongly influence the uptake of vaccines in the province. These organizations have the collective power to make policy recommendations that are informed by the evidence. Through both epidemiological data and evidence gathered from this study, physicians and nurses in their respective organizations can educate decision-makers on the current evidence. These healthcare professionals can show them the epidemiological and cost-effectiveness evidence for male youth vaccination, in addition to the support from NL physicians and nurses on a universal policy.

The outcome behaviour, recommendations of the HPV vaccine for male youth has the potential to be enhanced. Physicians and nurses who I spoke with had ideas about what could be done to enhance uptake. The idea of a mass media campaign about the benefits of vaccinating boys for HPV was suggested by physicians and nurses. A campaign like this would bring the vaccine to the forefront of the minds of healthcare professionals and the public. A mass media campaign could influence the attitudes of both the public and the providers which could ultimately lead to more recommendations.

Physicians may feel a greater urgency to bring up the HPV vaccine to male youth if the issue is already a component of the public discourse. A mass media campaign also has a potential to change the existing subjective norms, which could lead to behaviour change through the Theory of Planned Behaviour. There could be an increased social pressure to recommend that vaccine when it becomes a norm of the practice. Additionally, a mass media campaign could influence perceived behavioural control, as it could cause more males to appear in the office, have a lower perceived invincibility, and could educate physicians and the public about why the vaccine is important for this population. By targeting these three predictions of intentions and in turn, can change behaviour.

Utilizing the advocacy powers to the NLMA and ARNNL also has power to change behaviour through the theoretical framework of the Theory of Planned Behaviour. These professional organizations could make an impact by putting a policy statement forward or creating a conversation among their members. If physicians and nurses recognize that their respective professional organizations are taking a stand, it could change their attitudes towards recommendation and likely the social pressure they feel to make a recommendation. Applying two of the three factors of the Theory of Planned Behaviour by encouraging these organizations to take action could ultimately impact the number of recommendations made to male youth for HPV vaccination.

**Summary**

This chapter covers physician and nurse recommendations for the HPV vaccine and the factors that came up in the interview that served as general barriers to recommendations. The physicians were limited in their ability to recommend the vaccine through institutional barriers such as one-patient-per-visit polices, and their payment

plans in addition to individual barriers such as their patients' ability to pay. Nurses were keen to recommend the vaccine but were limited by the domains of their professional practice and were not often, if ever, able to give a personal recommendation to males on the job as it is outside of the provincial schedule. Despite these differences, nurses and physicians had similarities in their beliefs about the HPV vaccine. Most physicians and nurses believed that all individuals should be vaccinated, as everyone has the potential to suffer the consequences of a HPV infection.

Physicians and nurses also had differences in how gender and religion influenced the uptake of the vaccine. Gender was an important factor for HPV recommendation, as male youth often do not present themselves in primary care, where they would have the opportunity to receive a recommendation. Additionally, male youth often have a belief that they are invincible and recommending a vaccine with benefits decades down the line does not seem relevant.

Physicians and nurses noted that religion would not have an impact on individual decision making. Nurses made a point that it would be challenging for personal religion to interfere with the materials they present as they are not making personal recommendations but using information coming down from the government at a higher level.

I put forth policy options and practical suggestions about how to improve the uptake of the HPV vaccine based on my findings. Vaccination has proven cost-effectiveness and a risk-based program was not viewed positively among most of the providers interviewed. Mass media was viewed as a possible strategy to build awareness of the vaccine in the public, while not having to necessarily pay for the vaccine for all

male youth. A mass media campaign, funded by the government or a related NGO has the potential to bring the HPV vaccine for males at the forefront of everyone minds. Finally, the NLMA and ARNNL have the potential to use their advocacy potential to encourage the government to fund the vaccine to all boys.

## Chapter 8: Conclusion

In 2016, males are not included in the publicly funded vaccination program in NL, despite good evidence indicating a significant health and social benefit for recipients in terms of prevention of HPV-related infections and cancers in this population (Audisio et al., 2016). The NACI has recommended the vaccine for females since 2006 and males since 2012, however, NL currently funds a girls-only vaccination program (NACI, 2015), although healthcare professionals can inform individuals that they can receive the vaccine for male youth if they pay privately. There is a lack of consistency across Canada on this issue; some provinces have introduced policies to include male youth in the last three years (CBC News, 2013, 2015; Government of Nova Scotia, 2015; Prince Edward Island, 2013; Province of British Columbia, 2015).

This project sought to understand the factors that influence physicians' and nurses' decision to recommend the HPV vaccine for male youth. There are no studies in the local context that report recommendation practices and immunization rates for HPV in males in NL. The knowledge gained from this research could help reduce missed opportunities for male HPV immunization (despite its lack of availability under the public insurance program) and encourage recommendations informed by the evidence. This research empowers these professional organizations (NLMA and ARNNL) to use their collective influence to lobby the government to include male youth in the publicly funded HPV immunization program. The problem is found across the province when physicians' and nurses' choose not to recommend the HPV vaccine for male youth. This happens both within healthcare institutions and through informal social interactions. The goal of this study was to generate evidence to inform the development of an appropriate strategy

in NL that responds to the 2014 NACI recommendation to expand HPV vaccination programs to the male population.

My research objectives were to: (1) Gather information about NL physicians' and nurses' recommendation and/or intention to recommend HPV vaccination of male youth (9-18 years) and the factors that inform those recommendations; (2) Investigate the role of gender and religion as social factors influencing physicians' and nurses' decision-making about HPV immunization (3) Identify ways to strengthen the intention of physicians and nurses to recommend and vaccinate male youth at-risk of HPV infections and HPV-related cancers in NL. I accomplished these three objectives.

I demonstrated the way in which physicians and nurses recommend the HPV vaccine for male youth and that ways that gender and religion impact decision-making. Physicians and nurses were both more likely to believe that the HPV vaccine is important for females than males, however there is a promising amount of physicians and nurses who would recommend the HPV vaccine for male youth. The large gap between current recommendations and intentions to recommend in both age groups and professions demonstrated to me that there are barriers to recommendation that I was not aware of. The interviews demonstrated that there are a variety of reasons why these professionals may not be recommending the vaccine. These reasons range from the time to bring up the vaccine in their office, the cost of the vaccine for their patients and their own confidence in their knowledge about the vaccine.

These issues were then compounded by gender and religion interfering with uptake. Religion was thought to play a minor role in making recommendations at most, but not directly a factor with the physicians interviewed. On the other hand, gender

played a significant role. Female physicians were more likely to recommend the vaccine for male youth and, and there are expectations around how sexual health is managed that puts the majority of the responsibility on women.

From these issues, nurses and physicians offered their ideas and opinions on policy options. Both professional groups were largely opposed to a risk-based strategy where only the males at an elevated risk would have their vaccine covered by the provincial government. Several physicians desired a mass media campaign to help improve the public awareness of the issue so they would be more inclined to bring it up during office visits. A nurse supported a campaign to include handouts in schools about the benefits of the vaccine for boys, when girls were sent home with information when they were getting vaccinated in school. In sum, both nurses and physicians believed that their respective professional organization should take a position against a risk-based strategy and encourage the provincial government to fund the vaccine for all individuals, regardless of gender.

I would like to again acknowledge the context in which this research was conducted. The general cost-effectiveness arguments on male HPV vaccination are related but not central to this thesis. I hope to have opened the conversation to go beyond the financial cost-effectiveness arguments at the surface, and to consider the cost as one that cuts deeper that the financial one. There are significant social implications that serve as a cost, which have the potential to further disadvantage already marginalized groups.

**Theoretical Implications.** On a theoretical level, if the issue is not resolved there may be serious theoretical implications. The expectation that women are responsible for protecting the bodies of males is re-entrenched in this policy. If the gender-based policy

remains, NL is resisting against the progressive nature of Canadian healthcare and lagging behind the rest.

**Implications for Policy, Practice and Programs.**

**Potential implications of not attending to this issue.** There are implications of not attending to this issue. NL is now in the minority of provinces to not include males in the HPV immunization policy. As long as males are excluded from the publicly funded program that is implemented in schools, it will be challenging to reach significant uptake and could lead to:

1. Increased males infected with HPV, which could lead to expenses for the provincial healthcare system in the future
2. A public outcry if it is revealed later on that the government knew about the potential benefit but didn't act

**Recommended course of action.**

1. Physician: Recommend the vaccine to boys at a younger age
2. Nurse: Discuss the HPV vaccine for boys at public health education sessions for the HPV vaccine
3. Health authorities/provincial government: Send out information in schools at the time girls are vaccinated, so parents can be educated about the relevance of the issue for male youth, perhaps discussing risk groups, pros and cons of the vaccine etc.
4. Include the vaccine in the publicly funded program for all boys

**Plans for Dissemination and KT Strategy**

Knowledge translation (KT) is an important component of health services research. As a developing health services researcher, I value the role of KT in my thesis project as a key component of uptake and dissemination. Although my knowledge of KT was limited at the start of this project, I sought to engage with KT as early as possible. I consulted my supervisor to ensure I could develop a relevant end product. She advised me to consult stakeholders, including a regional communicable disease nurse, the provincial Director of Communicable Disease Control, the NLMA and the ARNNL. Engaging these individuals and groups helped me to ensure my priorities aligned with their priorities and needs.

