WHAT AFFECTS INFLUENZA VACCINATION RECOMMENDATIONS TO ADULT HISPANIC AND LATINO PATIENTS? AN ASSESSMENT OF HISPANIC AND LATINO PHYSICIANS' PERCEPTIONS

by

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(Under the Direction of Joel M. Lee and Matthew L. Smith)

ABSTRACT

Influenza disease is one of the leading causes of death in the United States for people 65 years old and older as well as individuals with medical conditions that place them at an increased risk for complications with influenza. In addition to causing substantial morbidity and mortality worldwide, the economic burden of disease associated with influenza in the United States is estimated to reach well over the $80 billion. Although annual influenza vaccination is the most effective protection against influenza disease, coverage in the United States is well below the objectives established under the Health People 2020. Further, national surveys revealed the existence of racial and ethnic disparities in adult immunization rates with Hispanic adults having significantly lower influenza vaccination coverage as compared to non-Hispanic white adults.

Although published studies have evaluated the barriers that keep physicians and patients from being vaccinated against influenza, no study has specifically evaluated the perceptions that Hispanic and Latino US practicing physicians assign to influenza vaccination. The first study examined how Hispanic and Latino physicians' perceptions of influenza vaccines affects their

recommendations to their Hispanic and Latino patients. The second study examined the impact that region of birth has on Hispanic and Latino physicians' perceptions of influenza vaccines.

The findings suggested that most Hispanic and Latino physicians, irrespective of birth region, were active promoters of influenza vaccination, and even those who less actively promoted it, recognized the value of influenza vaccination for their patients. Access to vaccine supply and cost as well as concern that first generation Hispanic and Latino patients may not follow physician's instructions because of cultural beliefs, and perception that patients do not initiate communication regarding influenza vaccination emerged as themes that are potentially associated with differences in influenza vaccine recommendations among Hispanic and Latino physicians to their clientele. The findings demonstrate that the development of culturally distinct patient care practices based on physician's assessment of their patient's acculturation level, independent of the physician's vaccine availability, could address and increase influenza vaccination rates among Hispanic and Latino adults in the United States.

INDEX WORDS: Influenza, Influenza Vaccination, Hispanic and Latino Physicians, Vaccination Perceptions, Health Belief Model, Public Health Messages

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DEDICATION

I dedicate this dissertation to my family and loved ones. To my parents, Virginio Veguilla and Elba Veguilla, for always loving me unconditionally and for instilling in me the value and importance of hard work. To my sister, Maureen D. Veguilla, for always serving as a role model, for always being there, for helping me and for encouraging me to pursue my dreams and goals no matter the challenges I have to face. To my former partner, Darin Cline, for unselfishly providing the patience, support, and space I needed to achieve this goal. To my partner, Michael Chandler, for bringing peace, hope, and support at a time of stress and turmoil. And finally to my sister-in-law, Sylvia Irrizary, for loving me like a brother and for taking care of those that are so dear and important to me. My success in this and all of the projects I undertake are due to your unwavering love, guidance, and support. I love you all!

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TABLE OF CONTENTS

Page

LIST OF TABLES

Page

LIST OF FIGURES

Page

CHAPTER 1

OVERVIEW

1.0 Introduction

This chapter reviews the epidemiology of influenza disease, one of the leading causes of death in the United States and examines one of the most effective tools for the prevention on influenza and its related complications – influenza vaccines. Additionally, the chapter includes a discussion of the purpose of the study and research design.

1.1 Influenza

Influenza is a highly contagious acute respiratory disease caused by influenza viruses. Influenza consistently ranked among the top ten leading causes of death in the United States between 1999 and 2014 (Centers for Disease Control and Prevention [CDC], 2015a). Influenza is generally transmitted from one person to another when virus droplets are secreted in the cough or sneeze of an infected individual, and settle on the mucosal surface of the upper respiratory tract of a susceptible individual (CDC, 2008). Influenza viruses can cause a wide range of illnesses ranging from asymptomatic infections to a relatively mild fever and cough to body aches, pneumonia, and other complications, including death. The average incubation period for influenza is approximately two days, and can typically range from one to four days. Both adults and children are capable of shedding influenza viruses prior to development of symptoms, and can continue to shed viruses for ten or more days after illness onset (CDC, 2008; Lau et al., 2010). Although in most cases influenza disease is self-limiting (i.e. recovery in two to seven days), it has the ability to cause substantial morbidity and mortality. Every year in the United States, epidemics of influenza

typically occur during the fall or winter months (although the season usually ends by late April or May) resulting in an average of five to 20 percent of the population getting infected with influenza. These infections result in more than 200,000 hospitalizations annually and influenza-associated deaths ranging from approximately 3,000 to about 49,000 deaths (Thompson et al., 2003; Thompson et al., 2004; Thompson et al., 2010). Estimates of the direct medical costs associated with influenza have been reported to be an average of $10.4 billion per year. For the total economic burden of annual influenza epidemics in the United States, the cost is estimated to be $87.1 billion (Molinari et al., 2007). Although influenza viruses can cause disease among all age groups, the rates of infection are often highest among children (Clark & Lynch, 2011). Additionally, rates of serious illness and death are often highest among the elderly (persons greater than or equal to 65 years) and individuals of any age with certain health conditions such as asthma, pregnancy or immunosuppression, which place them at an increased risk for complications with influenza (Pleschka, 2013).

Although differences in the virus protein makeup allow influenza viruses to be classified as types A, B, or C, only influenza A and B strains have caused epidemic human disease (CDC, 2014a). Further, unlike types B and C, influenza A viruses are able to infect a variety of animals including mammals, birds and animals who are able to serve as the virus' natural reservoir (Webster, Bean, Gorman, Chambers & Kawaoka, 1992). Although humans have been exposed to contemporary influenza A (H1N1), influenza A (H3N2) and influenza B viruses since 1977 (CDC, 2008), these seasonal viruses have the ability to gradually evolve through point mutations in the protein makeup, consequently resulting in antigenic changes. These changes partially allow the virus to escape the host immunity because human antibodies (developed either through passive or active immunity) are no longer able to identify the formation of the new virus protein. A second

defensive response against the human immune system that influenza viruses employ is antigenic shift. Although not frequent, this process occurs when a whole new gene segment or segments are introduced through reassortment, resulting in the emergence of a novel (generally A) type variant to which there is little population immunity (CDC, 2014b; Taubenberger & Morens, 2008). These novel proteins pose a bigger threat to human immunity and can lead to attack rates that result in a pandemic.

In the last 100 years, there have been four instances where novel influenza viruses originating from animal reservoirs emerged causing substantial morbidity and mortality worldwide. The H1N1 pandemic of 1918 killed more than 50 million people worldwide while the H2N2 and H3N2 pandemics of 1957 and 1968 caused an estimated 1.5 million and 1.0 million deaths, respectively. In 2009, a new reassortant virus, of the same subtype that was co-circulating (H1N1), resulted in over 18,000 deaths worldwide (Horimoto & Kawaoka, 2005; Monto & Webster, 2013). Since various animals (in particular waterfowl) provide natural reservoirs for influenza viruses, it is highly unlikely that the virus could ever become eradicated (Palese & Shaw, 2007; Webster, 1999; Wilschut & McElhaney, 2005; Wright, Naumann & Kawaoka, 2007).

Because of the continuous circulation of influenza viruses, and the potential for pandemics as well as epidemics of influenza disease (Kasowski, Garten & Bridges, 2011), many approaches to reduce the risk of influenza illness in individuals as well as increase the population immunity have been developed. Important infection control measures for influenza include: rapid administration of antiviral medications for treatment and prophylaxis, social distancing (including restriction of ill visitors and healthcare workers or simply staying at home when sick), hand hygiene, surgical mask use, respirators, cough etiquette, and annual influenza vaccination for all eligible individuals (CDC, 2015b; Ferguson et al., 2006; Bridges, Peasah & Meltzer, 2013). Of the

listed influenza infection control methods, annual influenza vaccination is considered to be the most effective tool for the prevention and control of influenza (CDC, 2008).

1.2 Influenza Vaccination

Annual influenza vaccinations are the most effective and relied upon means to prevent and reduce the risk of influenza illness and its complications (CDC, 2008). The vaccine's effectiveness has been demonstrated across multiple populations including young children, healthy adults, healthcare workers (HCWs), pregnant women, elderly, and nursing home residents (Fiore, Bridges, Katz & Cox, 2013; Manzoli, Ioannidis, Flacco, De Vito & Villari, 2012). While influenza vaccines' effectiveness can be highly variable and sometimes low, recent studies concluded that the vaccine helps reduce the risk of influenza illness in about 50 to 60% of the overall population during the seasons when circulating influenza viruses match the influenza vaccine strains (CDC, 2016a). In addition to reducing the likelihood of influenza infections in vaccinated individuals, high rates of influenza vaccination coverage may provide some herd or community immunity. Research studies, for example, have demonstrated the benefits of vaccination of school children in the prevention of influenza disease among adult community members that were unvaccinated. In 1968, a study conducted in two Michigan communities (one with approximately 85% of schoolchildren vaccinated and a second one in which children remained unvaccinated) resulted in the reduction in illness among unvaccinated adults in the community with vaccinated children (Monto, Davenport, Napier & Francis, 1970). In 2009, a study found a moderately lower risk of absenteeism among teachers in schools with high influenza vaccination rates among children (Graitcer et al., 2012). Influenza vaccination have also been proven to be a cost-effective strategy for the control of influenza infections. In 2001, a cost-benefit study showed that vaccinating

healthy working adults against influenza saved approximately $13.66 per person, with vaccinations generating a net savings 95% of the time (Nichol, 2001).

Inactivated influenza vaccines were first tested in clinical trials in the United States in 1943 and eventually licensed in the United States in 1945 (Fukuda, Levandowski, Bridges & Cox, 2004). Since then, both inactivated and intranasally administer live attenuated vaccines have been developed and licensed for human use worldwide. Each year, experts from the Centers for Disease Control and Prevention (CDC) and the Food and Drug Administration (FDA) convene to decide on the composition of the vaccine for the upcoming influenza season. Typically, the composition of the seasonal influenza vaccine changes year to year to reflect the ongoing evolution of the influenza viruses. Once a decision is made, the vaccine manufacturers begin the process of growing the viruses for use in the vaccine. These manufacturers then sell the influenza vaccines to thousands of purchasers, including physician's offices, public health agencies, community vaccinators, pharmacies, and medical supply distributors. The production and distribution of influenza vaccines can take up to six to eight months (Fukuda et al., 2004). The influenza vaccine options for the 2015-2016 season included the trivalent influenza vaccine (TIV) (standard-dose trivalent shot, high-dose trivalent shot, trivalent shot containing virus grown in cell culture, and recombinant trivalent shot that is egg-free) as well as quadrivalent influenza vaccine (intradermal quadrivalent shot, and quadrivalent nasal spray vaccine). The trivalent influenza vaccines contain the three prevalent virus variants (H1N1, H3N2, and B) that are most likely to cause outbreaks in the upcoming season while the quadrivalent vaccines include an additional B virus from the B virus lineage not already included in the TIV composition (CDC, 2016b).

Since the mid 1980's, the CDC Advisory Committee on Immunization Practices (ACIP) has made recommendations regarding annual influenza vaccination for various population groups.

These have included HCWs, persons with chronic medical conditions that make them more likely to have complications from influenza, women who will be or are pregnant during the influenza season, and most recently, all individuals age six months or older, unless medically contraindicated (Fiore et al., 2010; CDC, 1984; CDC, 2012). Further, CDC recommends that practicing healthcare providers offer influenza immunizations to their patient populations as soon as the vaccines become available (by October, if possible) (CDC, 2014c), as this allows for adequate influenza immunity to develop before the influenza season activity begins. Despite these recommendations, influenza vaccination coverage falls well below the objectives for influenza vaccination established under the Healthy People 2020 (US Department of Health and Human Services [US Dept. HHS], 2014a), a health-promotion and disease-prevention program established by the US Dept. HHS, with 10-year national objectives with the goal of improving the health of all Americans (US Dept. HHS, 2014b). Furthermore, national surveys have shown the existence of racial and ethnic disparities in adult immunization rates with non-Hispanic Blacks and Hispanics having significantly lower influenza vaccination coverage as compared to other racial and ethnic groups in the United States (Lu, Singleton, Euler, Williams & Bridges, 2013a; Lu et al., 2013b; Merrill & Beard, 2009; CDC, 2015h).

1.3 Purpose of the Research

Despite the existence of literature describing influenza vaccination uptake in the general as well as at risk-populations, vaccination trends between racial or ethnic groups, and physician as well as patient barriers attributed to the lagging of vaccine coverage for various populations (Lu, 2015; Lu et al., 2013a; Lu et al., 2013b; Nowak, Sheedy, Bursey, Smith & Basket, 2015) relatively little is known about the influenza vaccine perceptions of Hispanic and Latino physicians practicing in the United States. Further, it is also unclear how these perceptions affect the strength of these physicians' influenza

vaccine recommendations to their Hispanic and Latino patients. The study undertaken here sought to develop an understanding of the meanings and perceptions (including thoughts, feelings, knowledge, and attitudes) that Hispanic and Latino physicians assign to influenza vaccines. This understanding may assist public health communicators in the design of health communications messages that could be disseminated in upcoming vaccination campaigns to help increase vaccine coverage in the adult Hispanic population in the United States. Hence, the research aimed to address the following questions: How do Hispanic and Latino physicians perceive influenza vaccines and recommendations? What beliefs about influenza vaccination exist that further or prevent Hispanic and Latino physicians from recommending vaccination to their adult Hispanic patients? Are Hispanic and Latino physicians' beliefs about influenza vaccination homogeneous throughout the United States? What facilitates influenza vaccination promotion by Hispanic and Latino physicians to their adult Hispanic clientele?

1.4 Research Design

Manuscript One

This paper will examine how Hispanic and Latino physicians' perceptions of influenza vaccines affects their recommendations to their Hispanic and Latino patients. The expectation is that lack of understanding of influenza disease susceptibility and severity as well as influenza vaccine benefits should result in decreased or weaker recommendation of influenza vaccinations. Conversely, understanding of influenza disease susceptibility and severity as well as influenza vaccine benefits should result in an increase or stronger recommendation of influenza vaccination. The research plan involved surveying Hispanic and Latino physicians throughout the United States that cater mostly to Hispanic and Latino patients, to answer the research questions. The outcome of this research may be used to develop health communication messages to educate Hispanic and Latino physicians about influenza vaccines

and thus strengthen their recommendation of these vaccines to their Hispanic and Latino patients. These communication messages may be culturally centered based on the understanding of the meanings and perceptions that this target population (Hispanic and Latino physicians) assigns to influenza vaccines.

Manuscript Two

This paper will examine perceptions of influenza and influenza vaccines that Hispanic and Latino physicians practicing in the United States have based on their region of origin. The expectation is that physicians from Central and South America will show dissimilar perceptions than physicians from the United States and the Caribbean, due to their cultural differences. The research plan is to survey Hispanic and Latino physicians across four densely Hispanic populated states (i.e., California, Florida, New York, and Texas) to answer the research questions. The outcome of this research may be used to develop further formative research and identify implications of sub-cultural differences in the Hispanic and Latino populations for the design of health communication messages surrounding influenza vaccinations.

Conceptual Framework

Understanding Hispanic and Latino physicians' attitudes toward influenza vaccination requires the use of a theory that can help identify factors that motivate practitioners to adopt evidence-based practices or national guidelines. The Health Belief Model was initially developed to better understand the basis for the use of preventative health services, in particular public health screening programs. Since its creation in the 1950's, public health researchers have used this model to guide the development of health interventions with the aim of changing human health behaviors (Janz, Champion & Stretcher, 2002). Although the model was originally designed to predict acutely and chronically ill patients' behavioral response to treatment, in more recent years it has also been used to identify factors that

motivate physicians to adopt evidence-based practices or national guidelines (Brinsley, Sinkowitz-Cochran, Cardo & CDC, 2005). According to this model, it is believed that individuals will take action to prevent, control, or treat health-related problems if they 1) perceive themselves as susceptible to the condition; 2) believe the health-related problem will have potentially serious consequences; 3) believe a course of action exists that will benefit them in terms of reducing susceptibility and severity of condition; and 4) believe that few barriers exist to taking that action (Janz et al., 2002). In addition to these four perceptions, the Health Belief Model suggests that the behavior is also influenced by people, events or things that serve as cues to action that move people to change their behavior as well as the individual's beliefs in their ability to take that action (i.e., stop smoking, exercise more, get vaccinated, etc.) (Hayden, 2014).

Although the original design of the HBM model intended to measure and explain how individuals respond to information and recommendations, in this study, the model will help examine the background characteristics of physicians regarding their recommendations to their patients. Specifically, the model will be used to develop questions that will address the personal perceptions of these physicians regarding their influenza vaccine recommendations, including how these physicians assess their patients' susceptibility to disease as well as how severe they believe the disease outcome would be if the patient were unvaccinated. Finally, the model will also be used to assess the cues to action motivating physicians to recommend influenza vaccination to their clientele.

The Health Belief Model was used as the theoretical framework for the development of research questions in recent studies related to influenza vaccination among children, pregnant women, and healthcare workers (Chen et al., 2011; Gorman, Brewer, Wang & Chambers, 2012; Prematunge et al., 2012; Bond & Nolan, 2011). As it relates to healthcare workers, a study by Hoffman, Ferracin, Marsh,

& Dumas (2006) concluded that misperceptions regarding susceptibility to influenza disease (i.e., having good immune defenses to fight off influenza infection) as well as concerns about influenza vaccine safety and potential side effects (e.g., one can get influenza from the vaccine) were the major barriers to vaccine uptake among healthcare workers (Hoffman et al., 2006). Further, a second study by Hollmeyer & Hayden (2009) concluded that in addition to misconceptions about influenza vaccine's effectiveness and safety, a lack of awareness about healthcare workers' ability to serve as a source of transmission of influenza virus to patients as well as the lack of convenient access to vaccines were characteristics shared among non-vaccinated healthcare workers (Hollmeyer & Hayden, 2009). It is important to note that although these studies aided in the identification of key factors that influenced seasonal influenza vaccination among various populations including healthcare workers, the number of Hispanic respondents included in these studies was low, therefore a need exists to better identify and understand the potential determinants of vaccinating behavior among Hispanic providers. Specifically, determinants associated with Hispanic and Latino physicians' influenza vaccination recommendation to their adult Hispanic and Latino patients.