I included these stakeholders and project partners in project development by meeting with them over the phone and via videoconferences to discuss relevance and alignment of the work with their needs. My supervisor and I obtained letters of support from the NLMA and the ARNNL. Their support facilitated the completion of the project. These KT partners were able to help us gain access to the professional communities and will enhance the likelihood of success with implementation.

**Key stakeholders.** My project has four target stakeholder groups, which may all utilize the results of this project in a unique manner. These stakeholders are professionals (physicians and nurses), government, and peers from the research community, the patient population (male youth) and their families.

***Professional.*** These stakeholders in this research project also served as partners. The NLMA can use this project to help guide appropriate decision-making surrounding their resolutions at their AGM. They will receive appropriate information at the

conclusion of the study. Similarly, the ARNNL have been partners and stakeholders. They serve a similar purpose of the NLMA, but for the registered nurses and nurse practitioners of NL. The ARNNL will receive a report on the research to be disseminated across nurses in the province.

***Government.*** The provincial government should have an interest in my results as I have compiled information specific to the NL context. I will contact the Deputy Minister of the Department of Health and Community Services, Beverley Clarke, to share key findings that could have implications for provincial policy.

***Researchers.*** The academic community is another stakeholder group. This research is relevant to those who work in health policy, health services research, public health researchers, and researchers in health equity. My academic peers are also an important audience as they can utilize my work to create secondary and tertiary data sources.

**Key messages.** Vital to the development of an effective KT strategy are key messages that are tailored for particular audiences and easily communicated.

1. Physicians and nurses are in favour of government funding for the HPV vaccine for male youth in NL;
2. There are a number of barriers to recommending the vaccine which could, in part, be circumvented by recommending it for boys at a younger age;
3. There is a disconnect around the discourse amongst physicians about immunization as it is nurses that deliver most of the vaccines;
4. Some physicians and nurses have issues with a risk-based vaccination policy as they view it as inequitable, while others value this approach as “something is better than nothing”.

**Strategies to engage stakeholders.** There are a number of ways to engage stakeholders. However, when there is more than one stakeholder group, they must be engaged appropriately.

- *Professionals:* Communication and consultation through the research process, and final report to the organizations (NLMA and ARNNL)
- *Professionals/Researchers:* Presentation at PriFor, in St. John's which engages primary care providers (RNs and MDs) across the province in 2015
- *Government***:** Formal letter and briefing note to the Deputy Minister of the Department of Health and Community Services (Beverley Clarke) at project completion
- *Researchers:* Presentation at PATHWAYS to Health Equity Conference, in Winnipeg; peer-reviewed publication on the ethical issues of gendered immunization program in Nursing Inquiry

**KT products.**

- Reports following **1:3:25** framework for NLMA and ARRNL to disseminate as appropriate and to inform their decision-making;
- Educational outreach: a short guideline for practitioners on the status of male HPV vaccination in the province and strategies to overcome existing barriers to immunization;
- Conference presentations and peer-reviewed journal articles.
- Completed thesis available to other investigators

**Barriers and enablers.** As with any strategy that seeks to influence change, researchers often face push back from those who are resistant to change. Resistance can

be overcome through appropriate strategic planning and engagement. One way to ensure the stakeholders are engaged is to provide educational materials regarding the problem, purpose, and relevance of the research and the need to translate this knowledge into practice. Once the stakeholder recognizes value in the data, overcoming pre-existing barriers is more likely. In order to overcome the existing barriers, I must anticipate expected barriers and develop plans to address each.

One barrier is likely a lack of time from the stakeholders. This is why I have proposed to write a 1:3:25 report to the NLMA and ARNNL, so interested individuals can engage with the evidence as they see fit to their practice. I will also make myself available to these individuals to answer any questions regarding the research outcomes.

There will also likely be resistance to the proposition to include males in a publicly funded HPV immunization program for a number of reasons, including the additional cost. One barrier could be a perception of this program as one with limited cost-effectiveness. I will combat this barrier by providing current Canadian evidence that demonstrates the cost-effectiveness of universal HPV vaccination (Graham et al., 2015). Another barrier could be a lack of perceived need for this policy, which comes from a limited education on the subject or alternative political views. I will overcome this barrier by providing concise evidence that makes a case for the need and urgency of this policy.

While it is key to keep in mind barriers, enablers are also important to communicate the message. Individual practitioners who believe in the vaccination of the male youth could serve as champions of the causes, by educating their colleagues and making it a priority of their professional organizations. Also, if the public understands the

relevance of this issue and puts pressure on the government to educate them and provide the vaccine, it could also encourage uptake of the results of my study.

**Impact.** In order to measure impact, I consider how well I achieved my project objectives. Ultimately, I would like to see improved awareness of the barriers and facilitators to male youth HPV vaccination in nurses and physicians. In addition, a greater consideration of the systematic ways about how we gender healthcare, for example, through girls-only HPV vaccination program. Finally, I would like to see strengthened intentions of doctors and nurses to vaccinate male youth for HPV. Accomplishing these items would lead me to believe my KT strategy was effective.

This research does not have any direct benefit to individuals but has the potential to have a positive impact at the policy level. Through community partnerships at the NLMA and the ARNNL, I can disseminate the research findings to these groups, which have collective power to influence provincial government decision-making. These organizations will be able to use this evidence to inform their decision-making around recommendations to vaccinate male youth for HPV and to use their organization's professional power to lobby the government for health coverage that is in the best interest of all of its citizens. This could lead to a more comprehensive public health immunization program with physicians and nurses who are better informed on HPV vaccination for male youth.

**Recommendations**

The final component of my research question sought to understand how to increase the intentions of physicians and nurses to recommend the HPV vaccine for male youth. After a great amount of consideration, there are a few specific recommendations I

have formed through the data. In order to increase the number of recommendations, physicians and nurses must improve their attitudes towards the behaviour, have peer approval and support of the vaccine for males and have behavioural control and appropriately self-efficacy to recommend the vaccine knowing that they are appropriately educated to make a recommendation to their patients or clients. These factors outline how to increase intentions and thus alter behaviour through the Theory of Planned Behaviour.

These recommendations serve in individual practitioners in their encounters with HPV vaccine recommendations for male youth. A primary way to reduce missed opportunities for vaccination is to consider recommending the HPV vaccine from a younger age. This way highlighted barriers to immunization including male youth not accessing primary care, perceived male youth invincibility and the gender gap in health services could be mitigated by recommending the vaccine early and engaging male youth in protecting and managing their own sexual health from a young age.

Additionally, the individual physicians and nurses make up the collective NLMA and ARNNL. They can use their collective power to encourage the government to fund a mass media campaign the increased awareness and to recommend that the whole male youth population becomes vaccinated, not just high-risk ones.

As physicians and nurses are aware of the barriers they may face to actively recommending the vaccine, they can develop strategies to overcome the barriers and improve uptake in the current policy context and encourage the government to include boys in the immunization program in the future.

**Study limitations**

While I was able to gather an in-depth understanding of how physicians and nurses recommend the HPV vaccine for male youth there were some limitations.

My thesis used the Theory of Planned Behaviour as a tool to understand the findings and guide and understanding of the implications of this research. I chose this theory as I believe it was the best existing theory that helped to frame my findings but I did find limitations to it. The most significant limitation I found with it was that the focus of this theory is on individuals rather than institutions or social systems. I was directly studying individual recommendations by physicians and nurses, but the theory was challenging to use when I wanted to understand some of my findings at a higher level.

Another primary limitation to the study was that the survey measured intentions to recommend the vaccine, but we were not able to follow up on if the physicians and nurses were actually recommending the vaccine. Additionally, these data are all self-reported. So while we I was able to triangulate my data between multiple methods, I was still limited by a social desirability bias. Physicians may be more inclined to say they are practicing within national recommendation by saying the planned to recommend the HPV vaccine or were already doing so. This bias could have skewed my results to make it seem that although physicians may want to be recommending the vaccine to male youth in practice, they were not actually doing so. If I had more time and stronger personal connections to the NL medical community, I may have been able to foster greater recruitment. However, I need to work within the context and my personal situation.

Unfortunately, the response size of my population was not high enough to be statistically significant but may be clinically significant, and was substantial enough to

give us a general understanding of physicians' perspectives that led us to create interview guidelines that was informed by the perspectives of physicians across the province. While there was a low survey response rate, especially in the physician group, it is consistent with the nation that physicians are a notoriously difficult group to recruit to participate in research (Asch, Connor, Hamilton, & Fox, 2000; Borgiel L et al., 1989). Physicians are more likely to participate in research when recruited by other physicians, and by someone whom they have had personal contact with (Asch et al., 2000; Borgiel L et al., 1989). For physicians, incentives do not generally have an impact on participation rates. Physicians often choose not to participate due to time pressures (Asch et al., 2000).

The social desirability bias may have also come through on the interview. For example, the interview guideline consisted of sensitive questions that could lead to an interviewee discussing potentially unethical behaviour in their medical or nursing practice. As a result, the respondents may not have answered with the complete truth. While the interviews were not conducted anonymously, their identities are confidential. The interviews however were conducted over the telephone which may have mitigated the social desirability bias. A telephone interview with a researcher who is a stranger to them may have reassured them that their identities were private.

The further bias in the data set is that of self-selection. The volunteer participants who were educated on the subject and or interested in HPV vaccination for male youth were likely more interested in participating in the project through surveys and/or interviews. As a result, the individuals who knew little of HPV vaccination for male youth were poorly represented in this research project. These leads to the inherent limitation of fairly representing the unspoken group. I was able to learn about the

perspective from the unspoken group because I had few data on these individuals and they may have come to believe that their perspective were outside the medical norm and therefore were uncomfortable discussing their perspectives.

I was also limited to the physicians I interviewed as they were all individuals who had an affiliation to the Faculty of Medicine at Memorial University. I used an alternate recruitment strategy, mediated by a personal contact as I exhausted several previous attempts to recruit physicians. This specialty faces immunization most frequently compared to other specialization in medicine, however I had previously hoped to have a better-representative sample of physicians from different specialties. A further limitation of interviewing only those who were family doctor's affiliated with Memorial University is the way they were compensated. There interview guideline did not include any specific questions about method of payment, but most affiliated with the university are salaried, which means their thoughts about fee-for-service are based on speculation.

There were also limitations from the nurse surveys and interviews. The survey tool was adapted from a survey previously used by Barnack et al. (2010), and adapted to the NL context. The transferability and validity of the survey in the context was a limitation. However I used this tool as it was the best available instrument to answer my research question. While there were significantly more respondents to the survey for the nurses, it was not representative of the entire population. The nurse surveys were also open to all nurses in the province which is a limitation. As all nurses do not work with HPV vaccination, it may have been more relevant to just include nurses who work in public health, communicable disease control and policy to whom this issue is directly relevant. I would also like to acknowledge the possible respondent bias. The people who

chose to participate in the surveys and interviews may have particular reasons as to why they participated in the research project. Some participants may also have answered questions about the HPV vaccine for males differently after being primed with the survey questions.

Another limitation I faced in the statistical analysis was a need to combine the five point Likert scale variables, to a binary. For the questions I analyzed I grouped strongly agree and agree to reflect agreement and neutral, disagree and strongly disagree to represent a disagreement and neutrality as one. Certain variables were difficult to combine, for instance the nursing data contained one transgender respondent. Unfortunately, I had to omit the transgender response from the Fisher's test, as I needed a binary to be able to accurately gain an appropriate understanding of existent variables Although excluding the person from the analysis might reduce the generality of the results on the association of gender and vaccine recommendation, the result using one person to represent that category of gender is not reliable.

There is also likely a sampling bias for those who self-selected to respond the survey and interviews. Those more invested in this issue were more likely to engage in this research project. Those who do not believe that HPV vaccine for both is a worthwhile cause may have chosen not to engage in this research project as it is not worth their time. A further limitation bias in the result could be because awareness of the HPV vaccine for boys is still relatively low. This limitation could have made those with no awareness and perspective on the vaccine to self-select out of the survey and interview.

**Future directions**

Future directions for this research could be looking at the results of this project from different angles. I did not collect statistical data on the barriers and facilitators to recommending the vaccine, so a future research project that could include a survey asking about how cost, issues with males presenting in primary healthcare and religion interfere with their decision-making as individual survey variables as well as considering rural/urban dwelling environments. Alternatively, a future study could investigate the awareness and dissemination of knowledge around the HPV vaccine for boys as the popularity of the vaccine for the male population changes.

The purpose of this research project is based upon the assumption that minimal male youth are vaccinated for HPV due to an observed low population level awareness. The low immunization is confirmed due to relatively low awareness of the public and limited awareness and active recommendations between physicians and nurses.

A future study could follow up on the work that I completed regarding physicians' and nurses' intentions to recommend the HPV vaccine for male youth to see if their high intentions become practice. Additionally, further inquiry could investigate physicians' and nurse practitioners' prescription practices for the HPV vaccine by looking into how many prescriptions are being written for the vaccine.

**Summary**

In sum, it is important for healthcare professionals to take responsibility and consider how sexual health is a component of medicine where women are most often responsible for the protection of their own health, the health of the past, current and future sexual partners, as well as their unborn children. Healthcare professionals can use this

knowledge as power to mitigate unfair gendered expectations. My research has brought to light a number of barriers and ways to overcome these barriers so physicians and nurses can feel confident in their ability to move forward and recommend the vaccine. In the words of the Director of the National Center for Immunization and Respiratory at the CDC in the U.S., ‘a vaccine to prevent cancer would be a no-brainer’” (Rubin, 2015, p. 1503).

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**Appendix A: Physician Survey Recruitment Email**

Dr. Diana L. Gustafson (PhD) and her master's student, Victoria Law in the Faculty of Medicine at Memorial University, are surveying physicians to learn more about their attitudes toward the human papillomavirus (HPV) vaccine and issues relating to clinical practice and the sexual health of boys. The project is funded by the Janeway Pediatric Research Unit. The goal of this research is to learn more about physicians' willingness to vaccinate boys for HPV and their intentions to recommend the vaccine. The letter below offers more information about the study, and any possible risks and benefits of completing the survey.
[GRAPHIC OF LETTER WITH HYPERLINK]
Take the Survey
**http://fluidsurveys.com/s/HPV_MaleYouth/**

**Appendix B: Physician Survey Letter of Information/Consent Form**


Physician Survey Letter of Information/Informed Consent
Title: Assessing physicians' and nurses' intentions to recommend the HPV vaccine for male youth in Newfoundland and Labrador
Researchers:
Diana L. Gustafson, PhD - Professor
Victoria Law, BSc (Hons) - Applied Health Services Research Master's Student
Division of Community Health and Humanities, Faculty of Medicine
Memorial University St. John's, NL
HPV.MaleYouth@med.mun.ca
709-777-6720
Introduction/ Background to the study
Dr. Diana L. Gustafson and her master's student, Victoria Law in the Faculty of Medicine at Memorial University are surveying physicians to learn more about their attitudes toward the human papillomavirus (HPV) vaccine and issues relating to clinical practice and the sexual health of boys. This project is funded by the Janeway Pediatric Research Unit.
HPV is one of the most common sexually transmitted infections. There is a vaccine available. The National Advisory Committee on Immunization recommends the vaccine for both males and females ages 9-26. Currently, only girls in Newfoundland and Labrador are covered under provincial funding for the HPV vaccine, with a goal of reducing the rates of cervical cancer. This means that parents of boys must decide if the vaccine is right for their child while considering the cost of the vaccine and other factors such as the risk of head, neck and other cancers among men linked to HPV. As a result, some parents will turn to physicians for help with decision-making.
Purpose of study
The goal of this research is to learn more about physicians' and nurses' intentions to recommend the vaccine in Newfoundland and Labrador. The objectives are to:
1. Gather information about the NL physicians' recommendation and/or intention to recommend HPV vaccination of male youth (9-18 years) and the factors that will inform those recommendations;

2. Gather information about the NL registered nurses' and nurse practitioner's recommendation and/or intention to recommend HPV vaccination of male youth (9-18 years) and the factors that will inform those recommendations;

3. Identify gaps between evidence and practice for HPV vaccination in male youth, and to better understand the correlates for positive attitudes towards vaccinating this population.

What you will do in this study
This study has two components: Surveys and interviews. The surveys will provide an overview of NL physicians' intentions to recommend HPV vaccine and their current clinical practices in providing information to boys and their parents about sexual health. The second step will be to conduct interviews with interested physicians. This will allow us to better interpret the survey findings.
If you choose to complete the survey, you will be given more information about participating in a face-to-face interview.
This survey will ask:
About your attitude toward HPV vaccination in general;
Your intention to recommend HPV vaccination for male youth;
Your perceptions of what parents think about vaccinating their sons against HPV; and
Your current practices for assessing risk for HPV in male youth and discussing with them and their parents topics such as abstinence and safer sex behaviours for preventing sexually transmitted infections.
Withdrawal from the study It is entirely up to you to decide whether or not to take part in this research. If you choose not to take part in this research or if you decide to withdraw from the study after it has started, it will not affect you. You may withdraw at any time.
Length of time This survey will take approximately 10 minutes to complete.

Possible benefits There is no direct benefit to you. A possible benefit of participation is your chance to win a $75 gift card or donation to a charitable organization. Another possible benefit to you is that you may enjoy participating in meaningful research on HPV vaccination and boys' sexual health. One indirect benefit is that your responses may help us learn more about current practices of physicians in the province with regards to male HPV vaccination and the perspectives that physicians have.

Possible risks Measures will be taken to protect security and anonymity of all survey data. Data will be presented in aggregate form. Security functions will be adjusted to remove IP addresses and locations so that survey participants cannot be linked to their data and will not be known to the researchers. A possible risk of submitting your responses in an on-line survey is a leak in the information from hackers. It is possible that you may feel uncomfortable when answering questions about your clinical practice and decision-making.

Privacy and Confidentiality All survey information will remain confidential. Only Dr. Gustafson and Victoria Law, both trained research personnel, will have access to the completed surveys. Printouts of the surveys will be kept in a locked filing cabinet in Dr. Gustafson's office. When the results are published, no identifying information will be linked to the results.

Anonymity Security functions will be adjusted to remove IP addresses and locations so that survey participants cannot be linked to their data and will not be known to the researchers.

Storage of Data Data will be destroyed 5 years after project completion. Electronic data will be password encrypted on locked computers. Physical data such as printouts of the surveys will be stored in a locked filing cabinet in Dr. Diana L Gustafson's office.

Reporting of Results The data collected will be used for Victoria Law's master's thesis. The data may be published in a journal article and presented at a national academic conference.