Although the Health Belief Model has of six major components: 1) perceived susceptibility; 2) perceived severity; 3) perceived benefits; 4) perceived barriers; 5) cues to action; 6) and self-efficacy, for the purposes of this study, only the first five will be measured. The first parameter, perceived susceptibility, focuses on an individual's perception of their risk. The greater the perception of risk, the greater the likelihood of engaging in behaviors to decrease said risk. The opposite is also applicable. When individuals do not believe they are at risk, the greater the chances that unhealthy behaviors will occur (Hayden, 2014). The second parameter, perceived severity, focuses on an individual's belief about the seriousness of a disease or outcome. Studies have shown that while the perception is often based on medical information or knowledge, it can also develop from the beliefs that a person has about

the difficulties that a disease would bring about to his/her life in general (i.e., lost wages due to illness) (Hayden, 2014). The third parameter, perceived benefits, focuses on an individual's opinion of how a change in behavior will decrease their chances of developing a disease. The greater the perception that an advocated behavior will decrease the chances of developing the disease, the greater the likelihood that the individual will adopt said behaviors (Hayden, 2014).

The fourth parameter, perceived barriers, focuses on an individual's evaluation of the obstacles that keep him or her from adopting a new behavior. These could range from difficulties associated with starting a new behavior to fear of not being able to do the behavior correctly to having to give up other things in order to do the behavior, among others. Some studies argue that of all the parameters, perceived barriers is the most significant in determining behavior change in an individual (Hayden, 2014; Janz & Becker, 1984). The fifth parameter, cues to action, focuses on the events, people or things that move an individual to change his or her behavior. Examples of these could include illness of a family member, media reports (Graham, 2002), media campaigns, and health warning labels among others (Hayden, 2014). The sixth parameter, self-efficacy, focuses on an individual's belief in their ability to do something (Hayden, 2014). This parameter, although potentially useful for understanding an individual's confidence in his or her ability to successfully get vaccinated against influenza, has not been shown to be as strong of a determinant as the other HBM parameters measuring influenza vaccination among adults (Chen et al., 2011; Gorman et al., 2012; Prematunge et al., 2012; Bond & Nolan, 2011; Chapman & Coups, 1999; Marshall & Robert, 2013). Further, although limited papers have included this parameter in studies evaluating influenza vaccinations (Jones et al., 2015), this parameter is not always included Health Belief Model studies (Carpenter, 2010). (See Table 1.1 for Health Belief Model theoretical information as described by the World Health Organization.)

Table 1.1 Health Belief Model Constructs, Definitions, and Sample Strategies*

Concept	Definition	Examples	Potential change strategies
Perceived susceptibility	Beliefs about the chances or likelihood of getting a condition	Individual perceptions of personal susceptibility to specific illnesses or accidents often vary widely from the realistic appraisal of their statistical probability. The nature and intensity of these perceptions may significantly affect willingness to take preventive action.	• Define what population(s) are at risk and their levels of risk • Tailor risk information based on an individual's characteristics or behavior • Help the individual develop an accurate perception of his or her own risk
Perceived severity	Beliefs about the seriousness of a condition and its consequences	People may not respond to suggestions that they obtain flu shots because they do not view influenza as a serious disease. The person must perceive the potential seriousness of the condition in terms of pain or discomfort, time lost from work, economic difficulties, etc.	• Specify the consequences of a condition and recommended action
Perceived benefits	Beliefs about the effectiveness of taking action to reduce risk or seriousness	Individuals generally must believe that the recommended health action will actually do some good if they are to comply. Some long-time cigarette smokers, for example, seem to believe that, "I've smoked for so many years that it's too late to quit. It couldn't help now anyway, so why bother?"	• Explain how, where, and when to take action and what the potential positive results will be
Perceived barriers	Beliefs about the material and psychological costs of taking action	If the change is perceived as difficult, unpleasant or inconvenient and outweighs the perceived benefits, it is less likely to occur.	• Offer reassurance, incentives, and assistance; corrects information
Cues to action	Factors that activate "readiness to change" - a trigger mechanism	A reminder note from a dentist that it is time for a check-up may be sufficient to prompt action.	• Provide "how to" information, promote awareness and employ reminder systems
Self-efficacy	Confidence in one's ability to take a recommended action	One's opinion of what one is capable of doing is based largely on experience with similar actions or circumstances encountered or observed in the past.	• Provide training and guidance in performing action • Use progressive goal setting • Give verbal reinforcement • Demonstrate desired behavior

** From World Health Organization (WHO, 2012)*

Due to its utility in explaining vaccination behavior, the Health Belief Model was used to provide the theoretical foundation for the development of the research tools. Figure 1 displays attitudes and perceptions of influenza vaccination from previous studies which focused on the knowledge, attitudes, and practices of physicians in the United States. This framework also makes use of research related to predictors of influenza vaccination among Hispanic populations. The measurement of the Health Belief Model parameters may provide guidance in the development of educational materials that could be disseminated in upcoming vaccination campaigns to help increase vaccine coverage in the adult Hispanic population in the United States. It is readily acknowledged that other factors as well as the interaction of factors not measured in the study, could confound the results by either enhancing or further predisposing a Hispanic and Latino physician from recommending influenza vaccines to their adult Hispanic and Latino patients. Nevertheless, this project will serve as a starting point to identify determinants of influenza vaccination as well as influenza vaccine recommendations, to better understand our population of interest.

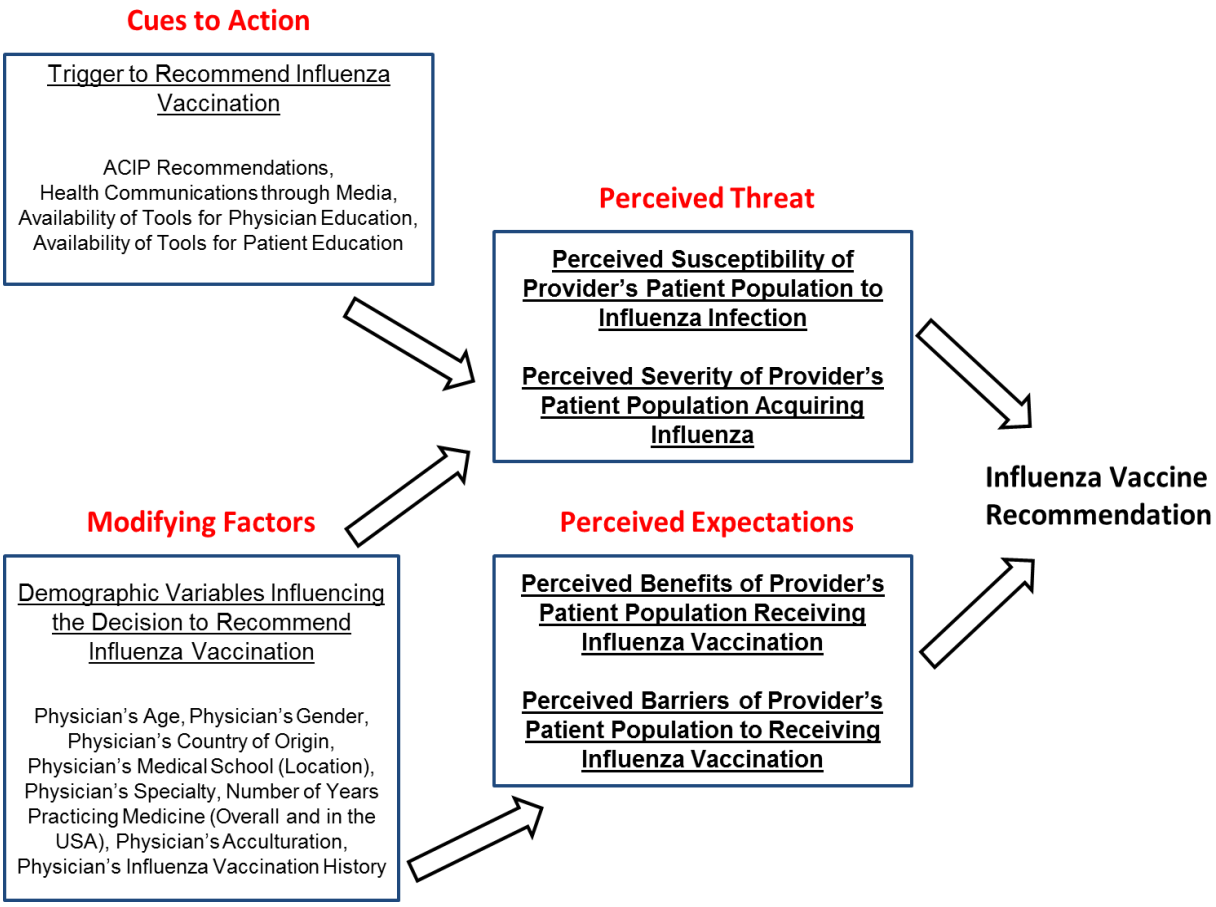

Figure 1.1 Application of the Health Belief Model to Physicians' Influenza Vaccine Recommendation to their Patients

1.5 Significance of the Proposed Study

To date, although research has shown that influenza vaccination remains the primary method of influenza prevention and control, national influenza vaccination coverage of adult Hispanics and Latinos in the United States remains sub-optimal (Lu et al., 2013a; Lu et al., 2013b; Merrill & Beard, 2009). For example, most recent influenza vaccination coverage estimate by race/ethnicity showed that in 2014-2015 influenza season, among adults 18 years and older, coverage for non-Hispanic whites (46.7%) was higher than coverage for Hispanics (35.0%) (CDC, 2015h). Further, although not specific to Hispanic culture, studies have identified the benefits of patient-physician

race/ethnicity concordance as it is believed that the optimal alignment may have positive effects during clinical encounters (Eamranond, Davis, Phillips, & Wee, 2011; Cooper-Patrick et al., 1999; Street & Haidet, 2011; Street, O'Malley, Cooper, & Haidet, 2008). Specifically, because of the race/ethnicity concordance, physicians are able to have a better understanding of factors impacting their patient's healthcare. Additionally, studies have found that patients reported a more positive consultation when the physician is of the same race or ethnicity (Cooper-Patrick et al., 1999; Street & Haidet, 2011; Street et al., 2008).

Data from the 1994 Commonwealth Fund Minority Health Survey revealed that Hispanics in the United States preferred to seek healthcare from Hispanics or physicians of their similar race or ethnicity (Laveist & Nuru-Jeter, 2002). Further, although many sub-groups within the Hispanic population are very reliant on traditional healing systems as a way to improve their health (Favazza-Titus, 2014), previous research suggests Hispanics are also highly responsive to individual and public recommendations from healthcare officials (Larson et al., 2009). Given the high likelihood that Hispanics and Latinos in the United States will choose a physician of similar race/ethnic background (Laveist & Nuru-Jeter, 2002) and the low coverage of influenza vaccination among this population (CDC, 2015c; Lu et al., 2013a; Lu et al., 2013b; Merrill & Beard, 2009), it is likely that Hispanic and Latino providers may be missing an opportunity to recommend influenza vaccination to their adult Hispanic and Latino patients.

Despite research (Prematunge et al., 2012; Hoffman et al., 2006; Hollmeyer & Hayden, 2009; Nowak et al., 2015) uncovering some of the determinants (i.e., misperceptions regarding: susceptibility to influenza disease, influenza vaccine safety and side effects) associated with a healthcare providers' rejection of influenza vaccination for themselves, little knowledge exists about Hispanic and Latino physicians' perceptions of influenza vaccination. The proposed study is intended to: 1)

address this gap in the empirical literature with respect to evaluating the meanings and perceptions (including thoughts, feelings, knowledge, and attitudes) that Hispanic and Latino physicians assign to influenza vaccines, and 2) obtain insights that may assist in the design of health communication messages targeting adult Hispanic and Latino population in the United States.

1.6 Chapter Summary

Influenza disease is one of the leading causes of death in the United States for people 65 years old and older as well as individuals with medical conditions that place them at an increased risk for complications with influenza. In addition to causing substantial morbidity and mortality worldwide, the economic burden of disease associated with influenza in the United States is estimated to reach well over the $80 billion. Although annual influenza vaccination is the most effective protection against influenza disease, and the Advisory Committee on Immunization Practices of the Centers for Disease Control and Prevention recommends all individuals age six months or older, unless medically contraindicated, receive an annual influenza vaccination, coverage in the United States is well below the objectives established under the Health People 2020. Further, national surveys have revealed the existence of racial and ethnic disparities in adult immunization rates with Hispanic adults having significantly lower influenza vaccination coverage as compared to non-Hispanic white adults in the United States.

Although published studies have evaluated the barriers that keep physicians and patients from being vaccinated against influenza, no study has specifically evaluated the perceptions that Hispanic and Latino US practicing physicians assign to influenza vaccination and how these perceptions, in turn, affect their influenza vaccine recommendations to their Hispanic and Latino patients. The proposed study seeks learn how Hispanic and Latino physicians perceive influenza

vaccines for their adult Hispanic and Latino patients and whether or not their beliefs and perceptions are similar or dissimilar to those of other non-Hispanic physicians.

CHAPTER 2

HISPANIC AND LATINO PHYSICIANS' AND PATIENTS' ATTITUDES TOWARD INFLUENZA VACCINATION – LITERATURE REVIEW

2.0 Overview

This chapter will review information about Hispanic and Latinos living in the United States. The chapter will also include a discussion of US practicing physicians and Hispanic and Latino patients' attitudes toward influenza vaccination. Lastly, the chapter will review the generation of culturally centered public health messages as well as survey-study limitations with physicians as the target population.

2.1 Hispanics and Latinos in the United States

The 2010 United States Census Bureau defined Hispanics and Latinos as people of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race. Further, the 2010 Census estimated that about 50.5 million Hispanics live in the United States; this represents approximately 16% of the population in the country. Among the sub-groups, Mexicans accounted for approximately 63% (~31.8 million) of the Hispanic population, followed by Central / South Americans (~6.8 million; 13.4%), Puerto Ricans (~4.6 million; 9.2%), Cubans (~1.8 million; 3.5%), and Dominicans (~1.4 million; 2.8%) (US Census Bureau, 2011). Although arguably all sub-groups share a similar Hispanic culture, they demonstrate affinities for different regions in the United States, thus creating their own areas of concentration nationwide. Most Mexicans live in the West (52%), 77% of Cubans reside in the South, and 53% of Puerto Ricans live in the Northeast (US Census Bureau, 2011).

Much like their affinity for different regions, studies have identified discrepancies within Hispanic sub-groups with regards to health patterns (e.g., number of medical conditions, number of functional impairment, and health risk factors such as substance abuse, activity level, and weight) (Zsembik & Fennel, 2005). Vargas-Bustamante, Chen, Rodriguez, Rizzo, & Ortega (2010) also concluded that the use of preventive health services such as influenza vaccination varied among various Hispanic sub-groups. Specifically, Hispanics of Mexican and Central / South American background use these services less frequently than other Hispanic sub-groups (Vargas-Bustamante et al, 2010). Despite these differences within the Hispanic sub-groups, national influenza vaccine coverage estimates, which fail to stratify Hispanics based on their place of origin, show that Hispanics ≥ 18 years in the United States, are less likely to receive the influenza vaccine than non-Hispanic whites (CDC, 2015c; Lu et al., 2013a; Lu et al., 2013b; Merrill & Beard, 2009) (see Table 2.1 for influenza vaccination coverage estimates). Furthermore, these influenza vaccination rates fall well below the Healthy People 2020 influenza vaccination targets (70% for noninstitutionalized adults aged 18-64 years and 90% for noninstitutionalized high risk adults aged 18 to 64 years) (US Dept. HHS, 2016).

Table 2.1 Influenza Vaccination Coverage Estimates by Race/Ethnicity Among Adults ≥ 18 Years – United States, 2007-08 Through 2014-15*

Racial/Ethnic Groups	Percent Influenza Vaccination Estimates by Influenza Seasons							
	2007-2008	2008-2009	2009-2010±	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
≥ 18 years, non-Hispanic white only	40.8	43.5	44.1	43.2	41.9	44.6	45.4	46.7
≥ 18 years, Hispanic	26.6	29.4	29.3	32.3	29.4	33.8	33.1	35.0

* *Data are from the Behavioral Risk Factor Surveillance System, National 2009 H1N1 Flu Survey, and National Immunization Survey.*

± *Estimate for the seasonal influenza vaccination (trivalent)*

Hispanics and African Americans, in comparison to non-Hispanic whites, are more prone to chronic diseases such as diabetes, cardiovascular diseases, and HIV/AIDS (Mozaffarian et al., 2015; CDC, 2015d). These comorbidities, in turn, place these groups at a higher risk for influenza disease complications (CDC, 2015e). Notably, during the 2009 H1N1 influenza pandemic, Hispanics along with non-Hispanic Blacks and Asian/Pacific Islanders had increased risks for severe outcomes following pandemic H1N1 infections, as these ethnic groups showed higher hospitalizations rates associated with pandemic H1N1 diseases (Ritger et al., 2009).

Although many sub-groups within the Hispanic population are very reliant on traditional healing systems as a way to improve their health (Favazza-Titus, 2014), previous research suggests that this community is also highly responsive to individual and public health recommendations from healthcare providers (Larson et al., 2009). Furthermore, physician endorsement of influenza vaccination has been shown to be a strong predictor of improved vaccination coverage among Hispanic patients (Vlahov, Bond, Jones, & Ompad, 2012; Frew et al., 2012). Although influenza vaccines are nowadays available to the general public in settings other than physicians' clinics (e.g., drug stores, workplaces, etc.), a 2011 study concluded that among Hispanics aged 18-64 years, influenza vaccination administrations were approximately two times higher in a medical setting (i.e., doctor's office, health center, or hospital) than in a non-medical setting (i.e., community center, workplace, drugstore, or schools); thus highlighting the important role that physicians play with regards to influenza vaccination coverage in this ethnic population (Kennedy et al., 2011).

2.2 Hispanic and Latino Physicians in the United States

Similarly to trends shown in the 2010 United States Census data about the general Hispanic and Latino population, recent figures from the Association of American Medical Colleges concluded

that California, Florida, New York and Texas were the four states with the highest distribution of Hispanic and Latino physicians practicing in the United States (US Census Bureau, 2011; Association of American Medical Colleges [AAMC], 2010). Further, this publication also reported that between 1978 and 2008, 25% of all medical school graduates practicing medicine in the United States belonged to a minority ethnic group; with Hispanics and Latinos comprising only 5.5% (~25,717 physicians) of this proportion (AAMC, 2010). With regards to the Hispanic and Latino sub-group composition of the medical school graduates practicing medicine in the United States, Mexican-Americans and Puerto Ricans were the largest sub-groups with 35.1% (~9,013 physicians) and 34.0% (~8,743 physicians), respectively (AAMC, 2010). In 2008, the majority of these physicians were age 35 to 44 (37.3%), followed by 45-54 (33.7%), 34 and younger (21.4%), and 55 and older (7.6%). Furthermore, 50% of Hispanic of Latino physicians age 34 and younger were women. However, across the remaining age categories, the majority of the physicians were males (ages: 35 to 44, 58.4%; 45-54, 66.2%; and 55 and older, 71.9%) (AAMC, 2010). In 2010, a study estimated that in the United States, there were 105 Hispanic and Latino practicing physicians per 100,000 Hispanic and Latino population (Sánchez, Nevarez, Schink, & Hayes-Bautista, 2015).