Sharing of Results with Participants Upon completion of this research, a summary report will be provided to the NLMA and other community partners. Participants will be able to access the results through this community partner. The researchers may also hold town hall meetings to discuss results.

Conflict of Interest Diana L. Gustafson and Victoria Law have no conflicts of interest.

Questions or problems If you have any questions about taking part in this study, you can contact the researcher who is in charge of this study.

Dr. Gustafson can be reached at 709 777 6720 or Ms. Law can be reached at HPV.MaleYouth@med.mun.ca

You can also speak with someone who is not involved in the study but can advise you on your rights as a participant in this study.

This person can be reached at: Ethics Office Health Research Ethics Authority 709-777-6974 or by email at info@hrea.ca

**Appendix C: Physician Survey**

HPV in Male Youth: A Physician Survey
With the recent Health Canada approval of Gardasil® (Human Papillomavirus Quadrivalent (Types 6, 11, 16, and 18) Recombinant Vaccine) for male youth (individuals 9-18 years of age), we are interested in NL physicians' attitudes toward the vaccination of boys and other sexual health issues.

Do you agree to participate in this survey?
○ Yes
○ No

Please answer survey questions honestly and to the best of your ability. You do not have to answer any questions you do not feel comfortable answering.
Attitudes towards HPV and HPV Vaccination
For the following statements, indicate how much you agree or disagree.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| Youth (9-18 year olds) are at risk for HPV infections. | ○ | ○ | ○ | ○ | ○ |
| HPV has serious negative health consequences for MALE YOUTH. | ○ | ○ | ○ | ○ | ○ |
| Gardasil® is effective in preventing HPV infections that can cause cancer. | ○ | ○ | ○ | ○ | ○ |
| Vaccination against HPV is beneficial to the health of FEMALES | ○ | ○ | ○ | ○ | ○ |
| Vaccination against HPV is beneficial to the health of MALES | ○ | ○ | ○ | ○ | ○ |
| It is important that all GIRLS ages 9-18 are vaccinated against HPV before they become sexually active (engaging in oral, vaginal, anal and/or other sexual behaviour). | ○ | ○ | ○ | ○ | ○ |
| It is important that all BOYS ages 9-18 are vaccinated against HPV before they become sexually active (engaging in oral, vaginal, anal and/or other sexual behaviour). | ○ | ○ | ○ | ○ | ○ |
| I would vaccinate my DAUGHTER against HPV. | ○ | ○ | ○ | ○ | ○ |
| I would vaccinate my SON against HPV. | ○ | ○ | ○ | ○ | ○ |

| | | | | | |
|---|---|---|---|---|---|
| The risks of the HPV vaccination outweigh the benefits. | ○ | ○ | ○ | ○ | ○ |
| Boys might be MORE SEXUALLY ACTIVE (engaging in oral, vaginal, anal and or/ other sexual behaviour) if they get the HPV vaccine. | ○ | ○ | ○ | ○ | ○ |

Parents, HPV Risk and HPV Vaccination for Boys

For the following statements, indicate how much you agree or disagree.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| Parents should have their sons vaccinated against the types of HPV that can cause CERVICAL CANCER in their FEMALE PARTNERS. | ○ | ○ | ○ | ○ | ○ |
| Parents should have their sons vaccinated against the types of HPV that can cause HEAD and NECK cancers. | ○ | ○ | ○ | ○ | ○ |
| Parents should have their sons vaccinated against the types of HPV that can cause PENILE cancer. | ○ | ○ | ○ | ○ | ○ |
| Parents should have their sons vaccinated against the types of HPV that can cause ANAL cancer. | ○ | ○ | ○ | ○ | ○ |
| Parents will be open to having their sons vaccinated. | ○ | ○ | ○ | ○ | ○ |
| Parents will fear that their sons will have sex AT A YOUNGER AGE if they get the HPV vaccine. | ○ | ○ | ○ | ○ | ○ |
| Parents will fear that their sons will be MORE SEXUALLY ACTIVE (engaging in oral, vaginal, anal and/or other sexual behaviour) if they get the HPV vaccine. | ○ | ○ | ○ | ○ | ○ |
| It is important to educate parents about HPV | ○ | ○ | ○ | ○ | ○ |
| FEAR of NEGATIVE HEALTH OUTCOMES, like allergic reactions, will prevent parents from vaccinating their sons against HPV infections. | ○ | ○ | ○ | ○ | ○ |
| It is important to INFORM parents about the HPV vaccine. | ○ | ○ | ○ | ○ | ○ |
| It is important to RECOMMEND | ○ | ○ | ○ | ○ | ○ |

the HPV vaccine to parents of boys.

My Attitudes toward Sexual Education and Recommending HPV Vaccination

For the following statements, indicate how much you agree or disagree.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| It is important to teach male youth how to protect themselves from getting a sexually transmitted infection such as those caused by HPV. | ○ | ○ | ○ | ○ | ○ |
| Educating boys about safer sex practices encourages them to be sexually active (engaging in oral, vaginal, anal and/or other sexual behaviour). | ○ | ○ | ○ | ○ | ○ |
| Vaccinating boys against HPV infections is good public health practice. | ○ | ○ | ○ | ○ | ○ |

My Clinical Practices with Assessing HPV Risk and Recommending HPV Vaccination for younger boys ages 9 to 13

For the following statements, indicate HOW OFTEN in your clinical practice you have discussed the following with boys aged 9 to 13 and/or their parents.

| | Always | Often | Sometimes | Rarely | Never |
|---|---|---|---|---|---|
| Risks associated with being sexually active (engaging in oral, vaginal, anal, and/or other sexual behaviour) . | ○ | ○ | ○ | ○ | ○ |
| The health consequences of getting an HPV infection. | ○ | ○ | ○ | ○ | ○ |
| How boys can protect themselves from getting sexually transmitted infections such as HPV? | ○ | ○ | ○ | ○ | ○ |
| Abstinence as a way to reduce the risk of HPV transmission. | ○ | ○ | ○ | ○ | ○ |
| Safer oral sex practices. | ○ | ○ | ○ | ○ | ○ |
| Where to obtain condoms and how to use them. | ○ | ○ | ○ | ○ | ○ |
| Recommended the HPV vaccine IN THE PAST. | ○ | ○ | ○ | ○ | ○ |
| Intend to recommend the HPV vaccine IN THE FUTURE. | ○ | ○ | ○ | ○ | ○ |

My Clinical Practices with Assessing HPV Risk and Recommending HPV Vaccination for older boys ages 14 to 18

For the following statements, indicate HOW OFTEN in your clinical practice you have discussed the following with boys aged 14 to 18 and/or their parents.

| | Always | Often | Sometimes | Rarely | Never |
|---|---|---|---|---|---|
| Risks associated with being sexually active (engaging in oral, vaginal, anal, and/or other sexual behaviour). | ○ | ○ | ○ | ○ | ○ |
| The health consequences of getting an HPV infection. | ○ | ○ | ○ | ○ | ○ |
| How boys can protect themselves from getting sexually transmitted infections such as HPV? | ○ | ○ | ○ | ○ | ○ |
| Abstinence as a way to reduce the risk of HPV transmission. | ○ | ○ | ○ | ○ | ○ |
| Safer oral sex practices. | ○ | ○ | ○ | ○ | ○ |
| Where to obtain condoms and how to use them. | ○ | ○ | ○ | ○ | ○ |
| Recommended the HPV vaccine IN THE PAST. | ○ | ○ | ○ | ○ | ○ |
| Intend to recommend the HPV vaccine IN THE FUTURE. | ○ | ○ | ○ | ○ | ○ |

Responsibilities, Knowledge and Comfort with HPV and Sexual Health Education

For the following statements, indicate how much you agree or disagree.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| It is the PHYSICIANS' responsibility to discuss sexual activity (oral, vaginal, and/or anal sex) with male youth. | ○ | ○ | ○ | ○ | ○ |
| I have sufficient knowledge about HPV TRANSMISSION to counsel patients and their male children about safer sexual activities. | ○ | ○ | ○ | ○ | ○ |
| I have sufficient knowledge about the benefits and risks of HPV VACCINE to counsel parents and their male children. | ○ | ○ | ○ | ○ | ○ |
| I am NOT comfortable discussing sexual activity (engaging in oral, vaginal, anal and/or other sexual behaviour) with PARENTS of male youth. | ○ | ○ | ○ | ○ | ○ |
| I AM comfortable discussing sexual activity (engaging in oral. | ○ | ○ | ○ | ○ | ○ |

| | | | | | |
|---|---|---|---|---|---|
| vaginal, anal and/or other sexual behaviour) with MALE YOUTH ages 9 to 13. | | | | | |
| I am NOT comfortable discussing sexual activity (engaging in oral, vaginal, anal and/or other sexual behaviour) with MALE YOUTH ages 14 to 18. | ○ | ○ | ○ | ○ | ○ |

Demographics

You're almost finished. Just a few questions about demographics. You do not have to answer any questions you do not feel comfortable answering.

How old are you?

- ○ 20-29
- ○ 30-39
- ○ 40-49
- ○ 50-59
- ○ 60 or over

What is your gender identity?

- ○ Male
- ○ Female
- ○ Transgender
- ○ Do not identify with male, female or transgender

What is your marital status?

- ○ Married
- ○ Divorced
- ○ Separated
- ○ Living with a significant other
- ○ Significant other (not living together)
- ○ Single
- ○ Widowed

What is your sexual orientation?

- ○ Straight
- ○ Gay/Lesbian
- ○ Bisexual
- ○ Other

How many children do you have?

- ○ 0
- ○ 1
- ○ 2
- ○ 3-4
- ○ More than 4

How many sons do you have?

- ○ 0
- ○ 1

○ 2
○ 3-4
○ More than 4

Are you affiliated with a faith community?

○ Anglican
○ Baptist
○ Catholic
○ Hindu
○ Jehovah's Witness
○ Jewish
○ Lutheran
○ Moravian
○ Muslim
○ Pentecostal
○ Presbyterian
○ Protestant
○ Salvation Army
○ Seventh-Day Adventist
○ United
○ I do not identify with an organized religion
○ Other please specify

How often do you engage in religious activities?

○ At least once a week or more often
○ At least once a month
○ For seasonal celebrations such as Christmas, Passover or Eid
○ For weddings and funerals
○ Never

Have you been vaccinated against any of these diseases? Check all that apply.

□ Hepatitis A
□ Hepatitis B
□ Measles, Mumps, and Rubella (MMR)
□ Chicken pox
□ Menningitis
□ Pertussis (whooping cough)
□ Influenza
□ HPV
□ Small Pox
□ Other, please specify... _____

What is your area of specialization?

Family medicine
Anesthesia
Cardiology
Emergency Medicine

Internal Medicine
Obstetrics/Gynecology
Ophthalmology
Urology
Oncology
Pediatrics
Psychiatry
Other (please specify)

How long have you been practicing medicine?

- ○ 0-10 years
- ○ 11-20 years
- ○ 21-30 years
- ○ 31-40 years
- ○ 41+ years

We respect your privacy and are committed to keeping your responses confidential.
Now, you have the option of exiting the survey
OR
connecting to another website where can provide your contact information and be entered into a draw (as our thanks for your participation) and/or indicating your interest in discussing these issues in more detail in a brief interview.
In this way your contact information will not be linked to your survey responses.
Would you like to be entered into a draw for a $75-dollar gift card or charitable donation to Planned Parenthood or another registered charity of your choice?
NOTE: Your answer to this question will not be linked to your survey responses

- ○ Yes
- ○ No

If you answered YES to the previous question, please type your email below. If NO, proceed to the final page.

[ ]

You now have the option of exiting the survey OR providing contact information that indicates your interest in discussing these issues in more detail in a brief interview.
If you indicate NO, this is the end of your participation. We thank you for taking part in this study.
If you indicate YES, click on this link now http://fluidsurveys.com/surveys/diana-gustafson/physician-interview/ Customize]. You will be directed to another website where you can provide your e-address and learn more about participating in the interview.
In this way, your contact information will not be linked to your survey answers.
NOTE: By providing your contact information, you are NOT consenting to participate in an interview; you are just agreeing to allow us to contact you.

- ○ No, I am NOT interested in taking part in an interview.

- ○ Yes, I am interested in taking part in an interview.

**Appendix D: Physician Interview Letter of Information/ Consent Form**


**Faculty of Medicine/Community Health and Humanities**

Health Science Centre
St. John's, NL Canada A1B 3V6
Tel: 709-351-3355

**Title:** Assessing physicians' and nurses' intentions to recommend the HPV vaccine for male youth in Newfoundland and Labrador

**Researchers:**

Diana L. Gustafson
Division of Community Health and Humanities
Master's Student
HSC 2834, Faculty of Medicine
Memorial University
St. John's, NL
**HPV.MaleYouth@med.mun.ca**

Victoria Law
Applied Health Service Research
Faculty of Medicine
Memorial University
St. John's, NL

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Hello. We want to invite you to take part in a research project in your community. We are interested in learning more about physicians' and nurses' intentions to recommend the HPV vaccine for male youth. This form is part of the process of informed consent.

We want to give you a basic idea of what this project is about and what your participation will involve. It also describes your right to withdraw from the project. In order to decide whether you wish to participate in this research project, you should understand enough about the potential risks and benefits to be able to make an informed decision. This is the informed consent process.

We invite you to take part in a research study. Taking part in this study is voluntary. It is up to you to decide whether to be in the study or not. You can decide not to take part in the study. If you decide to take part, you are free to leave at any time without penalty. If you are uncomfortable with any aspect of the interview, you may leave or terminate the conversation. You must be at least 18 years to participate in the interview.

Before you decide, you need to understand what the study is for, what risks you might take and what benefits you might receive. This consent form explains the study.

Please read this carefully. Take as much time as you like. If you like, take it home to think about for a while. Mark anything you do not understand, or want explained better. After you have read it, please ask questions about anything that is not clear. Please contact one of the researchers, Diana L. Gustafson or Victoria Law, before you consent to participate if you have any questions about the study or if you want more information not included here.

Prior the completing this interview the researchers will:
Discuss the study with you
Answer your questions
Keep confidential any information which could identify you personally
Be available during the study to deal with problems and answer questions

**Introduction/ Background to the study**

Dr. Diana L. Gustafson and her master's student, Victoria Law in the Faculty of Medicine at Memorial University are surveying and interviewing physicians and nurses to learn more about attitudes toward the human papillomavirus vaccine (HPV) and related issues such as discussing abstinence, risk and sex education with your patients. This project is funded by the Janeway Pediatric Research Unit.

HPV is one of the most common sexually transmitted infections. There is a vaccine available. The National Advisory Committee on Immunization recommends the vaccine for both males and females ages 9-26. Currently, only girls in Newfoundland and Labrador are covered under provincial funding for the HPV vaccine with a goal of reducing the rates of cervical cancer. This means that parents of boys must decide if the vaccine is right for their child while considering the cost of the vaccine and other factors such as the risk of head, neck, and other cancers among men linked to HPV.

**Purpose of study:** The goal of this research is learn more about physicians' and nurses' intentions to recommend the vaccine in Newfoundland and Labrador. Our objectives are to:
Gather information about the NL physicians' recommendation and/or intention to recommend HPV vaccination of male youth (9-18) years and the factors that will inform those recommendations;
Gather information about the NL nurses' recommendation and/or intention to recommend HPV vaccination of male youth (9-18) years and the factors that will inform those recommendations;
Identify gaps between evidence and practice for HPV vaccination in male youth, and to better understand the correlates for positive attitudes towards vaccinating this population

**What you will do in this study**
This study has two components. The first component was a survey. The surveys were sent to physicians in order to understand their attitudes and beliefs about the HPV vaccine. Now, we will conduct interviews with physicians. This will allow the researchers to have a greater understanding of the survey results.

This interview will ask:
About your attitude toward HPV vaccination in general;
Your intention to recommend HPV vaccination for male youth;
Your perceptions of what parents think about vaccinating their children against HPV;
Your current practices for assessing risk for HPV in male youth and discussing with them and their parents, abstinence and safer sex behaviours for preventing sexually transmitted infections.

Data will be audio recorded and the researcher will take notes. If you would like to view the interview guideline before the interview, it is available at your request.

**Length of time**
The interview will take between 15 minutes and 1 hour.

**Withdrawal from the study**
It is entirely up to you to decide whether or not to take part in this research. If you choose not to take part in this research or if you decide to withdraw after the research it has started, it will not affect you. You may withdraw at any time.

**Possible benefits**
The only possible benefit to completing this interview is that a responses will help increase our understanding of physicians' attitudes toward HPV vaccinations and related issues

**Possible risks**
There is an unlikely possibility that the information coming from the interview would be leaked, however only Dr. Diana L Gustafson and Victoria Law will have access to the data from the interviews. All information collected at the interview, will be confidential which minimizes any risk of having private information leaked.
The only other risk is that it may make you, the participant, feel uncomfortable when answering questions about your child's sexuality and sex practices

**Privacy and Confidentiality**
All Only Dr. Diana L. Gustafson and Victoria Law, both trained research personnel, will have access to the completed surveys and the interview transcripts.
Printouts of the surveys and focus group transcripts will be kept in a locked filing cabinet in Dr. Diana L. Gustafson's office.
When the results are published, no identifying information will be linked to the results.

**Anonymity**
Due to the nature of the interview, there will not be participant anonymity; however participants contributions will be confidential and not linked to their name
There will be data anonymity upon publication.

**Storage of Data**
Data will be destroyed 5 years after project completion
Electronic data will be password encrypted on locked computers
Physical data will be stored in a locked filing cabinet in Dr. Diana L Gustafson's office

**Reporting of Results**
The data collected will be used for Victoria Law's master's thesis
In addition, the data will be published in a journal article and presented at a national academic conference.

**Sharing of Results with Participants**
Upon completion of this research, a summary report will be provided to the community partner, the NL medical association. Participants will be able to access the results through the community partner. The researchers may also hold a town hall meeting to discuss results.
**Conflict of Interest**
Diana L. Gustafson and Victoria Law have no conflicts of interest.
**Questions or problems**
If you have any questions about taking part in this study, you can contact the researcher who is in charge of this study. **Diana L. Gustafson** can be reached at **709 777 6720, or HPV.MaleYouth@med.mun.ca.**
You can also speak with someone who is not involved in the study but can advise you on your rights as a participant in this study.
**This person can be reached at:**
Ethics Office
Health Research Ethics Authority
709-777-6974 or by email at info@hrea.ca
**If you sign this form, you do not give up your legal rights and do not release the researchers from their professional responsibilities.**
**A copy of this Informed Consent Form will be given to you for your records.**

## Appendix E: Physician Interview Guide

Physician Interview Guide

Thank you for agreeing to meet with me today. As you know we recently completed a physician survey about HPV in male youth. We want to better understand some of the findings that emerged in three areas.