Although not specific to the Hispanic culture, multiple studies have uncovered the benefits of patient-physician race/ethnicity concordance (Cooper-Patrick et al., 1999; Laveist & Nuru-Jeter, 2002; Cooper et al., 2003; Laveist, Nuru-Jeter, & Jones, 2003). Specifically, it is believed that the optimal alignment may have positive effects during clinical encounters as physicians are able to have a better understanding of factors impacting their patient's healthcare. These factors could include patient's medication adherence, utilization of services, and lifestyle decisions, among others. Further, the studies have also concluded that patients have reported a more positive consultation when the physician is of the same race or ethnicity (Cooper-Patrick et al., 1999; Street & Haidet, 2011) because the language

concordance reduces the likelihood for confusion and frustration experienced by the patient when receiving their health-services. Research has also shown that physicians from racial and ethnic minorities are themselves more likely to treat racial and ethnic minority patients than physicians from non-minority groups. Specifically, Hispanic physicians in California were found to practice in areas where the percentage of Hispanic residents was twice as high as in areas where other physicians practiced (Komaromy et al., 1996). Furthermore, a recent publication concluded that with the exception of Asian Americans, most respondents/patients in the United States, including members of the Hispanic population, were more likely to have a non-Hispanic white physician. Nevertheless, for Hispanic respondents, the second most common physician's race/ethnicity that they sought healthcare from were Hispanics or physicians of similar race or ethnicity (Laveist & Nuru-Jeter, 2002).

Healthcare workers (HCWs), including physicians, are at a greater risk of exposure to influenza infections as they could acquire the disease from exposure to the general community (e.g., infected household contacts, public settings, etc.) as well as their workplace (e.g., infected patients attending clinics, hospitals, etc.). The Advisory Committee on Immunization Practices (ACIP) recommends that all US healthcare workers get vaccinated annually against influenza as it not only helps reduce the influenza-related morbidity and mortality among the vaccine recipients (i.e., HCWs), it also helps prevent nosocomial infections and associated morbidity and mortality among their patients (CDC, 2015f). Despite these recommendations, the influenza vaccine uptake among HCWs aged ≥ 18 years remains substantially below the objectives for influenza vaccination established under the Healthy People 2020. The Healthy People 2020 Objective for HCWs is 90% and the influenza vaccine uptake for HCWs for the 2014 to 2015 season was 77% (US Dept. HHS, 2014a; Black et al., 2015). Further, recent studies have also uncovered the existence of racial and

ethnic disparities in vaccine uptake among HCWs, with Blacks and Hispanics having lower vaccination rates than non-Hispanic whites. Specifically, an analysis of the National Health Interview Survey data for the 2010 to 2011 influenza season concluded that while non-Hispanic White HCWs had a vaccination uptake of approximately 59%, the vaccination uptake for Blacks and Hispanics was 44% and 45%, respectively (Lu et al., 2013a). Despite these differences, little is known about the perceptions of influenza vaccination that could explain the racial/ethnic disparities in influenza vaccine uptake among HCWs.

2.3 Hispanics and Latinos and their perceptions about influenza

Although the target population for the proposed study are Hispanic and Latino physicians practicing in the United States, no previous literature exists that focuses on the positive or negative perceptions of influenza vaccination among this population and how these perceptions, in turn affect the conviction of their influenza vaccine recommendation to their Hispanic and Latino patients. Instead, a body of knowledge exists focusing on the influenza vaccine perceptions of either Hispanic and Latino patients or HCWs. Interestingly, although not specific to Hispanics or Latinos, a recent study concluded that despite the level of education, HCWs knowledge, attitudes and beliefs (KABs) regarding seasonal influenza vaccination were often similar to those of the general public (Wheelock, Thomson, & Sevdalis, 2013).

Most recently, the Center for Health and Risk Communication at the University of Georgia, along with the Health Communication Science Office in NCIRD at CDC, published a qualitative meta-analysis of 29 unpublished CDC-sponsored influenza vaccination related studies conducted between 2000 and 2013. These studies focused on KABs associated with influenza and influenza vaccination and involved focus groups, in-depth interviews, messaging testing, and surveys of the general public (including Hispanics), parents, and HCWs (Nowak, Sheedy, Bursey, Smith, & Basket, 2015). See Table

2.2 for major recurring themes identified through this meta-analysis that were associated with influenza and influenza vaccines as they would apply to the Health Belief Model, that were gathered from the general public as well as healthcare professionals. Nowak et al, (2015) highlighted strong predictors as well as inhibitors of influenza vaccination, which are in agreement with previous published literature (Hoffman et al., 2006; Prematunge et al., 2012; Hollmeyer & Hayden, 2009; Riphagen-Dalhuisen, Gefenaite, & Hak, 2012; Vasilevska, Ku, & Fisman, 2014). Of note, the study concluded that misperceptions regarding susceptibility to influenza disease (i.e., believe that "they were not likely to experience a severe course of influenza illness and/or that influenza was a 'manageable' disease) as well as concerns about influenza vaccine effectiveness (e.g., believe that "influenza vaccinations were often not effective – and/or that vaccination did not provide much or good protection from influenza"), were the major barriers to vaccine uptake among healthcare workers (Nowak et al., 2015).

Table 2.2 Recurring Themes Associated With Influenza and Influenza Vaccination – Meta-Analysis (Nowak et al., 2015)

Recurring Theme	General Public	Healthcare Workers*
Perceived susceptibility		
Perception that influenza did not pose a significant health threat	√	√
Perception that individual was not susceptible to contracting influenza	√	√
Perceived severity		
Perception that influenza was a manageable disease (i.e. not resulting in need for medical care)	√	√
Increase awareness resulting from having chronic health conditions	√	√
Perceived benefits		
Perception that vaccine was able to protect from significant health threat or illness	√	√
Perception that vaccination would lower the chances of infecting loved ones, especially those at risk	√	
Perceived barriers		
Basic/limited influenza-related knowledge	√	√
Limited knowledge about influenza vaccines	√	√
Beliefs strongly shaped by personal experience with influenza	√	√
Perception that influenza vaccination was only required for those at risk (i.e. ≥ 50 years or weakened immune system)	√	√
Convenience and easy access (including payment) to influenza vaccines	√	√
Perception that influenza vaccine was not effective or provided much protection from influenza	√	√
Perception that influenza vaccination is harmful and could leave individual susceptible to disease	√	√
Perception that other infection control methods were more effective than influenza vaccination	√	√
Limited time for physicians to discuss influenza vaccines with their patients	√	√
Cues to action		
Healthcare provider recommended influenza vaccination	√	√
Convenience and easy access (including payment) to influenza vaccines	√	√
Increased awareness through active promotion and educational materials	√	√

** Healthcare workers were not solely physicians but other Healthcare professionals including registered nurses and physician's assistants.*

Although many of the themes highlighted in Nowak et al. (2015) were consistent with previous literature, Hoffmann et al., (2006) also concluded that up to 26% of HCWs were too fearful of injections, and thus refrained from influenza vaccinations. Interestingly, this study also presented themes or ideas that served as motivating factors for HCWs to get vaccinated against influenza. These themes included: 1) desire to protect oneself; 2) desire to protect patients; and 3) following the example set by peers (Hoffmann et al., 2006). Similarly, other studies have concluded that an authority effect or mandatory vaccination policy has served as a motivating factor for HCWs to get vaccinated against influenza. At Virginia Mason Medical Center in Seattle, Washington, the implementation of a mandatory influenza vaccination program resulted in more than 98% of the HCWs getting vaccinated (Rakita, Hagar, Crome, & Lammert, 2010). A similar rate (98.4%) was attained at BJC HealthCare in St. Louis, Missouri, when influenza vaccination was established as a condition of employment for all of the employees (Babcock, Gemeinhart, Jones, Dunagan, & Woeltje, 2010). Despite these high vaccination rates, however, these mandatory policies are often viewed unfavorably by some vaccinated and unvaccinated individuals (Hakim, Gaur, & McCullers, 2011). Lastly, a meta-analysis in 2012 concluded that "being willing to prevent influenza transmission, believing that influenza is highly contagious, believing that influenza prevention is important, and having a family that is usually vaccinated" were also strong predictors of influenza vaccination among healthcare workers (Riphagen-Dalhuisen et al., 2012).

It is important to highlight that although many of these studies identify healthcare professionals that deal with patients as HCWs, the professions included in this category ranged from physicians and nurses, to physiotherapists, dieticians, and laboratory personnel. Furthermore, as noted by Nowak et al. (2015) and others, influenza vaccination perceptions within the HCWs community often vary by the profession. In their study, while most physicians believed influenza vaccination to be highly effective,

other HCWs, in particular nurses, believed that vaccines were often not effective and/or that influenza vaccination did not provide much protection (Nowak et al., 2015). These influenza vaccination perceptions, if not associated with culture or race/ethnicity, could further compound the effect that race/ethnicity already has on the overall influenza vaccination rate among Hispanic and Latino HCWs practicing in the United States.

In addition to the themes noted in Nowak et al., 2015, other findings regarding Hispanics and Latinos' perceptions about influenza vaccination in the published literature include: 1) distrust of the government and/or medical system as a whole due to conspiracy theories (e.g., government trying to make money out of medications they make available to the public) (Cassady et al., 2012); 2) lack of acculturation to the public health system of the United States and/or lack of English fluency (Fiscella, Franks, Doescher, & Saver, 2002); 3) lack of education and community support (Mark & Paramore, 1996); and 4) cultural beliefs such as the dependency on natural products and holistic medicine (e.g., use of curanderos for spiritual healing) (Favazza-Titus, 2014). Further, although a recent study concluded that racial differences in healthcare provider recommendation of influenza vaccination could not explain racial disparities in flu vaccination rates (e.g., non-Hispanic Blacks in the United States were more likely to receive recommendations for influenza vaccination than non-Hispanic whites) (Villacorta & Sood, 2015). Published studies have also suggested that the Hispanic community is highly responsive to individual and public recommendations from healthcare officials (Larson, et al., 2009). As such, effectively addressing misinformation regarding influenza vaccination could be accomplished through the provision of culturally appropriate, understandable messages delivered by healthcare workers.

2.4 Development of Influenza Vaccination Health Communication Messages

Cultural competence is an important factor that should be accounted for and evaluated before the development of any health communication message. A 'one size fits all' strategy should never be

adopted for the development of health communication messages as the development of interventions to address health concerns, such as vaccination, should be tailored to racial/ethnic groups for sensitivity as well as delivery effectiveness (Kreuter & McClure, 2004; Cassady, et al., 2012). By better understanding cultural factors related to the target population, public health communication programs are better able to customize and design their messages to better meet the needs of the population of interest. Pasick, D'Onofrio, & Otero-Sabogal (1996) argues that health-related priorities, decisions, and behaviors may be either directly or indirectly tied to the cultural elements of a specific group, and these, in turn, could influence the acceptance or rejection of health communication programs and messages. Once a specific audience is defined (e.g., for this study, Hispanic and Latino physicians practicing medicine in the United States, whose clientele consists mostly of fellow Hispanics and Latinos), it is the researcher's responsibility to understand the cultural elements that surround this population.

McGuire (1989) developed a communication framework which identified various input variables that can influence communication effectiveness. These variables include: communication source (e.g., focuses on the target audience's perceptions regarding the credibility, experience, and trustworthiness of the source delivering the communication message), message approach (e.g., message formats such as statistics or narratives, message balance addressing opposing arguments or viewpoints, etc.), channel factors (e.g., mass media through which the message is transmitted to the target audience, message delivery style – visual or not, etc.), recipient factors (e.g., audience mood at the time the message is received), and intent (e.g., the beliefs, attitudes, and/or behaviors that the planner desires to change in the target population). A good understanding of the cultural elements that surround the population of interest arguably could allow a research to address four of the five variables outlined above; recipient factors is the only variable category that would not be so easily modifiable by communication message developers. Further, the inclusion of as many of these parameters into a

research study would allow for a greater delivery and effectiveness of any given public health campaign.

Current examples of influenza-related health communication activities developed by public health agencies, which account for cultural elements of the Hispanic community, include CDC's National Influenza Vaccination Week as well as the Pan American Health Organization's (PAHO) Vaccination Week in the Americas (CDC, 2015g; PAHO, 2015). Both of these agencies developed websites in Spanish for Hispanic and Latino consumers (both patients and HCWs alike), providing resource materials that include information about the influenza virus, vaccination, toolkits, statistics, podcasts with Hispanic and Latino physicians that work at the agencies, narratives, and other influenza related information.

Because the conceptual framework guiding this study is the Health Belief Model (HBM), not all the communication framework input variables outlined by McGuire (1989) will be included in this research. However, the inclusion of the cues to action construct (from the HBM) will allow for a better understanding of the information sources that trigger action in the population of interest. The inclusion of cues to action construct would further outline the types of communication sources that are most trusted by the Hispanic and Latino physicians in the study as well as the types of channel factors (i.e., message delivery style) that are most relevant to them and their Hispanic and Latino patients. The identification of these communication sources may allow for the development and dissemination of evidence-based strategies and messages that will be tailored to specific target populations with the goal of addressing influenza vaccination misinformation and subsequently, increase the influenza vaccination uptake in the Hispanic and Latino community.

2.5 Influenza Vaccination Campaigns in the Americas

Although the population of interest for this study are Hispanic and Latino physicians practicing in the United States, the perceptions surrounding influenza vaccination for many of these individuals

could be driven by their backgrounds and experiences, including their educational training as well as their cultural identity – regardless of whether they were born in or outside the United States. As such, it is important to evaluate the influenza vaccine uptake throughout the Americas as this could provide background information that would further explain behaviors of the study participants.

Ropero-Álvarez, Kurtis, Danovaro-Holliday, Ruiz-Matus, & Andrus (2009) reported that although in Latin America and the Caribbean, influenza vaccines are offered through the public sector free of charge, in 2004 only 13 countries and territories had introduced seasonal influenza vaccine into their public health systems. Of these, only four (Bermuda, Canada, Chile, and the United States) had utilized the vaccine for the previous several decades. By 2008, 35 out of the 45 countries and territories in the Americas had incorporated seasonal influenza vaccine recommendations into their public health systems (Ropero-Álvarez et al., 2009). Further, along with this substantial increase in vaccine policy uptake, healthcare workers are currently targeted for vaccination in 38 out of the 45 (84%) countries/territories in Latin America (Ropero-Álvarez, Omeiri, Kurtis, Danovaro-Holliday & Ruiz-Matus, 2016). Interestingly, Ropero-Álvarez et al. (2009) indicated that the rapid growth in vaccine distribution in the Americas was due to multiple factors including morbidity and mortality caused by seasonal influenza (as expected), as well as political decisions due to the actions of neighboring countries, fear of an influenza pandemic, and results from cost-effectiveness studies. Much like the diverse criteria influencing vaccine introductions throughout the Americas, the target populations in each of the countries also varied. While 33 of the countries and territories targeted older adults as the risk population in need of receiving influenza vaccines, of these, two countries (Barbados and Guatemala) only targeted elderly individuals living in institutions, and three countries (Anguilla, Jamaica and Nicaragua) targeted older adults with chronic disease (Ropero-Álvarez et al., 2009).

Although their 2009 publication did not provide information on coverage rates for targeted

populations groups due to countries' challenges with the calculation of both numerator and denominator data (Ropero-Álvarez et al., 2009), a 2014 presentation reported a wide range in seasonal influenza coverage for children ages 6-23 months, elderly, pregnant women, and HCWs in Latin America and the Caribbean (Ropero-Álvarez, 2014). Specifically to HCWs, while some countries reported 100% seasonal influenza coverage between 2011 and 2013 (i.e., Brazil, Chile, and Cuba), while others reported rates well below the 50% threshold (i.e., Belize, Peru, and Uruguay). Additionally, some countries reported a significant reduction in 2013 influenza vaccination coverage as compared to previous years (i.e., Paraguay and Venezuela) (Ropero-Álvarez, 2014). Despite these differences, little knowledge exists about the influenza vaccine perceptions that are attributable for these variations in HCWs vaccination uptake in the Latin America and Caribbean communities.

2.6 Surveys, Physicians, and Response Rates

A potential limitation of any survey research study is the representativeness of the sampled respondents; this is even more so when the study response rate is low. When the response rates are low, it affects the margin of error, the reliability of the results, and brings about potential sources of nonresponse error. This type of error "occurs when a significant number of people in the survey sample do not respond to the questionnaire and have different characteristics from those who do respond, when these characteristics are important to the study" (Dillman, 2007a). Low response rates can be attributed to specific characteristics of the target population as well the method in which the data is gathered (e.g., mailed surveys, telephone interviews, internet surveys, etc.). For Internet surveys, the response rate "can be affected by the distribution options and the response/collection features employed as well as the existence of automated (out-of-office) replies, automated forwarding, server rejection, and organization or personal spam filters" (Dobrow et al., 2008).

Several published studies have argued that physicians present unique challenges to researchers

due to low response rates. In 2003, a meta-analysis looking at 17 Internet-based surveys that were distributed to physicians in the United States between 1999 and 2002, revealed a wide range of response rates. These response rates ranged from 19% to 75% (Braithwaite, Emery, de Lusignan, & Sutton, 2003). Notably, most studies in this meta-analysis used professional e-directories of specified health professionals as their sampling frames and the minority drew the physician's contact information from either commercial organization e-mail directories or targeted volunteers recruited via websites or electronic discussion groups (Braithwaite et al., 2003). As noted by Sudman (1985) and others, the reasons for nonresponse by physicians often can be reduced to five factors: 1) lack of time; 2) fatigue from numbers of questionnaires received from various sources; 3) low perception of the study's worth or value; 4) confidentiality concerns; and 5) perception that survey questions are biased. Further, a 2015 publication exploring physicians' response rates to web-based surveys also concluded that response rates are varied by specialties. In this study, although the overall survey response rate was 35.0%, neurologists and neurosurgeons accounted for 46.6% of the responses while psychiatrists accounted for 27.1% (Cunningham, et al., 2015). Despite the problems presented by physicians' low response rates, studies have concluded that in fact smaller-than-anticipated differences exist between physician respondents and nonrespondents, thus reducing the chances for nonresponse error in this specific population (Field et al., 2002; Kellerman & Herold, 2001; Cull, O'Connor, Sharp, & Tang, 2005). Further, it is argued that unlike the general population, nonresponse errors are reduced because physicians are quite homogenous with regards to knowledge, training, attitudes, and behavior. Notably, to our knowledge, no study has specifically focused on Hispanic and Latino physicians, whose behavior, attitudes, and knowledge could be guided by cultural elements. A recent publication by the Pew Research Center indicated that US Latinos present unique challenges to survey research because of their disproportionate refusal rate due in part by a general suspicion of the government, among other factors

(Brown, 2015). Arguably, cultural factors could further compound the low response rates that are normally seen with surveyed physicians.