**The first area is about beliefs and attitudes toward HPV vaccine for male youth**
I'd like to begin by asking you what you think about the HPV vaccine for male youth? Would you recommend it? Under what conditions?
How did you come to this decision? What are the most significant issues that factor into your decision about whether to recommend the HPV vaccine for male youth?
Can you tell me about a typical conversation with a young male patient and his parents about this decision?
What do you think is the most difficult aspect of that conversation with youth? With parents?
The literature says that gay and bisexual individuals are a vulnerable population, as they do not benefit from the high coverage rates that youth who engage in heterosexual activities benefit from? How do you talk about that with parents of youth whose sexual preferences may not be identified?
Do you think other physicians share your opinion about HPV vaccines for male youth?
Why do you think some physicians are reluctant to recommend the vaccine for male youth?
Too costly?
Lack of studies on efficacy in males?
Not enough males affected by HPV and its health consequences?
Not sufficiently informed?
Assessing sexual risk among male youth is difficult or uncomfortable?
Do you think gender plays a role in physicians' decision-making about recommending HPV vaccine for male youth?
Do you think that physicians are more likely to recommend the HPV vaccine for female than for male youth?
Do you think that female physicians are more likely than their male counterparts to recommend the HPV vaccine for male youth?
I'd like to talk now about religion and HPV vaccine
Do you think that religion plays a role in physicians' decision-making about recommending HPV vaccine for male youth?
Do you think that parents' religious affiliation plays a role in whether a physician will recommend the HPV vaccine for male youth?
The literature suggests that religious affiliation has been linked to more restrictive attitudes toward sexual health education and to vaccine hesitancy. According to the last census, NL has higher rates of religious affiliation than other Canadian provinces yet we have one of the highest coverage rates for HPV vaccine among girls. How do you make sense of that?

**The next area is about Continuing Education and Knowledge Acquisition**
Do you think the average physician is well informed about HPV and HPV vaccination for the male population?
Do you think most physicians are aware that the HPV vaccination is now recommended for male youth?
What sources do you think physicians are most likely to use when deciding whether to recommend HPV vaccination for male youth? When assessing HPV risk among male youth?
Why do you think physicians prefer this source to other sources?

**The third area we want to better understand is what physicians recommend as next steps.**
PEI, Alberta, Nova Scotia, and most recently, Manitoba include male youth in their HPV vaccination campaigns. Currently, NL vaccinates girls-only in publicly funded school-based programs. What position do you think NL should take?
Would you recommend that physicians be better informed about this issue? What would be helpful to you and other physicians? (e.g., resources, workshops, continuing education)
Some decision-makers advocate a risk-based approach to vaccine strategies? Some jurisdictions such as BC have implemented this approach by targeting male youth who identify as gay or bisexual. Would you recommend taking that approach in NL. Do you see any advantages or drawbacks to that approach?

**That brings me to the end of my questions. Is there anything else that you'd like to add or share with me about HPV vaccination for male youth?**

**Thank you for taking time to participate in this interview.** We are actively looking for other physicians to share their opinions and recommendations with us. If you know of anyone who may be interested in this project, we invite you to share our contact information with him or her.

**Appendix F: Nurse Recruitment Email**

Dr. Diana L. Gustafson (PhD) and her master's student, Victoria Law in the Faculty of Medicine at Memorial University, are surveying physicians to learn more about their attitudes toward the human papillomavirus (HPV) vaccine and issues relating to clinical practice and the sexual health of boys. The project is funded by the Janeway Pediatric Research Unit. The goal of this research is to learn more about physicians' willingness to vaccinate boys for HPV and their intentions to recommend the vaccine. The letter below offers more information about the study, and any possible risks and benefits of completing the survey.
[GRAPHIC OF LETTER WITH HYPERLINK]
Take the Survey
**http://fluidsurveys.com/s/HPV_MaleYouth/**

**Appendix G: Nurse Survey Letter of Information/ Consent Form**


Nurse Survey Letter of Information/Informed Consent
Title: Assessing physicians' and nurses' intentions to recommend the HPV vaccine for male youth in Newfoundland and Labrador
Researchers:
Diana L. Gustafson, PhD- Professor
Victoria Law, BSc (Hons)- Applied Health Services Research Master's Student
Division of Community Health and Humanities, Faculty of Medicine
Memorial University St. John's, NL
HPV.MaleYouth@med.mun.ca
709-777-6720
Introduction/ Background to the study
Dr. Diana L. Gustafson and her master's student, Victoria Law in the Faculty of Medicine at Memorial University are surveying nurses to learn more about their attitudes toward the human papillomavirus (HPV) vaccine and issues relating to clinical practice and the sexual health of boys. This project is funded by the Janeway Pediatric Research Unit.
HPV is one of the most common sexually transmitted infections. There is a vaccine available. The National Advisory Committee on Immunization recommends the vaccine for both males and females ages 9-26. Currently, only girls in Newfoundland and Labrador are covered under provincial funding for the HPV vaccine, with a goal of reducing the rates of cervical cancer. This means that parents of boys must decide if the vaccine is right for their child while considering the cost of the vaccine and other factors such as the risk of head, neck and other cancers among men linked to HPV. As a result, some parents will turn to nurses for help with decision-making.
Purpose of study
The goal of this research is to learn more about nurses' intentions to recommend the vaccine in Newfoundland and Labrador. The objectives are to:
1. Gather information about the NL registered nurses' and nurse practitioner's recommendation and/or intention to recommend HPV vaccination of male youth (9-18 years) and the factors that will inform those recommendations;

2. Identify gaps between evidence and practice for HPV vaccination in male youth, and to better understand the correlates for positive attitudes towards vaccinating this population.
What you will do in this study
This study has two components: Surveys and interviews. The surveys will provide an overview of NL nurses' intentions to recommend HPV vaccine and their current clinical practices in providing information to boys and their parents about sexual health. The

second step will be to conduct interviews with interested nurses. This will allow us to better interpret the survey findings.
If you choose to complete the survey, you will be given more information about participating in a face-to-face interview.
This survey will ask:
About your attitude toward HPV vaccination in general;
Your intention to recommend HPV vaccination for male youth;
Your perceptions of what parents think about vaccinating their sons against HPV; and

Your current practices for assessing risk for HPV in male youth and discussing with them and their parents topics such as abstinence and safer sex behaviours for preventing sexually transmitted infections.
Withdrawal from the study It is entirely up to you to decide whether or not to take part in this research. If you choose not to take part in this research or if you decide to withdraw from the study after it has started, it will not affect you. You may withdraw at any time.
Length of time This survey will take approximately 10 minutes to complete.

Possible benefits There is no direct benefit to you. A possible benefit to participation is your chance to win a $75 gift card or donation to a charitable organization. Another possible benefit to you is that you may enjoy participating in meaningful research on HPV vaccination and boys' sexual health. One indirect benefit is that your responses may help us learn more about current practices of nurses in the province with regards to male HPV vaccination and the perspectives that nurses have.

Possible risks Measures will be taken to protect security and confidentiality of all survey data. Data will be presented in aggregate form. Security functions will be adjusted to remove IP addresses and locations so that survey participants cannot be linked to their data and will not be known to the researchers. A possible risk of submitting your responses in an online survey is a leak in the information from hackers. It is possible that you may feel uncomfortable when answering questions about your clinical practice and decision-making.
Privacy and Confidentiality All survey information will remain confidential. Only Dr. Diana L. Gustafson and Victoria Law, both trained research personnel, will have access to the completed surveys. Printouts of the surveys will be kept in a locked filing cabinet in Dr. Diana L. Gustafson's office. When the results are published, no identifying information will be linked to the results.
Anonymity Security functions will be adjusted to remove IP addresses and locations so that survey participants cannot be linked to their data and will not be known to the researchers.
Storage of Data Data will be destroyed 5 years after project completion. Electronic data will be password encrypted on locked computers. Physical data such as printouts of the surveys will be stored in a locked filing cabinet in Dr. Diana L. Gustafson's office.

Reporting of Results The data collected will be used for Victoria Law's master's thesis. The data may be published in a journal article and presented at a national academic conference.

Sharing of Results with Participants Upon completion of this research, a summary report will be provided to the ARNNL and other community partners. Participants will be able to access the results through this community partner. The researchers may also hold town hall meetings to discuss results.

Conflict of Interest Dr. Diana L. Gustafson and Victoria Law have no conflicts of interest.

Questions or problems If you have any questions about taking part in this study, you can contact the researcher who is in charge of this study.

Dr. Diana L Gustafson can be reached at 709 777 6720 or Ms. Law can be reached at HPV.MaleYouth@med.mun.ca

You can also speak with someone who is not involved in the study but can advise you on your rights as a participant in this study.

This person can be reached at: Ethics Office Health Research Ethics Authority 709-777-6974 or by email at info@hrea.ca

**Appendix H: Nurse Survey**

HPV in Male Youth: A Nurse Survey

**Please answer survey questions honestly and to the best of your ability.**

* 1. With the recent Health Canada approval of Gardasil® (Human Papillomavirus Quadrivalent (Types 6,11,
16, and 18) Recombinant Vaccine) for male youth (individuals 9-18 years of age), we are interested in NL
registered nurses' attitudes toward the vaccination of boys and other sexual health issues. You do not have to answer any questions you feel uncomfortable with.
I have read what this study about and agree to participate in the survey

Yes

2. For the following statements, indicate how much you agree or disagree.

Strongly Disagree Disagree Neutral Agree Strongly Agree

Youth (9-18 year olds) are at risk for HPV infections.

HPV has serious negative health consequences for MALE YOUTH.

Gardasil® is effective in preventing HPV infections that cause cancer.

Vaccination against HPV is beneficial to the health of FEMALES.

Vaccination against HPV is beneficial to the health of MALES

It is important that all GIRLS ages 9-18 are vaccinated against HPV before they become sexually active (engaging in oral, vaginal, anal and/or other sexual behaviour).

It is important that all BOYS ages 9-18 are vaccinated against HPV before they become sexually active (engaging in oral, vaginal, anal and/or other sexual behaviour).

I would vaccinate my DAUGHTER against HPV.

I would vaccinate my SON against HPV.

The risks associated with the HPV vaccination outweigh the benefits.

Strongly Disagree Disagree Neutral Agree Strongly Agree

Boys might be MORE SEXUALLY ACTIVE (engaging in oral, vaginal, anal and or/ other sexual behaviour) if they get the HPV vaccine.

3. For the following statements, indicate how much you agree or disagree.

Strongly Disagree Disagree Neutral Agree Strongly Agree

Parents should have their sons vaccinated against the types of HPV that can cause CERVICAL CANCER in their FEMALE PARTNERS.

Parents should have their sons vaccinated against the types of HPV that can cause HEAD and NECK cancers.

Parents should have their sons vaccinated against the types of HPV that can cause PENILE cancer.

Parents should have their sons vaccinated against the types of HPV that can cause ANAL cancer.

Parents will be open to having their sons vaccinated.

Parents will fear that their sons will have sex AT A YOUNGER AGE if they get the HPV vaccine.

Parents will fear that their sons will be MORE SEXUALLY ACTIVE (engaging in oral, vaginal, anal and/or other sexual behaviour) if they get the HPV vaccine.

It is important to educate
PARENTS of
BOYS about HPV and related infections and cancers.

Strongly Disagree Disagree Neutral Agree Strongly Agree

It is important to INFORM parents of boys about the HPV vaccine.

It is important to RECOMMEND the HPV vaccine to parents of boys.

FEAR of SERIOUS SIDE EFFECTS will prevent parents from vaccinating their sons against HPV infections.

My Beliefs about the Sexual Health of Male Youth

4. For the following statements, indicate how much you agree or disagree.

Strongly Disagree Disagree Neutral Agree Strongly Agree

It is important to teach male youth how to protect themselves from getting a sexually transmitted infection
such as those caused by
HPV.

Educating male youth about safer sex practices encourages them to be sexually active (engaging in oral, vaginal, anal and/or
other sexual behaviour).

Vaccinating male youth against HPV infections is good public health practice.

My Clinical Practices with Assessing HPV Risk and Recommending HPV Vaccination for Boys ages 9-13

5. For the following statements, indicate HOW OFTEN in your clinical practice have you discussed the
following with boys aged 9 to 13 and/or their parents.

Always Often Sometimes Rarely Never

Risks associated with being sexually active (engaging in oral, vaginal, anal, and/or other sexual behaviour)
.

The health consequences of getting an HPV infection.

How boys can protect themselves from getting sexually transmitted infections such as HPV?

Abstinence as a way to reduce the risk of HPV transmission.

Safer oral sex practices.

Where to obtain condoms and how to use them.

6. In the past, have you recommended the HPV vaccine for boys 9 to 13?

Yes

No

7. In the future, do you plan to recommend the HPV vaccine for boys ages 9 to 13?

Yes

No

My Clinical Practices with Assessing HPV Risk and Recommending HPV vaccination for Boys ages 14 -18

8. For the following statements, indicate HOW OFTEN in your clinical practice you have discussed the
following with boys aged 14 to 18 and/or their parents.

Always Often Sometimes Rarely Never

Risks associated with being sexually active (engaging in oral, vaginal, anal, and/or other sexual behaviour)
.

The health consequences of getting an HPV infection.

How boys can protect themselves from getting sexually transmitted infections such as HPV?

Abstinence as a way to reduce the risk of HPV transmission.

Safer oral sex practices.

Where to obtain condoms and how to use them.

9. In the past, have you recommended the HPV vaccine for boys ages 14 to 18?

Yes

No

10. In the future, do you intend to recommend the HPV vaccine for boys ages 14 to 18?

Yes

No

11. For the following statements, indicate how much you agree or disagree.

Strongly Disagree Disagree Neutral Agree Strongly Agree

It is a
NURSE'S responsibility to discuss sexual activity (oral, vaginal, and/or
anal sex) with male youth.

I have sufficient knowledge about HPV TRANSMISSION to counsel patients and
their male children about safer sexual activities.

I have sufficient knowledge about the benefits and risks of HPV VACCINE to counsel parents and
their male children.

I am NOT comfortable discussing sexual
activity (engaging in oral, vaginal, anal and/or
other sexual behaviour) with PARENTS of male youth.

I am NOT comfortable discussing sexual
activity (engaging in oral, vaginal, anal and/or
other sexual behaviour) with MALE YOUTH ages 9 to 13.

I am NOT comfortable discussing sexual
activity (engaging in oral, vaginal, anal and/or
other sexual behaviour) with MALE YOUTH ages 14 to 18.

Demographics

**You're almost finished. Just a few questions about demographics.**

12. How old are you?

20-29

30-39

40-49

50-59

60 or over

13. What is your gender identity?

Male Female Transgender
Do not identify with male, female or transgender

14. What is your marital status?

Married Divorced Separated
Living with a significant other Significant other (not living together) Single
Widowed

15. What is your sexual orientation?

Straight Gay/Lesbian Bisexual Other

16. How many children do you have?

- [ ] 0 1 2 3-4
- [ ] More than 4

17. How many sons do you have?

0
1
2
3-4
More than 4

18. Are you affiliated with a faith community?

- [ ] Anglican Baptist Catholic Hindu
- [ ] Jehovah's Witness
- [ ] Jewish Lutheran Moravian Muslim
- [ ] Pentecostal Presybterian Protestant
- [ ] Salvation Army
- [ ] Seventh Day Adventist
- [ ] United
- [ ] I do not identify with an organized religion
- [ ] Other (please specify)

19. How often do you engage in religious activities (e.g., praying, attending a religious ceremony, reading a religious text)?

- [ ] Daily Weekly Monthly
- [ ] A few times a year such as for seasonal celebrations such as Christmas, Passover or Eid
- [ ] Rarely except for weddings and funerals
- [ ] Never

20. Are you currently employed as a nurse?

Yes

No

21. What is your highest level of education in nursing?

Diploma

BN or BScN BN-NP
MN-NP

MN or MScN PhD
Other (please specify)

22. What is your highest level of education OUTSIDE of nursing?

Certificate or Diploma Bachelor's Degree Master's Degree
PhD None
Other (please specific)

23. What type of nursing do you currently practice?
Advanced Practice ( NP or CNS) Community Health Nurse Emergency Nurse
Palliative Care Nurse Oncology Nurse Surgical Nurse Neonatal Nurse Pediatric Nurse
Public Health Nurse
Urology Nurse
Other (please specify)

24. What is your current workplace setting?
Hospital
School
Health Clinic
Doctor's Office
Hospital School Health Clinic
Doctor's office
Family Planning Clinic
Home Care
Other (please specific)

25. How long have you been a registered nurse or registered to practice as a nurse?

0-10 years
11-20 years
21-30 years
31-40 years
41 + years

26.Have you been vaccinated against any of these diseases? **Check all that apply.**

Chicken pox, Hepatitis A, Heptatitis B, HPV, Influenza, Measles, Mumps, Rubella, Meningitis, Pertussis (whooping cough), small pox, other (please specify)
Our way of saying "Thank You"

27. Would you like to be entered into a draw for a $75 dollar gift card or charitable donation to Planned Parenthood or another registered charity of your choice? Note: Your answer to this question will not be linked to your survey responses.

Yes
No

28. If you answered YES to the previous question, please type your email below. If NO, proceed to the final page.

We'd like to interview you.
29. Now, you have the option of exiting the survey

OR
Providing contact information that indicates your interest in discussing these issues in more detail in an interview.

NO, I am NOT interested in taking part in an interview. This is the end of your participation. We thank you for taking part in this study.

YES, I am interested in taking part in an interview. If you indicate YES, click on this link now: https://www.surveymonkey.com/r/nurseinterview_maleyouthHPV. You will be directed to another survey where you can provide your e-mail address and learn more about participating in the interview. Note: By providing your contact information, you are NOT consenting to participate in an interview; you are just agreeing to allow us to contact you. Your contact information will not be linked to your survey answers.

**Appendix I: Nurse Interview Letter of Information/Consent Form**


Faculty of Medicine/Community Health and Humanities

Health Science Centre
St. John's, NL Canada A1B 3V6
Tel: 709-351-3355

Title: Assessing physicians' and nurses' intentions to recommend the HPV vaccine for male youth in Newfoundland and Labrador

Researchers:
Diana L. Gustafson
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HSC 2834, Faculty of Medicine
Memorial University
St. John's, NL
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Victoria Law
Applied Health Service Research Master's Student
Faculty of Medicine
Memorial University
St. John's, NL

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Hello. We want to invite you to take part in a research project in your community. We are interested in learning more about physicians' and nurses' intentions to recommend the HPV vaccine for male youth. This form is part of the process of informed consent.