As a way to improve participation rates among physicians, Flanigan, McFarlane, & Cook (2008) provided design strategies to further help researchers increase the legitimacy and credibility of their results when targeting this specific population (i.e. physicians). These practices or strategies are outlined on Table 2.3.

Table 2.3 Best Practices in Surveying Physicians (Flanigan et al., 2008)

Category	Strategy
Mail Packaging	● Use a personalized pre-notification letter as well as stamps or special packaging (i.e. priority shipping or Federal Express) ● Prepare a personalized cover letter ● Make use of sponsorships or letters of endorsement
Incentives	● Pre-paid incentives ● Amount of incentive should be large enough to be viewed as a "token of appreciation"
Questionnaire Length	● Keep surveys short
Survey Mode of Administration	● Multi-mode methods including mail and web-based surveys
Nonresponder Follow-Up	● Use postcard reminders as well as telephone "prompts", e-mail, and fax "prompts" (when available)

2.7 Chapter Summary

The 2010 U.S. Census estimated that about 50.5 million Hispanics (i.e., individuals of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race) live in the United States; this represents approximately 16% of the population in the country. The majority of Hispanics and Latinos in the United States come from Mexico, followed by Central/South American, Puerto Rico, Cuba, and Dominican Republic. Further, most

Mexicans live in the West, Cubans in the South, and Puerto Ricans in the Northeast part of the country. Although discrepancies within Hispanic sub-groups exist with regards to the use of preventive health services such as influenza vaccination, as a group, Hispanics ≥ 18 years in the United States, are less likely to receive the influenza vaccine than non-Hispanic whites. Although many sub-groups within the Hispanic population are very reliant on traditional healing as compared to Western medicine, these groups have been found to be highly responsive to individual and public recommendations from healthcare officials. Further, among those who receive the influenza vaccine, the administration of vaccinations for Hispanics and Latinos is two times higher in a medical setting than in community centers, workplaces or other non-medical settings.

Similar to the general Hispanic and Latino population, Hispanic and Latino physicians practicing in the United States tend to reside/practice in California, Florida, New York and Texas. Further, although they only comprised about 5.5% of all the medical school graduates practicing medicine in the United States (between 1978 and 2008), the majority are of Mexican-American or Puerto Rican descent. Although it is estimated that the ratio between Hispanic and Latino physicians to Hispanic and Latino patients in the United States is 105 per 100,000 individuals, the optimal alignment between physician/patient concordance is believed to yield positive effects as patients are more inclined to use the health services available to them and adhere to the medications they are prescribed.

Notably, although HCWs irrespective of race/ethnicity, are at a greater risk of exposure to influenza infections and ACIP has recommend that all US HCWs get vaccinated annually against influenza, the vaccination uptake in this group (i.e., HCWs aged ≥ 18 years) remains substantially low in comparison to the objectives established under Healthy People 2020. Further, similar to the general Hispanic and Latino population, the existence of racial and ethnic disparities in vaccine

updates is also prevalent in the HCWs community, with Blacks and Hispanics having lower vaccination rates than non-Hispanic whites. Despite these differences little is known about the perceptions of influenza vaccination that could explain the racial/ethnic disparities in influenza vaccine uptake among HCWs.

Because it is argued that health-related priorities, decisions, and behaviors may be either directly or indirectly tied to cultural elements, health communication messages must take into account culture/cultural considerations. These cultural elements could become components of input variables in the communication framework such as communication source, message approach, and channel factors, to improve the message effectiveness to the target audience of interest. Although not all of the constructs of the Health Belief Model align with the communication framework input variables, the inclusion of cues to action construct in a study allows for better understanding of the media sources that trigger action among Hispanic and Latino physicians as well as the type of message delivery style that are most relevant to them and their Hispanic and Latino clientele.

Much like with the Hispanic and Latino physicians in the United States, little knowledge exists about the influenza vaccination perceptions among HCWs in the Latin America and Caribbean communities. However, studies have shown a significant variation in the influenza vaccine uptake in these regions. In Latin America and the Caribbean, vaccines that are offered through the public sector are available to the public free of charge. By 2008, 35 out of 43 countries in the region had incorporated seasonal influenza vaccine into their public health systems. Further, although some countries have reported 100% seasonal influenza coverage for HCWs between 2011 and 2013, this is not the norm for the region. In some cases, countries have reported vaccine uptake rates well below 50% and others have noted a significant reduction in 2013 influenza vaccination coverage as compared to previous years.

When surveying physicians, a potential limitation that researchers must keep in mind is the representativeness of the sample population of the study. This is particularly so because the response rates for these individuals is quite varied with some reports noting that it could range from 19% to 75%. These low response rates could be attributed to many factors including questionnaire fatigue as well as lack of time or interest in the study. The response rate for a study could also be heavily affected by the method in which data is collected. For Internet or web-based surveys, the existence of automated replies as well as organization or personal spam filters, could further increase the number of non-responders in a study. Although some researchers argue that the homogeneous composition of the physician community (i.e., share knowledge, training, and attitudes) yield smaller-than-anticipated differences between physician respondents and nonrespondents, it could be argued that cultural elements of the Hispanic and Latino physician community could further compound the inherent low response rate that exists among physicians.

CHAPTER 3

UNITED STATES HISPANIC AND LATINO PHYSICIANS' PERCEPTIONS OF INFLUENZA VACCINATION[1]

3.0 Abstract

Background: Despite representing a large population in the United States (US), Hispanic and Latinos (HL) use preventive health services, in particular influenza vaccination, much less than non-Hispanic whites. Factors associated with physicians' rejection of influenza vaccination have been identified, however little knowledge exists about the influenza vaccine perceptions of HL physicians practicing in the US.

Purpose: This study uses the Health Belief Model (HBM) to understand HL physicians' attitudes toward influenza vaccination for the identification of factors that determine practitioners' depth of acceptance and adherence to national guidelines for influenza vaccinations.

Methods: HL physicians were selected from the American Medical Association (AMA) Physician Masterfile as well as the Harrison, Maldonado, Associates, Inc. (HMA) database. Out of 498 participants who received a self-administered online survey, 46 responded and selected participants were invited to participate in semi-structured telephone interviews. This study evaluated influenza vaccine

[1] Veguilla V., Smith ML., Cordero JF., Nowak G., and Lee JL. To be submitted to American Journal of Preventive Medicine

perceptions of HL physicians and how these perceptions, in turn affect the depth of conviction of their influenza vaccine recommendation to their HL patients.

Results: Majority of study participants were active/strong recommenders of influenza vaccination to their patients. Determinants of how actively influenza vaccines are recommended by HL physicians included vaccine availability and perception that patients will not follow the physician's recommendations.

Conclusions: Because of the diversity within the HL population in the US, the development of culturally distinct intervention practices based on physician's assessment of their patient's acculturation level, independent of the physician's vaccine availability, could substantially reduce disparities in the receipt of influenza vaccinations as compared to non-Hispanic whites.

3.1 Introduction

Hispanics and Latinos (HL) currently represent approximately 16% of the population in the United States (US). Although they are the largest ethnic-minority in the country (Gonzales, 2008), recent studies have also demonstrated that this group uses preventive health services much less than other racial and ethnic groups (Kang-Kim et al., 2008). The Advisory Committee on Immunization Practices (ACIP) of the Centers for Disease Control and Prevention (CDC) recommends annual influenza vaccination for healthcare workers (HCWs), persons with chronic medical conditions that make them more likely to have complications of influenza, women who will be or are pregnant during the influenza season, and most recently, all individuals age six months or older, unless medically contraindicated (Fiore et al., 2010; CDC, 1984; CDC, 2012). Despite these

recommendations, national influenza vaccine coverage estimates show that HL ≥ 18 years in the US, are less likely to receive the influenza vaccine than non-Hispanic whites (CDC, 2015c; Lu et al., 2013a; Lu, et al., 2013b; Merrill & Beard, 2009). Furthermore, recent studies have also found that racial and ethnic disparities in vaccine uptakes exist among HCWs, with Blacks and Hispanics having lower vaccination rates than non-Hispanic whites (Lu et al., 2013a).

Studies on factors that might influence influenza vaccine uptake among HL have uncovered a number of reasons that could partially explain these discrepancies in vaccination rates (Mayberry, Mili, & Ofili, 2000; Cheng, Chen, & Cunningham, 2007; DuBard & Gizlice, 2008;). These have included lack of access to healthcare, language barriers, lack of education among HL in the general population, and concerns about the safety and effectiveness of influenza vaccines. Further, although not specific to HL HCWs, studies have also concluded that vaccine related concerns, specifically vaccine's safety, effectiveness and necessity, were barriers to influenza vaccine uptake among HCWs which further mediated the racial/ethnic vaccine uptake disparity (Ojha, et al., 2015). In 2015, misperceptions regarding susceptibility to influenza disease (i.e., believe that "they were not likely to experience a severe course of influenza illness and/or that influenza was a 'manageable' disease) were also identified as another major barrier to vaccine uptake among healthcare workers in the US (Nowak et al., 2015).

Multiple studies have revealed the benefits of patient-physician race/ethnicity concordance. Specifically, it is believed that the optimal alignment may have positive effects during clinical encounters as physicians are able to have a better understanding of factors impacting their patient's healthcare. These factors could include patient's medication adherence, utilization of services, and lifestyle decisions, among others. These studies have also reported patients having a more positive

consultation when the physician is of the same race or ethnicity (Cooper-Patrick, et al., 1999; Street & Haidet, 2011) because the language concordance reduces the likelihood for confusion and frustration experienced by the patient when receiving their health services. Data from the 1994 Commonwealth Fund Minority Health Survey, a national survey, revealed that Hispanics in the US preferred to seek healthcare from Hispanics or physicians of their similar race or ethnicity (Laveist & Nuru-Jeter, 2002). Despite this extensive information, little knowledge exists about the influenza vaccination perceptions of HL physicians practicing in the US. This study examines data from a national survey and phone interview of HL physicians living in Hispanic populated areas (California, Florida, New York, and Texas) to assess the meanings and perceptions that they assign to influenza vaccines, and how these perceptions in turn affect the conviction of their influenza vaccine recommendation to their HL patients

3.2 Methods

Study Sample

A stratified purposeful sample strategy was used to recruit HL physicians practicing in the US. Family/General Practitioners, Internists, and OB/GYNs in Los Angeles and Orange County, California; Hialeah and Miami-Dade County, Florida; Bronx and Queens boroughs, New York; and Laredo and Cameron County, Texas, were randomly selected from the American Medical Association (AMA) Physician Masterfile as well as Harrison, Maldonado, Associates, Inc. (HMA, a cultural marketing company with 20 years of experience) Physician's database, as these represent the states and areas with the highest number of HL in the country (US Census Bureau, 2011). HMA sent physicians (n = 498) an invitation to participate in a self-administered online survey (made available in both English and Spanish) from May 27, 2015 through September 6, 2015. Further, HMA contacted physicians via

phone and once via email, to request participation and to confirm delivery of the survey. Following survey data collection, selected participants (n = 26) were invited to participate in semi-structured audio-taped telephone interviews, conducted by HMA in either English or Spanish to further evaluate their perceptions of influenza and influenza vaccination. The inclusion criteria for the study included: all current practicing English-speaking, Spanish-speaking, or bilingual physicians who treat (>50%) HL patients, and who themselves were of HL ethnicity. Additional inclusion criteria included provision of written or verbal consent to join the study. Physicians aged 70 years or older as well as resident physicians were excluded from the study. Participants received $50 and $100, for their participation in online survey and phone interviews, respectively.

Measures

Information about influenza vaccine uptake as well as attitudes and knowledge about the vaccine were ascertained with a survey designed using the Health Belief Model (HBM) as the theoretical model. The constructs in the survey included: perceived susceptibility of provider's patient population to influenza infection; perceived severity of provider's patient population acquiring influenza; perceived benefits of provider's patient population receiving influenza vaccination; perceived barriers of provider's patient population to receiving influenza vaccination; and the cues to action that make these physicians more willing to recommend influenza vaccines to their patients. The survey also consisted of demographic questions assessing the study participants, the study participants' clientele, and the study participants' clinic. All attitudinal and behavioral questions used three, four, or ten-point Likert scales. Patient's racial/ethnic groups were defined as HL, African American, Native American, Asian American, White, and other race.

HMA conducted semi-structured, one-on-one audio-taped phone interviews with selected participants to

complement and expand survey data to better understand the context of physician's decision to recommend influenza vaccines to their patients. The interviews covered the following themes: 1) influenza and influenza vaccine knowledge, 2) influenza vaccine recommendation experiences, and 3) sources of influenza vaccine information. Each interview lasted approximately 25 to 40 minutes and were transcribed verbatim. Surveys and interviews were piloted before data collection, with HL physicians for readability, time required to complete, and clarity (survey = 10; interview = 6). Piloting was conducted in both English and Spanish. This study received approval from CDC's Institutional Review Board and funding from the CDC's Health Communication Science Office (HSCO) and Influenza Division in the National Center for Immunization and Respiratory Diseases (NCIRD).

Statistical Analysis

Data from survey were summarized by descriptive statistics using SAS V9.3 software (SAS Institute Inc., Cary, NC). Measures of central tendency were used for interval/ratio data while nominal/ordinal data were analyzed with frequencies and proportions. Principal investigator read interview transcripts multiple times in order to achieve immersion and identify major themes in the participant's responses via open coding. Further, quotes were extracted as examples of developing themes. Although audiotapes and transcriptions were reviewed at least three times by the author, no formal testing of the reliability of the coding was undertaken. Discussion with colleagues regarding the emerging themes and their meanings were conducted.

3.3 Results

Out of 1,622 potentially eligible contacted physicians/offices, 498 met the inclusion criteria but only 46 completed the electronic survey (9.2% response rate). Further, out of 26 physicians invited to participate in the phone interview, only ten completed the interview (four who reported not being very active with

their influenza recommendations, and six who reported being very active).

In total, the majority of the survey respondents were from New York (n = 16) and Florida (n = 15), followed by Texas (n = 10), and California (n = 5). Respondents were mostly males (72%) and their median age was 51 years (range: 29-69 years). The majority of participants (30%) were born in the Caribbean (Cuba, Dominican Republic, Haiti, and Puerto Rico), 12 were born in the US, 9 in South America (Argentina, Brazil, Colombia, Ecuador, Peru, and Venezuela), 8 in Central America (Guatemala, Mexico, and Panama), and 3 in other places (Spain, and Philippines). Although just over half of the participants (52%) completed or graduated with their technical qualification in the US, all but three participants (93%) have lived in the US for at least six years. For those not completing or graduating with their technical qualification in the US, the majority (17%) did so at a school in the Caribbean (Cuba, Dominican Republic, or Puerto Rico). All but seven (85%) have practiced medicine for more than five years following completion or graduation with their technical qualification; and 86% have done so in the US.

Out of the 46 physicians, 8 (17%) indicated that they were not very active (e.g. 1-6 response on a 10-point Likert scale with 'very active' and 'not very active' as response anchors) with their influenza vaccine recommendations. The median age for this group was 55 years while the median age for the physicians who actively recommended vaccines to their patients was 50 years. With the exception of region of birth (majority of non-active recommenders were born in the US while majority of active recommenders were born in the Caribbean), all other frequency distributions for demographic and acculturation variables measured in the survey were comparable between the two groups. See Table 3.1 for study sample characteristics.

Susceptibility

Overall, most of the participants, regardless of active level of recommendation of influenza vaccination to their adult HL patients, believed that all individuals, high risk and non-high risk status alike, were likely to experience a serious illness as a result of influenza infections. Furthermore, 71% of non-active vaccine recommenders and 53% percent of active vaccine recommenders indicated that it was unlikely that they themselves would experience a serious illness if infected with influenza viruses.

Severity

Although only 25% of non-active influenza vaccine recommenders previously treated a HL patient that developed a life-threatening complication (i.e. pneumonia or death) and required hospitalization as a result of influenza illness, overall, most of the participants, active and non-active recommenders alike, believed that influenza causes serious health problems for all individuals. Further, seven of the ten interviewed participants indicated that the severity of disease was related to multiple factors including patient's medical underlying conditions and age. Further, three non-active recommenders identified several factors that could be attributed to differences in the severity of symptoms or outcomes associated with influenza infections, including influenza vaccination:

> *"I would say that one (factor) is access to or getting the influenza vaccination…(symptom severity) is more likely to happen in patients that haven't gotten the influenza vaccine. Second (factor) is older patients, like 65 years or older. Third (factor), any patient with a disease that compromises their immune system, for instance diabetes or any other diseases that compromises the immune system." (Non-Active Recommender, #1)*

Benefits

With the exception of one physician in the non-active recommender group, 45 participants believed that getting the influenza vaccine could greatly reduce the chances of becoming ill with influenza for all

populations regardless of high risk status. Further, when asked if individuals previously vaccinated against influenza were likely to experience milder symptoms if infected with the virus, active and non-active recommenders alike, believed that the vaccine helped reduce the symptoms associated with influenza disease. See Table 3.2 for Susceptibility, Severity and Benefits construct results.

> *"When I get patients with flu in comparison to the ones who got the flu vaccination to those that didn't, the proportion is five to one. Like for every five patients who got the flu, four did not get the vaccine but one got the vaccination." (Non-Active Recommender, #1)*

Barriers

With the exception of two physicians in the active recommender group, 42 participants believed that influenza vaccines were safe for all individuals alike, regardless of high risk status. Further, the majority of participants also believed that getting annual influenza vaccination was an effective way to prevent influenza-related diseases. However, a common barrier of provider's patient population to receiving influenza vaccination, for active and non-active recommenders alike, was the lack of education their patients had regarding influenza vaccines as many of the patients felt they could get sick following vaccination.