We want to give you a basic idea of what this project is about and what your participation will involve. It also describes your right to withdraw from the project. In order to decide whether you wish to participate in this research project, you should understand enough about the potential risks and benefits to be able to make an informed decision. This is the informed consent process.

We invite you to take part in a research study. Taking part in this study is voluntary. It is up to you to decide whether to be in the study or not. You can decide not to take part in the study. If you decide to take part, you are free to leave at any time without penalty. If you are uncomfortable with any aspect of the interview, you may leave or terminate the conversation. You must be at least 18 years to participate in the interview.

Before you decide, you need to understand what the study is for, what risks you might take and what benefits you might receive. This consent form explains the study.

Please read this carefully. Take as much time as you like. If you like, take it home to think about for a while. Mark anything you do not understand, or want explained better. After you have read it, please ask questions about anything that is not clear. Please contact one of the researchers, Diana L. Gustafson or Victoria Law, before you consent to participate if you have any questions about the study or if you want more information not included here.

Prior the completing this interview the researchers will:
Discuss the study with you
Answer your questions
Keep confidential any information which could identify you personally
Be available during the study to deal with problems and answer questions

Introduction/ Background to the study

Dr. Diana L. Gustafson and her master's student, Victoria Law in the Faculty of Medicine at Memorial University are surveying and interviewing physicians and nurses to learn more about attitudes toward the human papillomavirus vaccine (HPV) and related issues such as discussing abstinence, risk and sex education with your patients. This project is funded by the Janeway Pediatric Research Unit.

HPV is one of the most common sexually transmitted infections. There is a vaccine available. The National Advisory Committee on Immunization recommends the vaccine for both males and females ages 9-26. Currently, only girls in Newfoundland and Labrador are covered under provincial funding for the HPV vaccine with a goal of reducing the rates of cervical cancer. This means that parents of boys must decide if the vaccine is right for their child while considering the cost of the vaccine and other factors such as the risk of head, neck, and other cancers among men linked to HPV.

Purpose of study: The goal of this research is learn more about physicians' and nurses' intentions to recommend the vaccine in Newfoundland and Labrador. Our objectives are to:
Gather information about the NL physicians' recommendation and/or intention to recommend HPV vaccination of male youth (9-18) years and the factors that will inform those recommendations;
Gather information about the NL nurses' recommendation and/or intention to recommend HPV vaccination of male youth (9-18) years and the factors that will inform those recommendations;
Identify gaps between evidence and practice for HPV vaccination in male youth, and to better understand the correlates for positive attitudes towards vaccinating this population

What you will do in this study
This study has two components. The first component was a survey. The surveys were sent to nurses in order to understand their attitudes and beliefs about the HPV vaccine. Now, we will conduct interviews with nurses. This will allow the researchers to have a greater understanding of the survey results.

This interview will ask:
About your attitude toward HPV vaccination in general;

Your intention to recommend HPV vaccination for male youth;
Your perceptions of what parents think about vaccinating their children against HPV;
Your current practices for assessing risk for HPV in male youth and discussing with them and their parents, abstinence and safer sex behaviours for preventing sexually transmitted infections.

Data will be audio recorded and the researcher will take notes. If you would like to view the interview guideline before the interview, it is available at your request.

Length of time
The interview will take between 15-45 minutes.

Withdrawal from the study
It is entirely up to you to decide whether or not to take part in this research. If you choose not to take part in this research or if you decide to withdraw after the research it has started, it will not affect you. You may withdraw at any time.

Possible benefits
The only possible benefit to completing this interview is that your a responses will help increase our understanding of physicians' attitudes toward HPV vaccinations and related issues

Possible risks
There is an unlikely possibility that the information coming from the interview would be leaked, however only Dr. Diana L Gustafson and Victoria Law will have access to the data from the interviews. All information collected at the interview, will be confidential which minimizes any risk of having private information leaked.
The only other risk is that it may make you, the participant, feel uncomfortable when answering questions about your child's sexuality and sex practices

Privacy and Confidentiality
All Only Dr. Diana L. Gustafson and Victoria Law, both trained research personnel, will have access to the completed surveys and the interview transcripts.
Printouts of the surveys and focus group transcripts will be kept in a locked filing cabinet in Dr. Diana L. Gustafson's office.
When the results are published, no identifying information will be linked to the results.

Anonymity
Due to the nature of the interview, there will not be participant anonymity; however participants contributions will be confidential and not linked to their name
There will be data anonymity upon publication.

Storage of Data
Data will be destroyed 5 years after project completion
Electronic data will be password encrypted on locked computers
Physical data will be stored in a locked filing cabinet in Dr. Diana L Gustafson's office

Reporting of Results

The data collected will be used for Victoria Law's master's thesis
In addition, the data will be published in a journal article and presented at a national academic conference.

Sharing of Results with Participants
Upon completion of this research, a summary report will be provided to the community partner, the NL medical association. Participants will be able to access the results through the community partner. The researchers may also hold a town hall meeting to discuss results.
Conflict of Interest
Diana L. Gustafson and Victoria Law have no conflicts of interest.
Questions or problems
If you have any questions about taking part in this study, you can contact the researcher who is in charge of this study. Diana L. Gustafson can be reached at 709 777 6720, or HPV.MaleYouth@med.mun.ca.
You can also speak with someone who is not involved in the study but can advise you on your rights as a participant in this study.
This person can be reached at:
Ethics Office
Health Research Ethics Authority
709-777-6974 or by email at info@hrea.ca
If you sign this form, you do not give up your legal rights and do not release the researchers from their professional responsibilities.
A copy of this Informed Consent Form will be given to you for your records.

**Appendix J: Nurse Interview Guide**

Nurse Interview Guide

Thank you for agreeing to meet with me today. As you know we recently completed a nurse survey with nurses about HPV and HPV vaccination for in male youth. We want to better understand some of the findings that emerged in three areas.

The first area is about beliefs and attitudes toward HPV vaccination for male youth
I'd like to begin by asking you what you think about vaccination boys against HPV?
As a nurse, you may be viewed as a knowledge leader regarding health care in your community. Suppose your neighbor asked you if they thought they should vaccinate their son for HPV. How might you respond?
Under what conditions?
How did you come to this decision?
What are the most significant issues that factor into your decision about whether to recommend the HPV vaccine for male youth?
Would you feel comfortable talking about the costs and benefits?
Are there times when you feel you may not be knowledgeable enough about the vaccine to make a recommendation?
Think back to a time when you had a conversation with a young male patient and his parents about the HPV vaccine?
What do you think is the most difficult aspect of that conversation with young boys? With parents?
The literature says that gay and bisexual individuals are a vulnerable population, as they do not benefit from the high coverage rates that youth who engage in heterosexual activities benefit from? How would you discuss this with parents of youth whose sexual preferences may not be identified?
Our survey indicated that some nurses may not share your opinion about vaccinating boys against HPV. What do you think accounts for these differences in opinion?
Do you think gender plays a role in nurses' decision-making about recommending HPV vaccine for male youth?
Do you think that female nurses are more likely than their male counterparts to recommend the HPV vaccine for male youth?
Do you think that nurses are more likely to recommend the HPV vaccine for girls than for boys? Why do you think that is?
I'd like to talk now about religion and HPV vaccine
Do you think that parents' religious affiliation plays a role in whether a nurse will recommend the HPV vaccine for male youth?
Do you think that religion plays a role in nurses' decision-making about recommending HPV vaccine for male youth?

The literature suggests that religious affiliation has been linked to more restrictive attitudes toward sexual health education and to vaccine hesitancy. According to the last census, NL has higher rates of religious affiliation than other Canadian provinces yet we have one of the highest coverage rates for HPV vaccine among girls.

How do you make sense of that?

The next area is about nurses' knowledge about the HPV vaccine.
54 % of nurses are either neutral or don't believe they have enough knowledge about the HPV vaccine to counsel parents and their male children. What could be done to improve nurses' knowledge about the vaccine?
How do nurses become aware of new vaccine recommendations? How did you become aware of the HPV vaccine for the male population?
What sources do you think nurses are most likely to use when deciding whether to recommend HPV vaccination for male youth? When assessing HPV risk among male youth?
Why do you think nurses prefer this source to other sources?

The third area concerns nurses' recommendations for next steps.
PEI, Alberta, Nova Scotia, and most recently, Manitoba include male youth in their HPV vaccination campaigns. Currently, NL vaccinates girls-only in publicly funded school-based programs. What position ARNNL should take on this issue?
Some decision-makers advocate a risk-based approach to vaccine strategies? This means targeting transgender? and male youth who identify as gay or bisexual.
What have you heard about a risk-based approach to vaccination?
Some jurisdictions such as BC have implemented this approach. What do you think about this?
Would you recommend taking that approach in NL?
Do you see any advantages or drawbacks to that approach?

**That brings me to the end of my questions. Is there anything else that you'd like to add or share with me about HPV vaccination for male youth?**

**Thank you for taking time to participate in this interview.** We are actively looking for other nurses to share their opinions and recommendations with us. If you know of anyone who may be interested in this project, we invite you to share our contact information with him or her.