> *"Basically, if they have a previous experience themselves or a close relative where they got the vaccination then they got an upper respiratory infection or lower respiratory infection one or two weeks right after the vaccinations sometimes they link it to the influenza vaccination. They don't want to have it anymore (get vaccinated). So you kind of have to educate them." (Active Recommender, #1)*

Notably, unlike participants in the active recommender group, 50% (n = 4) of non-active recommenders identified two reasons that mildly deter them from recommending influenza vaccination to their HL patients. These were the high costs associated with the vaccine administration at their clinics and the

vaccines unreliability to prevent influenza cases in their patients. Additionally, three non-active responders pointed at the lack of vaccine availability as a challenge when communicating the influenza vaccine recommendation to their patients. One in particular pointed at the competition for vaccine access between vendors and the lack of a 'buying pool' for physicians to purchase the vaccines at a cheaper price. Others indicated that lack of vaccine availability severely altered their recommendation regime due to the influenza season unpredictability.

> *"It's the time in the year when it's needed and usually suppliers will say they don't have it. It's probably (lack of vaccine availability) they sell it to the bigger chains like the Walgreens and the CVS. They will have it way before I can get it." (Non-Active Recommender, #2)*

> *"It's whether I am able to provide the vaccine is the only problem. But I won't go out of my way to, if I don't have it in stock to tell them to get their flu shot." (Non-Active Recommender, #2)*

> *"Well there are times especially in the beginning (of the influenza season) when we don't know how many people we will have to vaccinate, and then that's when we are a little bit more conservative in our recommendations. Also in the beginning, we try to reserve that vaccine for certain groups and during the winter, if we see that we have a lot left of the vaccination, we start to vaccinate everyone." (Non-Active Recommender, #3)*

> *"If there was some type of pool or buying pool or something where it would become available more easily, more reasonably cost, at an earlier time, I think that would be a big improvement to increase in the amount I'd be able to vaccinate my patients." (Non-Active Recommender, #2)*

While 82% of the active influenza vaccine recommenders were highly confident that most of their HL

patients would follow their advice to vaccinate against influenza, 75% of non-active recommenders were moderately confident that their patients would follow their vaccination advice. This lack of patient responsiveness was attributed to factors associated with the patient's education, socioeconomic status, and family support.

> *"Patients (that are most responsive to influenza vaccination recommendation) are more educated and tend to be in tuned to more modern medicine concepts….patients (that are least responsive) are less educated , lower socio-economic status…it still also boils down to whether they can afford it." (Non-Active Recommender, #2)*

> *"I think the ones (patient that are most responsive to influenza vaccination recommendation) that has any family supporting them. Basically, you know children, they are married, and basically the ones that are alone widows or separated sometimes the compliance goes down." (Active Recommender, #1).*

Furthermore, subcultural differences within the Hispanic population and lack of patient acculturation to US medicine, were also listed as a factors for the patient's lack of response to public health recommendations.

> *"Certain folk beliefs (are a cultural barrier) that depend on the education, and the area they come from. Some are very recent immigrants and some will be integrated…It's a big spectrum. So it's patients that are assimilated and have been in this country, probably 2nd or 3rd generation, that are more likely to follow instructions than patients that are recently here. Maybe first generation will not be as compliant or if they have folk beliefs such as if they go out and get their feet, cold feet or get their hair wet, they'll believe that will cause an illness…I still have patients that believe things like that." (Non-Active Recommender, #2)*

Cues to Action

Overall, both active and non-active recommenders highly trusted influenza vaccine information received through professional medical associations (e.g. AMA), government agencies such as CDC/ACIP and FDA, and scientific journal articles. Similarly, both groups of participants, trusted vaccine information shared through media (e.g. newspapers, TV, and radio) and social media the least. One active recommender also identified the importance of influenza vaccination policy at his work place, and how this policy helped promote influenza vaccination recommendations. See Table 3.3 for Barriers and Cues to Action construct results.

> *"We have a medical direction here in my hospital to pay attention very strictly to the scale of immunizations. So every time that any patient shows up in the clinic we look through the scales of vaccinations (immunization records) and if we detect that there is some delay we encourage the patient to get the immunization. So that has become a routine for us." (Active Recommender, #3)*

3.4 Discussion

Overall, the study indicated the vast majority of HL physicians who participated were active/strong recommenders of influenza vaccination to their HL patients. Further, the majority of HL physicians knew of and used messages found in CDC and other public health agencies that provide recommendations and materials associated with influenza disease. The key messages these providers used to educate and persuade their patients included: influenza can cause serious health problems with the severity of the disease being greater depending on the patients' age and health status; influenza vaccination is beneficial as it helps protect and reduce symptoms associated with influenza; and more unvaccinated than vaccinated individuals get influenza

disease.

The study also suggested that HBM constructs (susceptibility, severity, benefits, and cues to action) were similar across study participants. Notably, unlike previous studies reporting on the association between physicians' personal health beliefs and their recommendations to their patients (Shieh, Gao, Ristvedt, Schootman, & Early, 2005), this study showed that although the majority of HL physicians did not believe they themselves would experience a serious illness if infected with influenza viruses, this belief was independent from their influenza vaccination recommendation practices. One possible explanation is that in spite of that belief (that they would not likely experience a serious case of influenza), most participants had received the influenza vaccine the previous year (data not shown).

A potential source of differences in influenza recommendations was the perception that patients will not follow the physicians' recommendations. Specifically, there was an overall belief among HL physicians that first generation HL immigrants in the US more likely follow holistic or methods tied to their cultural beliefs rather than recommended preventive medicine such as influenza vaccines. This finding is consistent with other studies involving HL patients in the US. For example, Bermúdez-Parsai, Mullins Geiger, Marsiglia, & Coonrod (2012) reported that as compared to non-acculturated women, self-reported acculturated Latino women were more likely to participate in their own healthcare by complying with post-partum visits. Further, these acculturated women were able to "draw on the cultural assets that have a positive influence on informal health practices, such as healthy eating and refraining from drug use." (Bermúdez-Parsai et al., 2012). One possible explanation as to why second or third generations, in other

words acculturated individuals, are more likely to follow their physician's recommendation, is that these individuals have been exposed to the challenges and benefits of more than one culture's healthcare system. Therefore, they have had the opportunity to adopt practices that are comfortable for them. First generation HL, on the other hand, may lack routine access to care and health insurance. Additionally, other first generation HL may only be familiar with practices that are tightly connected to their cultural beliefs, practices, and policy-level factors which may significantly differ from those of the US and may continue to have strong influences on their health beliefs. This is especially true for those arriving from Mexico and Central/South America, as published literature concluded that these individuals use preventive health services, such as influenza vaccination, less frequently than immigrants from other regions including those from the Caribbean (Vargas-Bustamante et al., 2010).

A second theme that emerged was that related to vaccine supply and cost. Specifically, less active vaccine recommenders, although aware of public health messages regarding influenza vaccination recommendations, were conservative in their influenza vaccine ordering and stocking because of the costs associated with maintaining the vaccine inventory. As a result, they sought to manage their flu vaccine supply in a way that minimized their financial risks even if that implied changing their recommendation strategies by foregoing certain groups so as to guarantee having enough vaccine supplies to last them through the entire influenza season. Similar vaccine availability challenges were noted in other studies (Davis, Wortley, Ndiaye, Woods, & Clark, 2004) where influenza vaccine availability "disparities across subspecialties may reflect different prioritization of immunization versus other visit objectives, or different proportion of patients with indications for influenza vaccine" (Davis et al., 2004). These

findings may have major implications for influenza vaccination among HL in the United States. Although influenza vaccines are nowadays available to the general public in settings other than physicians' clinics (i.e. pharmacies, workplaces, etc.), a 2011 study concluded that among Hispanics aged 18-64 years, influenza vaccination administrations were approximately two times higher in a medical setting (i.e. doctor's office, health center, or hospital) than in a non-medical setting (i.e. community center, workplace, drugstore, or schools) (Kennedy, et al., 2011). This highlights the need to help HL physicians lower the costs and/or challenges associated with small inventories of flu vaccines.

Because many first generation HL immigrants may be accustomed to seeking alternative care over conventional treatment, providers should be encouraged to have culturally and linguistically appropriate training to address potential barriers that keep their patients from adopting behaviors under a new health care environment. Providers should be able to tailor their patient care based on quick assessments of their patients' acculturation to the US healthcare system. Further, because of limitations associated with vaccine availability in clinics, providers should be encouraged to familiarize themselves with health centers, drugstores, or community centers that are 1) geographically close to their clinics, 2) able to provide influenza vaccination services at low or free of cost, and 3) most importantly, that cater specifically to members of this community. This would allow for continuous recommendation of influenza vaccination to the patients independent of vaccine availability at the clinics. Further, referral to these places would keep other deterrents such as access to healthcare and language barriers from allowing this underserved community to be vaccinated against influenza.

3.5 Limitations

The findings in this report are subject to limitations. First, this study was limited by the response rate of participants which is lower than the rates reported in studies with physicians as the target population (Braithwaite et al., 2003). This response rate could be further impacted by the stratification of an already hard to reach population. Although study participants were financially incentivized and were reminded of the study through e-mail and telephone prompts, future studies might benefit the following: larger financial incentives, development of multi-mode methods such as mail and web-based surveys, and reduction in the length of the survey tools (Flanigan, 2008). Further, the partnering with professional medical associations that cater to this specific community (e.g. Hispanic Medical Association), might increase the HL physicians' perception of the study's worth or value as well as help alleviate any confidentiality concerns.

Second, the conviction of the influenza vaccination recommendation was self-reported and therefore might be subject to social desirable answers that may not reflect the participants' true perceptions and behaviors. As such, questions were written in a non-judgmental and non-leading format, and follow up interviews were conducted to triangulate the data. Because it is acknowledged that physicians do not treat all of their patients the same with regards to influenza vaccination, questions were posed for different patient populations including patients at high risk of influenza infections such as pregnant women and patients aged 65 years or greater. Further, the survey instrument was evaluated with a subset of HL physicians to increase its clarity and validity.

Lastly, although the HBM is a helpful framework to identify constructs that can predict health

behavior, it does not provide information with regards to whether these determinants follow an additive or multiplicative effect on outcome of interest. Further, this model does not account for social or environmental constructs that would influence a HL physician to recommend influenza vaccination to their Hispanic clientele, or deter him/her from making these immunization recommendations. As a way to mitigate this problem, future studies should consider the merging HBM with other theories such as the Integrated Behavioral Model (IBM), which posits that in addition to having the knowledge/skills, experience, and limited environmental constraints to carry out a behavior, the most important determinant of behavior is the intention to perform the behavior (Montaño & Kasprzyk, 2008). Most recently, studies have used IBM as the conceptual framework evaluating influenza vaccination acceptance among high risk individuals (Frew et al., 2013). Despite these limitations, this study is among the few to look at the perceptions of this unique population and can serve as a benchmark for subsequent studies and for the establishment of intervention programs that may help enhance the vaccination rates among the Hispanic population in the US.

3.6 Conclusions

Almost all HL physicians who participated in this study were active promoters of influenza vaccination, and even those who less actively promoted it, recognized the value of flu vaccination for their patients. Two themes emerged that are potentially associated with differences in influenza vaccine recommendations among HL physicians to their HL clientele. These are access to vaccine supply and cost and the concern that first generation HL may not follow physician's instructions because of cultural beliefs and/or lack of experience with influenza vaccination in their country of origin. Further, this study identifies potential intervention practices that could decrease the influenza vaccination

recommendation barriers among HL physicians in the US. These include the development of culturally distinct patient care practices based on physician's assessment of their patient's acculturation level, independent of the physician's vaccine availability, to address and increase influenza vaccination rates among HL adults in the US.

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Table 3.1 Demographic Characteristic and Influenza Vaccination Recommendation Behavior of Sampled Population

	Total (N=46)	Non-Active Recommenders (n=8)		Active Recommenders (n=38)	
	%	n	%	n	%
PROVIDER CHARACTERISTICS					
Provider's Gender					
Male	72	5	63	28	74
Female	28	3	38	10	26
Provider's Age					
29-39 years	24	2	25	9	24
40-49 years	20	1	13	8	22
50-59 years	35	3	38	13	35
60+ years	20	2	25	7	19
missing	2			1	
Provider's Region of Birth					
United States	26	4	50	8	21
Central America	17	-	-	8	21
South America	20	3	38	6	16
Caribbean	30	-	-	14	37
Other	7	1	13	2	5
Number of years provider has lived in the United States					
<1 year	2	-	-	1	3
1-5 years	4	-	-	2	6
6-10 years	7	1	13	2	6
11+ years	57	4	50	22	61
Born in the United States	26	3	38	9	25
missing	4			2	
Language provider prefers to speak to patients					
English	4	-	-	2	6
Spanish	52	5	63	19	53
Either language	39	3	38	15	42
missing	4			2	

Language provider prefers to receive medical literature					
English	67	7	88	24	63
Spanish	2	-	-	1	3
Either language	30	1	13	13	34
Region where provider completed technical qualification					
United States	52	6	75	18	50
Central America	11	-	-	5	14
South America	9	1	13	3	8
Caribbean	17	-	-	8	22
Other	7	1	13	2	6
missing	4			2	
Number of years provider has practiced following graduation					
<1 year	2	-	-	1	3
1-5 years	13	2	25	4	11
6-10 years	15	1	13	6	16
11-20 years	17	1	13	7	18
20+ years	52	4	50	20	53
Number of years provider has practiced in the United States					
<1 year	-	-	-	-	-
1-5 years	13	1	14	5	14
6-10 years	4	-	-	2	6
11+ years	33	4	57	11	31
Graduated in the United States	43	2	29	18	50
missing	7	1		2	
PROVIDER'S CLINIC CHARACTERISTICS					
Provider's outpatient clinic structure					
Private clinic	57	6	75	20	56
Private clinic - OB/GYN	4	-	-	2	6
Private clinic - multispecialty	9	-	-	4	11
Gov clinic - OB/GYN	4	-	-	2	6
Gov clinic - multispecialty	2	-	-	1	3
University clinic	9	1	13	3	8
Hospital owned practice - Gov	4	-	-	2	6
Hospital owned practice - private	7	1	13	2	6
missing	4			2	

Clinic location					
California	11	1	13	4	11
Florida	33	2	25	13	34
New York	35	3	38	13	34
Texas	22	2	25	8	21
Percentage of patients who are Hispanic					
0-49%	22	3	38	7	18
50-100%	78	5	63	31	82
Percentage of patients who are pregnant					
0-9%	48	4	57	18	51
10-49%	33	2	29	13	37
50-100%	11	1	14	4	11
missing		1		3	
Percentage of patients who are elderly					
0-9%	7	-	-	3	8
10-49%	33	2	25	13	35
50-100%	59	6	75	21	57
missing				1	
Percentage of patients without insurance					
0-29%	61	5	63	23	61
30-69%	30	2	25	12	32
70-100%	9	1	13	3	8

Table 3.2 Perceived Susceptibility, Severity and Benefits Constructs and Depth of Conviction of Sample Population's Influenza Vaccine Recommendation

	Non-Active Recommenders (n=8)		Active Recommenders (n=38)	
	n	**%**	**n**	**%**
PERCEIVED SUSCEPTIBILITY				
Individuals in general population experience serious illness				
Likely	4	57	25	68
Unlikely	3	43	12	32
missing	1		1	
Pregnant women experience serious illness				
Likely	4	57	32	86
Unlikely	3	43	5	14
missing	1		1	
Elderly experience serious illness				
Likely	7	88	37	97
Unlikely	1	13	1	3
Me (I) experience serious illness				
Likely	2	29	17	47
Unlikely	5	71	19	53
missing	1		2	
Management of influenza disease among Latinos				
Easy	1	13	15	42
Moderate	6	75	11	31
Difficult	1	13	10	28
missing			2	
Management of influenza disease among pregnant women				
Easy	-	-	10	28
Moderate	4	50	12	33
Difficult	4	50	14	39
missing			2	

Management of influenza disease among elderly				
Easy	1	13	10	27
Moderate	5	63	13	35
Difficult	2	25	14	38
missing			1	
Management of influenza disease for me				
Easy	5	63	26	68
Moderate	3	38	10	26
Difficult	-	-	2	5
PERCEIVED SEVERITY				
Flu causes serious health problems for general population				
Agree	5	71	33	87
Disagree	2	29	5	13
missing	1		-	
Flu causes serious health problems for pregnant women				
Agree	6	86	36	97
Disagree	1	14	1	3
missing	1		1	
Flu causes serious health problems for fetus				
Agree	5	83	33	89
Disagree	1	17	4	11
missing	2		1	
Flu causes serious health problems for elderly				
Agree	8	100	37	97
Disagree	-	-	1	3
Flu causes serious health problems for me				
Agree	5	71	25	68
Disagree	2	29	12	32
missing	1		1	
Patient developed complication				
Yes	2	25	26	68
No	6	75	12	32

PERCEIVED BENEFIT				
Vaccine reduce chance of illness for general population				
Agree	7	88	38	100
Disagree	1	13	-	-
Vaccine reduce chance of illness for pregnant women				
Agree	8	100	37	100
Disagree	-	-	-	-
missing			1	
Vaccine reduce chance of illness for elderly				
Agree	8	100	38	100
Disagree	-	-	-	-
Vaccine reduce chance of illness for me				
Agree	8	100	38	100
Disagree	-	-	-	-

Table 3.3 Perceived and Cues to Action Constructs and Depth of Conviction of Sample Population's Influenza Vaccine Recommendation

	Non-Active Recommenders (n=8)		Active Recommenders (n=38)	
	n	**%**	**n**	**%**
PERCEIVED BARRIERS				
Getting annual influenza vaccination				
Effective	7	88	37	97
Not Effective	1	13	1	3
Safety of influenza vaccine for general population				
Safe	8	100	37	100
Unsafe	-	-	-	-
missing			1	
Safety of influenza vaccine for pregnant women				
Safe	8	100	34	94
Unsafe	-	-	2	6
missing			2	
Safety of influenza vaccine for pregnant woman's fetus				
Safe	7	100	33	94
Unsafe	-	-	2	6
missing	1		3	
Safety of influenza vaccine for elderly				
Safe	8	100	37	100
Unsafe	-	-	-	-
missing			1	
Safety of influenza vaccine for me				
Safe	8	100	36	100
Unsafe	-	-	-	-
missing			2	
Vaccine does not help with herd immunity				
No deter from rec	5	63	34	89
Mild deter from rec	2	25	3	8
Deter from rec	1	13	1	3

Vaccine is not reliable for preventing flu cases				
No deter from rec	4	50	33	87
Mild deter from rec	4	50	5	13
Deter from rec	-	-	-	-
Vaccines make people sick with flu related illness				
No deter from rec	6	75	32	84
Mild deter from rec	2	25	5	13
Deter from rec	-	-	1	3
Vaccines are unsafe				
No deter from rec	6	75	35	92
Mild deter from rec	2	25	1	3
Deter from rec	-	-	2	5
Vaccines lead to adverse effects				
No deter from rec	5	63	35	92
Mild deter from rec	3	38	2	5
Deter from rec	-	-	1	3
Vaccines are too expensive for my clinic to administer				
No deter from rec	4	50	34	89
Mild deter from rec	4	50	2	5
Deter from rec	-	-	2	5
Vaccines are too expensive for my patients				
No deter from rec	5	63	34	59
Mild deter from rec	2	25	3	8
Deter from rec	1	13	1	3
Confidence that patients will follow vaccination advice				
Very confident	-	-	8	21
Highly confident	2	25	23	61
Moderately confident	6	75	6	16
Not confident at all	-	-	1	3

CUES TO ACTION				
Provider level of trust of Professional Medical Associations	n	%	n	%
Highly trust	5	71	27	73
Somewhat trust	2	29	10	27
Do not trust	-	-	-	-
missing	1		1	
Provider level of trust of CDC / ACIP				
Highly trust	6	86	35	95
Somewhat trust	1	14	2	5
Do not trust	-	-	-	-
missing	1		1	
Provider level of trust of Vaccine Manufacturers				
Highly trust	-	-	8	22
Somewhat trust	4	57	26	70
Do not trust	3	43	3	8
missing	1		1	
Provider level of trust of Private Health Insurances				
Highly trust	1	14	6	17
Somewhat trust	3	43	25	69
Do not trust	3	43	5	14
missing	1		2	
Provider level of trust of Medicaid and Medicare				
Highly trust	2	29	24	65
Somewhat trust	5	71	11	30
Do not trust	-	-	2	5
missing	1		1	
Provider level of trust of US Food and Drug Administration				
Highly trust	3	43	23	62
Somewhat trust	3	43	14	38
Do not trust	1	14	-	-
missing	1		1	

Provider level of trust of scientific journal articles				
Highly trust	4	57	26	72
Somewhat trust	3	43	10	28
Do not trust	-	-	-	-
missing	1		2	
Provider level of trust of media				
Highly trust	-	-	2	6
Somewhat trust	2	33	12	34
Do not trust	4	67	21	60
missing	2		3	
Provider level of trust of social media				
Highly trust	-	-	1	3
Somewhat trust	-	-	9	26
Do not trust	5	100	25	71
missing	3		3	
Provider level of trust of opinions and experiences of colleagues				
Highly trust	2	33	7	19
Somewhat trust	4	67	26	72
Do not trust	-	-	3	8
missing	2		2	
Provider level of trust of experience from years in clinic				
Highly trust	5	71	27	73
Somewhat trust	2	29	9	24
Do not trust	-	-	1	3
missing	1		1	

CHAPTER 4

HISPANIC AND LATINO PHYSICIANS' ETHNIC VARIATIONS AND THEIR PERCEPTIONS OF INFLUENZA VACCINATION[2]

4.0 Abstract

Despite annual recommendations for seasonal influenza vaccines, coverage estimates show that Hispanics and Latinos ≥ 18 years in the US, are less likely to receive the influenza vaccine than non-Hispanic whites. Most vaccine coverage estimates and studies fail to account for the cultural diversity of the many sub-groups that comprise the Hispanic and Latino population. Factors associated with physicians' rejection of influenza vaccination have been identified, however relatively little is known about the influenza and influenza vaccine perceptions of Hispanic and Latino physicians practicing in the US. This study (1) examines Hispanic and Latino physicians' attitudes toward influenza vaccination for the identification of factors that determine practitioners' depth of acceptance and adherence to national guidelines for influenza vaccinations and (2) discusses implications of sub-cultural differences in the Hispanic and Latino population. This study analyzed survey data from 46 physicians from diverse birth regions (i.e., Central or South America, Caribbean, and the United States) across four study sites (i.e., California, Florida, New York, and Texas) representative of the various Hispanic sub-group concentrations in the United States. Although the majority of study participants actively recommended influenza vaccination to their Hispanic and Latino patients and were attuned to public health messages regarding influenza and

[2] Veguilla V., Smith ML., Cordero JF., Nowak G., and Lee JL. To be submitted to Social Marketing Quarterly.

influenza vaccination, small but potentially relevant differences between Hispanic sub-groups were noted. Because of the diversity within the Hispanic and Latino population in the US, the development of culturally distinct communication and education materials such as pamphlets, public service announcement or other material that could be provided at a physician's office is of value. Tailored materials can help patients educate themselves about influenza and influenza vaccine benefits prior to seeing the doctor. These materials could also elicit a conversation between patient and doctor and help encourage a doctor to recommend influenza vaccination during the visit. Hispanic and Latino patients should also be encouraged to familiarize themselves with health insurance coverages, including immunizations, so as to reduce the chances of out-of-pocket costs becoming a barrier at the time of vaccine recommendation and/or administration.

4.1 Introduction and Background

Every year in the United States, an average of 5 to 20% of the population gets infected with influenza. These infections result in more than 200,000 hospitalizations annually and influenza-associated deaths ranging from about 3,000 to about 49,000, depending on the severity of seasonal epidemic (Thompson et al., 2003; Thompson et al., 2004; Thompson et al., 2010). Although annual influenza vaccinations are the most effective and relied upon means to prevent and reduce the risk of influenza illness and its complications (CDC, 2008), racial and ethnic disparities in adult immunization rates exist. Non-Hispanic Blacks and Hispanic adults have significantly lower influenza vaccination coverage as compared to other racial and ethnic groups in the United States (Lu, et al., 2013a; Lu et al., 2013b; Merrill & Beard, 2009). This racial/ethnic vaccine uptake difference is also prevalent among healthcare workers (HCWs), with Blacks and Hispanic HCWs having lower vaccination rates than non-Hispanic whites HCWs (Lu et al., 2013a).

Although a few studies have identified correlates of influenza vaccine behavior among Hispanics in the United States (Nowak et al., 2015), most vaccine coverage estimates and studies lump all Hispanics and Latinos together into one category (i.e. Hispanics). In other words, they fail to account for the cultural diversity of the many sub-groups that this population comprises. Further, these lumped estimates fail to account for diversities between individuals who could be both born to Hispanic and Latino parents in the US or be born internationally in countries with diverse infrastructures and policies to support influenza vaccination (Ropero-Álvarez et al., 2016). Moreover, studies have also highlighted differences in the composition of social economic status, cultural, and lifestyle characteristics among the various sub-groups of the Hispanic population, which help account for diversity in their health outcomes (Moran et al., 2016; Zsembik & Fennel, 2005). Finally, studies have also identified discrepancies within Hispanic sub-groups, with Hispanics of Mexican and Central/South American ancestry using preventive health services, such as influenza vaccination, less frequently than other Hispanic sub-groups (Vargas-Bustamante et al., 2010).

Given the vast diversity of Hispanics and Latinos in the United States and their overall low influenza vaccination rates, the primary objectives for this research was to examine the differences in perceptions of influenza and influenza vaccines that Hispanic and Latino physicians have and whether or not ethnic variations have an impact on these perceptions. This article presents main findings from this research and discusses potential implications of sub-cultural differences in the Hispanic and Latino population that could aid in the designing of health communication messages surrounding influenza vaccinations.

4.2 Methods

The study was designed by staff from Centers for Disease Control and Prevention's (CDC) Health Communication Science Office (HSCO) and Influenza Division in the National Center for Immunization and Respiratory Diseases (NCIRD) in consultation with staff from the University of Georgia's (UGA) College of Public Health and Grady College of Journalism and Mass Communication, and implemented by Harrison, Maldonado, Associates, Inc. (HMA, a cultural marketing company with 20 years of experience working with industries to help reduce health disparities, especially among minority communities).

Study Sample

Hispanic and Latino physicians practicing in the United States were recruited using a stratified purposeful sample strategy. Family/General Practitioners, Internists, and OB/GYNs in Los Angeles and Orange County, California; Hialeah and Miami-Dade County, Florida; Bronx and Queens boroughs, New York; and Laredo and Cameron County, Texas were randomly selected from the American Medical Association (AMA) Physician Masterfile as well as HMA's Physician's database, as these represent the states and areas with the highest number of Hispanics and Latinos in the country (US Census Bureau, 2011). Physicians (n = 498) received an invitation to participate in a self-administered online survey (made available in both English and Spanish) from May 27, 2015 through September 6, 2015. Following invitation, physicians who had not replied to the survey request were contacted by HMA via phone and once via email, to confirm delivery of the survey. Selected participants (n = 26) were also invited to participate in a semi-structured audio-taped telephone interview, conducted by HMA in either English or Spanish to further discuss the physicians' perception about influenza and influenza vaccination. Inclusion criteria for the study included: all current practicing English-speaking, Spanish-speaking, or bilingual physicians who treat (>50%) Hispanic and Latino patients, and who

themselves were of Hispanic and Latino ethnicity. Additional inclusion criteria included provision of written or verbal consent to join the study. Physicians aged 70 years or older as well as resident physicians were excluded from the study. Participants received $50 and $100, for their participation in online survey and phone interviews, respectively.

Measures

Information about influenza vaccine uptake as well as attitudes and knowledge about the vaccine were ascertained with a survey designed using the Health Belief Model (HBM), as the theoretical model. The constructs in the survey included: perceived susceptibility of provider's patient population to influenza infection; perceived severity of provider's patient population acquiring influenza; perceived benefits of provider's patient population receiving influenza vaccination; perceived barriers of provider's patient population to receiving influenza vaccination; and the cues to action that make these physicians more willing to recommend influenza vaccines to their patients. The survey also consisted of demographic questions assessing the study participants' background including ethnicity, the study participants' clientele, and the study participants' clinic. All attitudinal and behavioral questions used three, four, or ten-point Likert scale. Patient's racial/ethnic groups were defined as Hispanic and Latino, African American, Native American, Asian American, White, and other race.

Surveys (n=10) and interviews (n=6) were piloted with members of the community for readability, time required to complete, and clarity, prior to data collection. Piloting was conducted in both English and Spanish. This study received approval from CDC's Institutional Review Board and grant funding by CDC's Health Communication Science Office (HSCO) and Influenza Division in the National Center for Immunization and Respiratory Diseases (NCIRD).

Statistical Analysis

Data from the questionnaire were summarized by descriptive statistics using SAS V9.3 software (SAS Institute Inc., Cary, NC). Measures of central tendency were used for interval/ratio data while nominal/ordinal data were analyzed with frequencies and proportions. To evaluate whether Hispanic and Latino ethnic variations had an effect on perceptions about influenza and influenza vaccination, data were stratified based on the provider's region of birth as following Vargas-Bustamante et al., 2010.

4.3 Results

The response rate for the study was 9.2% (46 physicians out of 498 who met the inclusion criteria).

Participant Characteristics

The majority of the survey respondents were from New York (n = 15) and Florida (n = 14), followed by Texas (n = 10), and California (n = 4). While half of the respondents born in the Caribbean had clinics located in New York (50%), respondents born in Central or South America had clinics located in either Florida or Texas (35% and 29%, respectively), and those born in the United States were distributed across all four sites. Regardless of the place of birth, the majority of the respondents in the study were males: 76% males from Central or South America, 79% males from the Caribbean, and 67% males born in the United States. The median ages ranged from mid-40's (45 years for those born in the United States) to low 50's (50 years for those born in the Caribbean and 52 years for those born in Central or South America). In comparison to those physicians born in the United States, those born outside of the country were well acculturated as the majority had lived in the United States for more than 11 years. Additionally, although the majority of respondents preferred to speak to their patients in Spanish (64% for those born in the Caribbean and 67% for those born in Central or South America), they also preferred to receive their medical literature in English (53% for those born in Central or South America and 64%

for those born in the Caribbean). Study sample demographics are depicted in Table 4.1.

Main Findings

The active promotion of influenza vaccination recommendation to Hispanic and Latino patients was relatively similar among physicians born in Central or South America and those born in the Caribbean, however lower among respondents born in the United States (82%, 100%, and 67%, respectively). Further, while 35% of Hispanic and Latino physicians born in Central or South America, and 43% of those born in the Caribbean indicated they recommended vaccination to 80-100% of their patients the previous week, 50% of respondents born in the United States indicated that they recommended influenza vaccination to less than 10% of their patients. Lastly, active and non-active influenza immunization recommenders alike noted that having educational tools in their clinics could help facilitate or enhance the communication between doctors and patients when recommending influenza vaccinations. Further, due to the diversity of clientele that doctors see, both active and non-active influenza vaccine recommenders alike noted the need to have influenza information (e.g. how vaccines work, benefits of influenza vaccines, and risks associated with influenza disease) translated in both English and Spanish as well as presented to patients in various formats other than pamphlets.

> *"I think literature, brochures, or things that can be handed out. Like I said, I don't go out of my way to purchase them so if they were available to hand out to patients, or just to have in the waiting room. Or even posters or things like that to remind people (of vaccination) certain times of the year. I have a television in my waiting room…it's more for entertainment, but if something could be put on there, I'm sure that patients would watch it, and learn from it. And they would be more interested, and I'm sure it would increase the number of patients interested (in talking about it)." (Non-Active Recommender, #1)*

"I think the most useful (educational tool) would be a video to play in my waiting room explaining why it is so important to get vaccinated, and that all should get vaccinated. Also, to explain to the public that there is lower risk in getting sick due to being vaccinated. What would be good is to have a large print audio visual material because you have people that have a hard time reading small print. Also, I think pamphlets that they can read while they're waiting would be helpful. Basic information about the vaccine, its purpose, how it works, and why it's so important. All these materials would be useful in English and in Spanish." (Non-Active Recommender, #2)

"Probably some good talking points would be nice, and developing something that says what the pros and cons are on getting the flu shot. I think you know we sometimes forget and give them numbers instead of giving them information saying this (influenza) has killed people in the past and these are our numbers. That would probably be very helpful…but not in a handout…I don't think patients want more handouts. They would throw those away…I would like…a flip chart. The flip chart doesn't have need to be in many languages. Just has to be in English with illustrations, and then I can translated it into whatever language I need." (Active Recommender, #1)

Susceptibility

Overall, most of the participants, regardless of region of birth, believed that high risk individuals (specifically pregnant women and individuals age 65 or older) were likely to experience a serious illness as a result of influenza infections. This believe was also true for non-high risk patients among Hispanic and Latino physicians born in Central or South America. Furthermore, approximately half of the respondents, regardless of region of birth, indicated that it was unlikely that they themselves would

experience a serious illness if infected with influenza viruses (53% for those born in Central or South America, 54% for those born in the Caribbean, and 40% for those born in the United States). Most of the participants also believed that influenza disease was difficult to manage in high risk patients. This perception was stronger among those born in the United States.

Severity

Although 83% of Hispanic and Latino physicians born in the United States previously treated a Hispanic or Latino patient that developed a life-threatening complication (i.e. pneumonia or death) and required hospitalization as a result of influenza illness (as compared to 53% and 50% of physicians born in Central or South America and Caribbean, respectively), overall, most of the participants, regardless of region of birth, believed that influenza causes serious health problems for all individuals.

Benefits

With the exception of one provider born in the United States (8%), all participants believed that getting the influenza vaccine could greatly reduce the chances of becoming ill with influenza for all populations regardless of high risk status. See Table 2 for Susceptibility, Severity and Benefits construct results.

Barriers

With the exception of two (17%) physicians born in the United States, all Hispanic and Latino physicians believed that getting an annual influenza vaccination was an effective way to prevent influenza infection. Further, the majority of respondents (regardless of region of birth) believed that influenza vaccines were safe for all regardless of high risk status. Notably, unlike physicians born in the Caribbean or Central/South America, respondents born in the United States were likely to be deterred from recommending influenza vaccination to their Hispanic and Latino patients due to the following reasons: vaccines do not help with herd immunity (25%), vaccines are not reliable for preventing influenza cases (42%), vaccines lead to serious adverse effects (25%), vaccines are too expensive for

their clinics to administer (33%), and vaccines are too expensive for their Hispanic and Latino patients (25%). Additionally, 50% of Hispanic and Latino physicians born in the United States were either moderately or not confident at all that their Hispanic and Latino patients would follow their vaccination recommendations. Lastly, active and non-active influenza immunization recommenders alike noted that patient's understanding of what their health insurances cover, could help alleviate some of the challenges the doctors face at the time of recommending vaccination to their patients.

> *"I guess because it is a benefit for everybody if patients are clearer about what insurance companies cover…if they cover influenza vaccine. Like we know for example, we know that our vaccines are covered, but sometimes once in a while certain vaccines are not covered or I don't know and my staff doesn't know…if all insurance companies cover the influenza vaccine and if everybody knows, I think that would help a lot." (Active Recommender, #2)*

Cues to Action

Overall, regardless of the physicians' place of birth, respondents trusted the same type of sources of influenza vaccination and recommendations. The most trusted source of influenza vaccine information included government agencies (e.g. CDC/ACIP) and professional medical associations (e.g. AMA). The least trusted sources of influenza vaccine information included media (e.g. newspapers, TV, and radio) and social media (e.g. Facebook, Twitter, etc.).

4.4 Discussion

The study provided an opportunity to examine the differences in perceptions of influenza and influenza vaccines that Hispanic and Latino physicians have and how their ethnic variations may be associated with these perceptions. Additionally, the study revealed potentially important findings that may guide the dissemination of public health messages to members of the Hispanic

and Latino physician community. First, findings revealed that irrespective of birth region, the majority of Hispanic and Latino physicians actively recommended influenza vaccination to their Hispanic and Latino patients. Further, the data suggests that the majority of the study participants use many of the same public health messages found in CDC and other public health agencies, regarding influenza and influenza vaccinations. Some of these messages included the severity of influenza disease if an individual were to be exposed to the virus, high risk individuals (i.e., those ages 65 and above) are highly susceptible to complications from the disease if they contract virus, as well as safety and benefits of influenza vaccines to help reduce chances of illness in the general population. Additionally, active and non-active influenza recommenders alike were interested in educating their patients about influenza disease and influenza vaccinations and believed that having educational materials available in the waiting room, could help facilitate or enhance the communication between doctors and patients when recommending influenza vaccinations.

Second, the study also revealed that although most of the influenza vaccine perceptions as measured through the components of the HBM (i.e., susceptibility, severity, benefits, barriers, and cues to action) were similar across participants, a small but potentially significant difference emerged between Hispanics and Latinos from various regions of birth. In particular, study participants born in the United States may be more likely to be deterred from recommending influenza vaccination to their Hispanic and Latino patients due to reasons that included vaccine reliability, vaccine safety and vaccine financial expenses to both the clinic and patients. Interestingly, although 83% of these US born respondents indicated being acquainted with the disease severity that influenza infections could cause (e.g. had patients who developed a life-threatening complication, such as pneumonia or death and required hospitalization as a result of influenza illness), 67% self-reported

themselves as non-active recommenders of influenza vaccination and 50% recommended influenza vaccines to less than 10% of their patients. The lack of influenza vaccine recommendations among physicians born in the US could be associated to the timing in which the study took place (i.e., May 27, 2015 through September 6, 2015), which falls outside of the normal influenza season in the United States. Further, it is noted that while 58% of the participants born in the United States were less than 50 years of age (median = 45 years), the majority of physicians born in Central or South America (59%) and the Caribbean (53%) were 50 years old or older (medians = 52 years and 50 years, respectively). This observation is congruent with previous studies which identify physician's age as a factor affecting uptake of influenza vaccination with older physicians being more likely to prescribe to vaccination compliancy (Hollmeyer & Hayden, 2009; Akan, et al., 2016).

Third, although the majority of Hispanic and Latino physicians indicated to their actively recommended influenza vaccination to their Hispanic and Latino patients, physicians born in the US were less likely to believe that their Hispanic or Latino patients would follow their influenza vaccination recommendations. Physicians born in the United States were also less likely to administer influenza vaccines at their clinics, as compared to Hispanic and Latino physicians born outside of the country.

Although influenza vaccine recommendation among Hispanic and Latino providers was high, the differences across providers from various regions of birth in this study further highlight the possibility that influenza vaccination recommendations and influenza vaccination administration may vary by Hispanic sub-groups across the United States. This observed variability between providers from diverse regions of birth is congruent with other recent published studies showing

that within the Hispanic population, place of birth is an important determinant for the increased use of preventive health services, including regular influenza vaccination (Vargas-Bustamante et al., 2010; Moran et al., 2016). Moran et al. (2016) study proposed that differences are due to a "broader cultural, structural, and policy-level factors at play in the countries" where Hispanics come from, that continue to influence their beliefs about health including vaccinations, even after they migrate to the United States (Moran et al., 2016).

It is worth pointing out that although Vargas-Bustamante et al. (2010) concluded that Hispanics of Mexican and Central/South American ancestry use preventive health services, such as influenza vaccination, less frequently than Hispanics from the Caribbean, this difference was not observed in this study. Instead, Hispanic and Latino physicians born in the United States were less likely to actively recommend influenza vaccination to their patients than respondents born outside of the country. Two possible explanations could explain this discrepancy in trends. One, although the survey tool used in this study accounted for physicians' region of birth, for those born in the United States, the survey tool did not account for ethnic background nor cultural practices. Second, although arguably Hispanic and Latino physicians born in the US are equally if not better acculturated to the US standards of care than those born outside of the country, these respondents were least likely to report that their Hispanic or Latino patients initiated the conversation regarding influenza vaccination. Similarly, physicians born in the US were also the least likely to believe that their Hispanic or Latino patients would follow their influenza immunization recommendations. These findings are important because a study published in 2007 concluded that "physicians were more patient-centered, less contentious, and showed more positive affect to patients they judged to be better communicators, more satisfied with care, and more likely to adhere to treatment". Further, "patients

who asked questions, expressed concerns, and stated preferences provided opportunities for physicians to provide information, offer support, and accommodate requests which, in turn, legitimize continued patient involvement" (Street, Gordon, & Haidet, 2007). Based on these findings, it could be argued that by not educating the patients prior to their doctor's visit and encouraging them to discuss vaccination concerns with their physicians, a missed opportunity is created as the physician would not be as inclined to recommend influenza vaccination as he or she would with other more engaging clientele. Further, Hispanic and Latino providers should also be encouraged to practice the same type of patient care regardless of the patient's background and be encouraged to adopt culturally and linguistically appropriate intervention practices to address barriers keeping their patients from getting vaccinated.

4.5 Limitations

While this study is among first to examine factors that may influence the influenza vaccine recommendations among Hispanic and Latino providers in the United States, there are several limitations that must be noted. First, , this study was limited due to the low response rate, which is lower than the rates reported in studies with physicians as the target population (Braithwaite et al., 2003). Arguably, the response rate could have been impacted by the stratification of an already hard to reach population (e.g. physicians or providers). Although physicians were provided a financial incentive and were reminded of the study through e-mail and telephone prompts, larger financial incentives, development of multi-mode methods such as mail and web-based surveys, and reduction in the length of the survey tools (Flanigan, 2008) might prove beneficial for future studies. Further, partnering with professional medical associations that cater to this specific community (e.g. Hispanic Medical Association), might increase the HL physicians' perception of the study's worth or value as well as help alleviate any confidentiality

concerns. Second, self-reported convictions of influenza vaccination recommendation might be subject to bias such as social desirable answers. To account for this problem, questions were written in non-judgmental and non-leading format and the survey instrument was evaluated with a subset of Hispanic and Latino physicians to increase its clarity and validity.

Lastly, although a helpful framework to identify constructs related to health behavior, the HBM does not provide information with regards to whether these determinants follow an additive or multiplicative effect on outcome of interest. Additionally, the model does not to account for social or environmental constructs that would influence a Hispanic and Latino physician to recommend influenza vaccination to their Hispanic clientele, or deter him/her from making these immunization recommendations. Other behavioral models such as the Integrated Behavioral Model (IBM), should be considered for future studies as they add many additional layers or components to the conceptual framework that may allow for the reveal of additional determinants that could predict behavior associated with influenza vaccination recommendations (Montaño & Kasprzyk, 2008).

Lastly, the response rate of for this study was low. It is important to note however, that this study is among the few to look at the perceptions of this unique population and can serve as a benchmark for subsequent studies and for the establishment of intervention programs that could help enhance the vaccination rates among individual Hispanic sub-groups in the US.

4.6 Conclusions

Irrespective of birth region, almost all Hispanic and Latino physicians who participated in this study

were active promoters of influenza vaccination and recognized the value of influenza vaccination for their patients. Potential factors for differences in influenza vaccine recommendations among Hispanic and Latino physicians to their Hispanic and Latino patient included perception that patients will not follow the physician's recommendations, perception that patients do not initiate communication regarding influenza vaccination, and vaccine financial costs to both clinics and patients. This study suggests the development of culturally communication practices such as pamphlets, public service announcements or other tailored materials that could be provided at a physician's office is of value so that patients can educate themselves about influenza and influenza vaccine benefits prior to seeing the doctor. These messages could further elicit a conversation between patient and doctor and encourage the doctor to recommend influenza vaccination during the visit. Hispanic and Latino patients should also be encouraged to familiarize themselves with health insurance coverages, including immunizations, so as to reduce the chances of out-of-pocket costs becoming a barrier at the time of vaccine recommendation and/or administration.

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Table 4.1 Demographic Characteristic of Sampled Population by Place of Birth

	Born in Central or South America (n=17)		Born in the Caribbean (n=14)		Born in the United States (n=12)	
	n	**%**	**n**	**%**	**n**	**%**
PROVIDER CHARACTERISTICS						
Provider's Gender						
Male	13	76	11	79	8	67
Female	4	24	3	21	4	33
Provider's Age						
29-39 years	5	29	2	15	4	33
40-49 years	2	12	4	31	3	25
50-59 years	6	35	5	38	3	25
60+ years	4	24	2	15	2	17
missing			1			
Number of years provider has lived in the United States						
<1 year	-	-	1	7	-	-
1-5 years	1	6	1	7	-	-
6-10 years	3	19	-	-	-	-
11+ years	12	75	10	71	1	9
Born in the United States	-	-	2	14	10	91
missing	1				1	
Language provider prefers to speak to patients						
English	-	-	1	7	1	8
Spanish	10	67	9	64	4	33
Either language	5	33	4	29	7	58
missing	2					
Language provider prefers to receive medical literature						
English	9	53	9	64	10	83
Spanish	1	6	-	-	-	-
Either language	7	41	5	36	2	17

Region where provider completed technical qualification						
United States	7	47	5	36	10	83
Central America	4	27	-	-	1	8
South America	4	27	-	-	-	-
Caribbean	-	-	7	50	1	8
Other	-	-	2	14	-	-
missing	2					
Number of years provider has practiced following graduation						
<1 year	1	6	-	-	-	-
1-5 years	3	18	1	7	2	17
6-10 years	3	18	1	7	3	25
11-20 years	1	6	4	29	3	25
20+ years	9	53	8	57	4	33
Number of years provider has practiced in the United States						
<1 year	-	-	-	-	-	-
1-5 years	4	25	2	15	-	-
6-10 years	1	6	-	-	1	9
11+ years	6	38	6	46	2	18
Graduated in the US	5	31	5	38	8	73
missing	1		1		1	
PROVIDER'S CLINIC CHARACTERISTICS						
Provider's outpatient clinic structure						
Private clinic	10	59	9	64	6	55
Private clinic - OB/GYN	-	-	1	7	1	9
Private clinic - multispecialty	3	18	1	7	-	-
Gov clinic - OB/GYN	1	6	-	-	1	9
Gov clinic - multispecialty	-	-	1	7	-	-
University clinic	1	6	-	-	2	18
Hospital owned practice – Gov	1	6	-	-	1	9
Hospital owned practice – private	1	6	2	14	-	-
missing					1	

Clinic location						
California	2	12	-	-	2	17
Florida	6	35	5	36	3	25
New York	4	24	7	50	4	33
Texas	5	29	2	14	3	25
Percentage of patients who are Hispanic						
0-49%	4	24	1	7	3	25
50-100%	13	76	13	93	9	75
Percentage of patients who are pregnant						
0-9%	9	56	8	67	2	18
10-49%	5	31	4	33	6	55
50-100%	2	13	-	-	3	27
missing	1		2		1	
Percentage of patients who are elderly						
0-9%	2	12	-	-	-	-
10-49%	4	24	5	36	5	45
50-100%	11	65	9	64	6	55
missing					1	
Percentage of patients without insurance						
0-29%	11	65	9	64	6	50
30-69%	3	18	5	36	6	50
70-100%	3	18	-	-	-	-

Table 4.2 Perceived Susceptibility, Severity and Benefits Constructs by Place of Birth

	Born in Central or South America (n=17)		Born in the Caribbean (n=14)		Born in the United States (n=12)	
	n	**%**	**n**	**%**	**n**	**%**
PERCEIVED SUSCEPTIBILITY						
Individuals in general population experience serious illness						
Likely	13	76	8	62	6	55
Unlikely	4	24	5	38	5	45
missing			1		1	
Pregnant women experience serious illness						
Likely	13	76	12	92	9	82
Unlikely	4	24	1	8	2	18
missing			1		1	
Elderly experience serious illness						
Likely	17	100	13	93	11	92
Unlikely	-	-	1	7	1	8
Me (I) experience serious illness						
Likely	8	47	6	46	6	60
Unlikely	9	53	7	54	4	40
missing			1		2	
Management of influenza disease among Latinos						
Easy	6	40	5	36	4	33
Moderate	7	47	4	29	5	42
Difficult	2	13	5	36	3	25
missing	2					
Management of influenza disease among pregnant women						
Easy	5	29	3	23	2	17
Moderate	7	41	6	46	3	25
Difficult	5	29	4	31	7	58
missing			1			

Management of influenza disease among elderly						
Easy	4	24	5	36	1	8
Moderate	8	47	5	36	5	42
Difficult	5	29	4	29	6	50
missing						
Management of influenza disease for me						
Easy	10	59	12	86	8	67
Moderate	6	35	2	14	4	33
Difficult	1	6	-	-		
PERCEIVED SEVERITY						
Flu causes serious health problems for general population						
Agree	15	88	10	71	11	100
Disagree	2	12	4	29	-	-
missing					1	
Flu causes serious health problems for pregnant women						
Agree	17	100	12	92	11	100
Disagree	-	-	1	8	-	-
missing			1		1	
Flu causes serious health problems for fetus						
Agree	15	94	11	85	11	100
Disagree	1	6	2	15	-	-
missing	1		1		1	
Flu causes serious health problems for elderly						
Agree	17	100	13	93	12	100
Disagree	-	-	1	7	-	-
Flu causes serious health problems for me						
Agree	13	76	8	57	7	70
Disagree	4	24	6	43	3	30
missing					2	

Patient developed complication						
Yes	9	53	7	50	10	83
No	8	47	7	50	2	17
PERCEIVED BENEFIT						
Vaccine reduce chance of illness for general population						
Agree	17	100	14	100	11	92
Disagree	-	-	-	-	1	8
Vaccine reduce chance of illness for pregnant women						
Agree	17	100	13	100	12	100
Disagree	-	-	-	-	-	-
missing			1			
Vaccine reduce chance of illness for elderly						
Agree	17	100	14	100	12	100
Disagree	-	-	-	-	-	-
Vaccine reduce chance of illness for me						
Agree	17	100	14	100	12	100
Disagree	-	-	-	-	-	-

Table 4.3 Perceived Barriers and Cues to Action Constructs by Place of Birth

	Born in Central or South America (n=17)		Born in the Caribbean (n=14)		Born in the United States (n=12)	
	n	**%**	**n**	**%**	**n**	**%**
PERCEIVED BARRIERS						
Getting annual influenza vaccination						
Effective	17	100	14	100	10	83
Not Effective	-	-	-	-	2	17
Safety of influenza vaccine for general population						
Safe	17	100	13	100	12	100
Unsafe	-	-	-	-	-	-
missing			1			
Safety of influenza vaccine for pregnant women						
Safe	17	100	11	92	11	92
Unsafe	-	-	1	8	1	8
missing			2			
Safety of influenza vaccine for pregnant woman's fetus						
Safe	16	100	11	92	11	92
Unsafe	-	-	1	8	1	8
missing	1		2			
Safety of influenza vaccine for elderly						
Safe	17	100	13	100	12	100
Unsafe	-	-	-	-	-	-
missing			1			
Safety of influenza vaccine for me						
Safe	17	100	12	100	12	100
Unsafe	-	-	-	-	-	-
missing			2			

Vaccine does not help with herd immunity							
	No deter from rec	16	94	12	86	8	67
	Mild deter from rec	1	6	1	7	3	25
	Deter from rec	-	-	1	7	1	8
Vaccine is not reliable for preventing flu cases							
	No deter from rec	16	94	12	86	7	58
	Mild deter from rec	1	6	2	14	5	42
	Deter from rec	-	-	-	-	-	-
Vaccines make people sick with flu related illness							
	No deter from rec	14	82	12	86	10	83
	Mild deter from rec	3	18	1	7	2	17
	Deter from rec	-	-	1	7	-	-
Vaccines are unsafe							
	No deter from rec	15	88	13	93	10	83
	Mild deter from rec	-	-	1	7	2	17
	Deter from rec	2	12	-	-	-	-
Vaccines lead to adverse effects							
	No deter from rec	16	94	13	93	9	75
	Mild deter from rec	-	-	1	7	3	25
	Deter from rec	1	6	-	-	-	-
Vaccines are too expensive for my clinic to administer							
	No deter from rec	14	82	13	93	8	67
	Mild deter from rec	1	6	1	7	4	33
	Deter from rec	2	12	-	-	-	-
Vaccines are too expensive for my patients							
	No deter from rec	15	88	13	93	8	67
	Mild deter from rec	1	6	1	7	3	25
	Deter from rec	1	6	-	-	1	8

Confidence that patients will follow vaccination advice						
Very confident	3	18	4	29	1	8
Highly confident	9	53	8	57	5	42
Moderately confident	5	29	2	14	5	42
Not confident at all	-	-	-	-	1	8
CUES TO ACTION						
Provider level of trust of Professional Medical Associations						
Highly trust	14	82	9	69	8	73
Somewhat trust	3	18	4	31	3	27
Do not trust	-	-	-	-	-	-
missing			1		1	
Provider level of trust of CDC / ACIP						
Highly trust	15	88	13	100	10	91
Somewhat trust	2	12	-	-	1	9
Do not trust	-	-	-	-	-	-
missing			1		1	
Provider level of trust of Vaccine Manufacturers						
Highly trust	4	24	3	23	1	9
Somewhat trust	12	71	8	62	8	73
Do not trust	1	6	2	15	2	18
missing			1		1	
Provider level of trust of Private Health Insurances						
Highly trust	4	24	3	25	-	-
Somewhat trust	11	65	8	67	7	64
Do not trust	2	12	1	8	4	36
missing			2		1	
Provider level of trust of Medicaid and Medicare						
Highly trust	11	65	11	85	4	36
Somewhat trust	6	35	2	15	6	55
Do not trust	-	-	-	-	1	9
missing			1		1	

Provider level of trust of US Food and Drug Administration						
Highly trust	11	65	8	62	7	64
Somewhat trust	6	35	5	38	3	27
Do not trust	-	-	-	-	1	9
missing			1		1	
Provider level of trust of scientific journal articles						
Highly trust	12	75	8	62	8	73
Somewhat trust	4	25	5	38	3	27
Do not trust	-	-	-	-	-	-
missing	1		1		1	
Provider level of trust of media						
Highly trust	1	6	1	8	-	-
Somewhat trust	7	44	3	25	3	30
Do not trust	8	50	8	67	7	70
missing	1		2		2	
Provider level of trust of social media						
Highly trust	-	-	1	8	-	-
Somewhat trust	5	33	3	25	1	10
Do not trust	10	67	8	67	9	90
missing	2		2		2	
Provider level of trust of opinions and experiences of colleagues						
Highly trust	5	33	2	15	1	9
Somewhat trust	10	67	9	69	10	91
Do not trust	-	-	2	15	-	-
missing	2		1		1	
Provider level of trust of experience from years in clinic						
Highly trust	14	82	11	79	5	50
Somewhat trust	3	18	2	14	5	50
Do not trust	-	-	1	7	-	-
missing					2	

Table 4.4 Behavioral Determinants Associated with Hispanic and Latino Physicians' Influenza Vaccination Recommendation to Their Hispanic and Latino Patients

	Born in Central or South America (n=17)		Born in the Caribbean (n=14)		Born in the United States (n=12)	
	n	**%**	**n**	**%**	**n**	**%**
DETERMINANTS OF INFLUENZA VACCINATION						
Influenza Vaccine Recommendation						
Active Recommender	14	82	14	100	8	67
Non-Active Recommender	3	18	-	-	4	33
Percentage of patients that were recommended vaccination						
0-9%	8	47	2	14	6	50
10-39%	3	18	5	36	1	8
40-79%	-	-	1	7	2	17
80-100%	6	35	6	43	3	25
Percentage of patients who initiated conversation about vaccine						
0-9%	5	33	5	36	6	50
10-39%	7	47	8	57	4	33
40-69%	3	20	-	-	1	8
70-100%	-	-	1	7	1	8
missing	2					

CHAPTER 5

CONCLUSION

5.0 Overview

This final chapter presents the conclusion from the two studies and links the findings as they relate to perceptions of influenza vaccination among Hispanic and Latino physicians in the United States. Further, this chapter connects the findings with the research questions presented in Chapters One through Four. Lastly, recommendations will be made for future research in this field to aid in the potential development of health communication messages to educate Hispanic and Latino physicians about influenza vaccines and thus increase their recommendation (or strength of those recommendations) of these vaccines to their Hispanic and Latino patients.

5.1 Background

Influenza ranked among the top ten leading causes of death in the United States between 1999 and 2014 and it has the ability to cause substantial morbidity and mortality worldwide. Although annual influenza vaccination has been identified and recommended as the most effective means to prevent and reduce the risk of influenza illness and its complications, Hispanics and Latinos in the United States have lower usage of preventive health services, such as influenza vaccination as compared to other racial and ethnic groups in the country. Hispanics and Latinos are the largest ethnic-minority group in the country, however, much like their affinity to settle in different regions in the country, recent studies have identified discrepancies within Hispanic subgroups with regards to use of preventive health services. Specifically, Hispanics of Mexican

and Central/South American descent use these services less frequently than other Hispanic subgroups. Research also suggests that the Hispanic and Latino community is highly responsive to individual and public recommendations from healthcare officials. Nevertheless, Hispanics and Latinos greater than 18 years in the United States are less likely to receive the influenza vaccine than non-Hispanic whites. This racial/ethnic vaccine uptake trend is also prevalent among healthcare workers (HCWs), with Blacks and Hispanics HCWs having lower vaccination rates than non-Hispanic whites HCWs.

Given the low influenza vaccination rates among Hispanics as well as the diversity within this population in the United States, the objective of this research was to examine the influenza and influenza vaccine perceptions among Hispanic and Latino physicians in the United States. The first study reviewed the meanings and perceptions that Hispanic and Latino physicians in the United States assign to influenza vaccines, and how these perceptions in turn affect the conviction of their influenza vaccine recommendations to their Hispanic and Latino patients. To account for the heterogeneity of the Hispanic community in the United States, the second study examined the differences in perceptions of influenza and influenza vaccines that Hispanic and Latino physicians born in three different regions (i.e. United States, Caribbean, and Central or South America) have and how their perceptions impact their immunization recommendation to their Hispanic and Latino clientele.

5.2 Research Questions and Findings

5.2.1 Study One

Research Questions:

i) What meanings and perceptions do Hispanic and Latino physicians in the United States assign to influenza and influenza vaccines?

ii) How do these meanings and perceptions affect the conviction of their influenza vaccine recommendation to their Hispanic and Latino patients?

Findings: The research findings as they relate to the studies' questions above may be summarized as follows:

i) In reviewing the results from the online survey, the findings suggest that Hispanic and Latino physicians believe that all patients, regardless of risk status, were likely to experience a serious illness as a result of influenza infections. Further, they also believed that the severity of the disease was related to multiple factors including a patient's underlying medical condition and age. With regards to influenza vaccines, Hispanic and Latino physicians believed getting the vaccine could greatly reduce the chances of becoming ill with influenza for all populations regardless of high risk status. Further, they believed that influenza vaccines are safe for all individuals alike. Results from the phone interviews revealed that common barriers of provider's patient population to receiving influenza vaccination and/or provider's recommendation of the vaccine included: patients' limited knowledge about influenza vaccines; lack of vaccine availability at the clinics; and the confidence providers had that their patients would follow their vaccination advice.

ii) Overall, the study revealed that the majority of Hispanic and Latino physicians were active/strong recommenders of influenza vaccination to their Hispanic and Latino patients. Further, findings from this study suggested that the majority of Hispanic and Latino physicians know of and used messages put forward by CDC and other public health agencies that provide recommendations and materials associated with influenza disease. Some of these messages include: influenza can cause serious health problems and severity of the disease is associated with patient's high risk status; influenza vaccination is beneficial as it helps protect and reduce symptoms associated with influenza; and more unvaccinated than vaccinated individuals get influenza disease.

5.2.2 Study Two

Research Question:

i) Are the meanings and perceptions assigned to influenza and influenza vaccines by Hispanic and Latino physicians homogeneous throughout the United States?

Findings:

i) Findings from study revealed that despite the heterogeneity of physicians' region of birth, most Hispanic and Latino physicians actively recommended influenza vaccination to their Hispanic and Latino patients. Further, the study suggested that these physicians are attuned to public health messages found in CDC and other public health agencies. Notably, the study also revealed that although most physicians are strong recommenders of the vaccine, small but potentially significant differences exists with regards to their perceptions about influenza and influenza vaccine. In particular, Hispanic and Latino physicians born in the United States were more likely to be deterred from recommending influenza vaccination to their Hispanic and Latino patients due to reasons that included vaccine reliability, vaccine safety and vaccine financial expenses to both the clinic and patients. Further, over half of this sampled group, as compared to those born in the Caribbean or Central/South America, self-reported themselves as non-active recommenders of influenza vaccination to their Hispanic and Latino patients. Lastly, although influenza vaccine recommendations among Hispanic and Latino providers overall was high, the differences in meanings and perceptions found in this study highlight the possibility that influenza vaccination recommendations and influenza vaccination administration may vary by Hispanic sub-groups across the United States.

5.3 Recommendations

Based on the information obtained in this study, the following recommendations are offered for related research in the field of influenza vaccination or immunization perceptions among Hispanic and

Latino physicians in the United States.

1. Given this study's low response rate, the following changes to methodology could help improve participation. These changes include partnering with the Hispanic Medical Association or other professional groups that specifically cater to physicians in this ethnic/race group across the country. This partnering will allow for a greater response rate as it will increase the level of interest in the study as well as the trust level among participants. Although physicians were instructed that this study was being conducted by investigators affiliated with CDC and the electronic survey had the CDC logo as part of the header, clinics and doctors were initially contacted by members of HMA and not CDC. It is possible that due to their unfamiliarity with this company, many doctors refrained from completing the survey even if they initially showed interest in participating.

   Another methodological change that could improve participation is the use of mixed-mode surveys. Although some studies argue that the implementation of mixed-mode surveys, in particular originally contacting the participant via email for the web-based questionnaire followed by a mailed survey, yields mildly higher response rates as compared to sending a mail survey or an electronic survey alone (Converse, Wolfe, Huang, & Oswald, 2008), other studies have revealed significant improvements in study response rates to electronic surveys through the use of these mixed-mode survey methods (Millar & Dillman, 2011). It is important to point out however, that studies specifically focused on evaluation of response rate in this particular population (i.e., Hispanic and Latino physicians practicing in the United States) are yet to be conducted.

Finally, although for this study it was important to generate multiple questions so as to measure almost all of the parameters of the HBM, researchers are encouraged to reduce the number of questions so as to shorten the length of the survey and thus help improve the response rates (Dillman, 2007b). Careful consideration must be given to the construction of the survey, as the reduction of questions may render the questionnaire useless and the answers uninterpretable. The following methodological techniques may help researchers identify variables that are of significance to their respective studies, so as to reduce the length of the final survey tools:

a) Researchers could recruit a small number of study participants similar to the population of interest and conduct focus groups. These focus groups, which are group discussions on a particular topic, are thought to be sources of data where the interaction between participants is expected to generate additional or different information than data gathered from one on one interviews. It allows the researcher to understand: topics/opinions that produce consensus among the group; statements that evoke conflict between participants; common experiences shared among study participants; and viewpoints or specific participants that are silenced by the majority, among others (Bazeley, 2013). Researchers could then incorporate that language and insights into a structured questionnaire to be field to the target population.

b) A second technique that researchers could employ if they have time and resources available is to conduct a "qualitative sandwich" prior to developing the final survey. To do so, researchers can field a set of questions, either in a focus group or one on one-interviews, in an open-ended format among participants similar to those of their population of interest. Once enough responses are obtained, researchers can analyze the results and come up with closed-ended questions based on the obtained responses

that could then be field to the target population in a survey or interview format (Henning, 2016). By performing this technique, researchers can construct questionnaires based on their target population's insight of the subject matter of interest rather than the researcher's current understanding based on published materials.

2. Although this study suggested that the majority of study participants strongly recommended influenza vaccination to their Hispanic and Latino patients, it is possible that some of these self-reported responses were biased due to social desirability. Equally as important as the self-reported conviction of influenza vaccine recommendation were the results revealing potentially important deterrents that could keep Hispanic and Latino physicians from making these recommendations. For instance, researchers should be encouraged to develop studies focusing on the perceptions that Hispanic and Latino physicians have of their Hispanic and Latino patients with regards to their acculturation level and willingness to follow advices. Additionally, further research should be conducted on the effect that cultural components have on the perceptions and behaviors that Hispanic and Latinos physicians adhere to in the United States. As noted in Chapter 4, small but potentially significant differences regarding HBM model parameters were noted across participants from different regions of birth which could impact influenza vaccination recommendations and influenza vaccination administration. As revealed by other published studies, place or region of birth can be an important determinant for the increased likelihood of seasonal influenza vaccination and these differences are believed to be associated with a "broader cultural, structural, and policy-level factors at play in the countries" where Hispanics come from, which continue to influence their beliefs about health including vaccinations, even after they migrate to the United States (Moran et al., 2016). As such, researchers are encouraged undertake

studies based on country or region of origin (i.e., Central America, South America, and Caribbean) in order to evaluate potential associations between country or region of origin and perceptions of influenza vaccination among members of this population. The combination of these studies could shed light as to why Hispanics ≥ 18 years in the United States continue to be less likely to receive influenza vaccination as compared to non-Hispanic whites.

3. Findings from these studies suggested that differences between non-active and active vaccine recommenders is not guided by the physicians' perception of the influenza vaccine but by physicians' perception related to their patient clientele. Therefore, independent of the vaccine (e.g. HPV, chickenpox, or vaccines developed against newly emerging pathogens such as Zika), vaccine campaigns and communication materials should be informed by cultural considerations that can aid in the communication between Hispanic and Latino physicians and their Hispanic and Latino patients.
4. Findings from these studies suggest that despite heterogeneity within the Hispanic and Latino population, few differences exist in the perceptions of influenza and influenza with respect to parameters of the Health Belief Model between non-active recommenders and active recommenders. Future research should consider the use of other behavioral models such as the Integrated Behavioral Model (IBM), as it adds additional layers or components to the conceptual framework that may help identify additional determinants of influenza vaccination (Montaño & Kasprzyk, 2008).
5. Because more heterogeneous Hispanic and Latino immigrants are moving to the United States, future research studies should also evaluate the potential impact that other socioecological factors (not measured in this study) could have in the recommendation and acceptance of

influenza immunizations. A study in 2016, although limited to immigrants from Mexico, El Salvador and Guatemala, concluded that structural- (i.e., healthcare coverage, health literacy, etc.), cultural- (i.e., place of birth, acculturation to the United States, etc.) and individual- (i.e., education level, age, socioeconomic status, etc.) level factors could predict influenza vaccination and vaccine safety confidence among various Hispanic sub-groups (Moran et al., 2016). As future research evaluates the specific socioecological determinants of influenza vaccine recommendations among Hispanic and Latino providers, intervention programs (i.e., health communication and education efforts) should consider the development of a socioecological framework that examines the intersecting factors that contribute to decision-making when this population of interest is faced with specific immunization messages.

6. Given these studies' findings, identification of other factors associated with vaccination as well as stratification of the Hispanic and Latino community, should be incorporated to national health surveys such as the National Health Interview Survey, so as to better estimate the influenza vaccine uptake in the Hispanic and Latino adult population.

5.4 Research Limitations

The limitations of this research include the fact that the response rate was low. Additional data, both from survey as well as interview, would strengthen the analyses and conclusions. In addition, although potential differences were noted between study participants, the HBM does not provide information with regards to whether determinants follow an additive or multiplicative effect on influenza vaccine recommendation. Further, the model does not account for social or environmental constructs that would influence a physician to recommend influenza vaccination to their patients, or deter him/her from making these immunization recommendations. As more data becomes available, future research should explore the applicability of this model to this population as compared to the use of additional

models or a merging of models as the conceptual framework for studies. Finally, the study was limited by the fact that conviction of the influenza vaccination recommendation was self-reported and therefore might be subject to social desirable answers that may not reflect the participants' true perceptions and behaviors. As such, questions in future studies should be written in a non-judgmental and non-leading format, and consideration should be given to mixed-methods (i.e., follow up interviews with participants after completion of surveys) to triangulate the data.

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DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Centers for Disease Control
and Prevention (CDC)

Memorandum

Date November 21, 2014

From Jennifer McCleary
Acting Senior IRB Administrator, Human Research Protection Office

Subject IRB Approval of New CDC Protocol #6620, "What Affects Influenza Vaccination Recommendation to Adult Hispanic or Latino Patients? Analysis of Hispanic or Latino Physician's Perceptions" (Expedited)

To Vic Veguilla, MPH
NCIRD

CDC's IRB-C has reviewed the request for approval of new protocol #6620, "What Affects Influenza Vaccination Recommendation to Adult Hispanic or Latino Patients? Analysis of Hispanic or Latino Physician's Perceptions" and has approved the protocol for the maximum allowable period of one year. **CDC IRB approval will expire on 11/12/2015.** The protocol was reviewed in accordance with the expedited review process outlined in 45 CFR 46.110(b)(1), categories 6 and 7. The IRB determined that the study poses no greater than minimal risk to subjects. A waiver of documentation of informed consent for completion of the on-line survey and follow-up telephone interviews has been granted in accordance with 45 CFR 46.117(c).

COLLABORATORS INFORMATION:

1. **Harrison Maldonado Associates, Inc**.: The IRB Authorization Agreement to Rely on the CDC IRB has been approved by the CDC Human Research Protection. **Study activities may now begin with this collaborator.**

2. **University of Georgia (Site Restricted):** The IRB Authorization Agreement to Rely on the CDC IRB has not yet been approved. **Study activities may not begin with this collaborator until CDC's Human Research Protection Office has approved the reliance agreement and you have been notified that study activities may begin with this collaborator.**

If other institutions involved in this protocol are being awarded CDC funds through the CDC Procurement and Grants Office (PGO), you are required to send a copy of this IRB approval to the CDC PGO award specialist handling the award. You are also required to verify with the award specialist that the awardee has provided PGO with the required documentation and has approval to begin or continue research involving human subjects as described in this protocol.

As a reminder, the IRB must review and approve all human subjects research protocols at intervals appropriate to the degree of risk, but not less than once per year. There is no grace period beyond one year from the last IRB approval date. It is ultimately your responsibility to submit your research protocol for continuation review and approval by the IRB along with

available IRB approvals from all collaborators. Please keep this approval in your protocol file as proof of IRB approval and as a reminder of the expiration date. **To avoid lapses in approval of your research and the possible suspension of subject enrollment and/or termination of the protocol, please submit your continuation request along with all completed supporting documentation at least six weeks before the protocol's expiration date of 11/12/2015.**

Any problems of a serious nature must be brought to the immediate attention of the CDC IRB, and any proposed changes to the protocol should be submitted as an amendment to the protocol for CDC IRB approval before they are implemented.

If you have any questions, please contact your National Center Human Subjects Contact or the CDC Human Research Protection Office at (404) 639-7570 or e-mail: huma@cdc.gov.

cc:
NCIRD Human Studies Review
Amy Sandul, MPH

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Centers for Disease Control
and Prevention (CDC)

Memorandum

Date October 20, 2015

From Denise M. Marshall, BS
IRB Administrator, Human Research Protection Office

Subject CDC IRB Approval of Continuation of Protocol #6649.0, "What affects influenza vaccination recommendation to adult Hispanic or Latino patients? Analysis of Hispanic or Latino Physician's perceptions" (Expedited)

To Vic Veguilla, MPH
NCIRD/ID

CDC's IRB "C" has reviewed and approved the request to continue protocol #6649.0, "What affects influenza vaccination recommendation to adult Hispanic or Latino patients? Analysis of Hispanic or Latino Physician's perceptions", for the maximum allowable period of one year. CDC IRB approval will expire on 11/12/2016. The continuation action was reviewed in accordance with the expedited review process outlined in 45 CFR 46.110(b)(1), categories 6 and 7.

If other institutions involved in this protocol are being awarded CDC funds through the CDC Procurement and Grants Office (PGO), you are required to send a copy of this IRB approval to the CDC PGO award specialist handling the award. You are also required to verify with the award specialist that the awardee has provided PGO with the required documentation and has approval to begin or continue research involving human subjects as described in this protocol.

As a reminder, the IRB must review and approve all human subjects research protocols at intervals appropriate to the degree of risk, but not less than once per year. There is no grace period beyond one year from the last IRB approval date. It is ultimately your responsibility to submit your research protocol for continuation review and approval by the IRB along with available IRB approvals from all collaborators. Please keep this approval in your protocol file as proof of IRB approval and as a reminder of the expiration date. **To avoid lapses in approval of your research and the possible suspension of subject enrollment and/or termination of the protocol, please submit your continuation request along with all completed supporting documentation at least six weeks before the protocol's expiration date of 11/12/2016.**

Any problems of a serious nature must be brought to the immediate attention of the CDC IRB, and any proposed changes to the protocol are required to be submitted as an amendment to the protocol for CDC IRB approval before they are implemented.

If you have any questions, please contact your National Center Human Subjects Contact or the CDC Human Research Protection Office at (404) 639-7570 or e-mail: huma@cdc.gov.

cc: NCIRD Human Studies
Amy Sandul, CIP, MPH, DHSc

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Centers for Disease Control
and Prevention (CDC)

Memorandum

Date October 20, 2016

From Clarietha T. Washington, BSPH
IRB Administrator,
Human Research Protection Office

Subject CDC IRB Approval of Continuation (2) of Protocol **#6649.0**, "What affects influenza vaccination recommendation to adult Hispanic or Latino patients? Analysis of Hispanic or Latino Physician's perceptions".

To VIC VEGUILLA, MPH
NCIRD/ID

CDC's IRB "C" has reviewed and approved the request to continue protocol #**6649.0,** "Linkage of Assisted Reproductive Technology Data with State Vital Records and Disease Registries, for the maximum allowable period of one year". CDC IRB approval will expire on **11/12/2017.** The continuation action was reviewed in accordance with the expedited review process outlined in 45 CFR 46.110(b) (1).

If other institutions involved in this protocol are being awarded CDC funds through the CDC Procurement and Grants Office (PGO), you are required to send a copy of this IRB approval to the CDC PGO award specialist handling the award. You are also required to verify with the award specialist that the awardee has provided PGO with the required documentation and has approval to begin or continue research involving human subjects as described in this protocol.

As a reminder, the IRB must review and approve all human subjects' research protocols at intervals appropriate to the degree of risk, but not less than once per year. There is no grace period beyond one year from the last IRB approval date. It is ultimately your responsibility to submit your research protocol for continuation review and approval by the IRB along with available IRB approvals from all collaborators. Please keep this approval in your protocol file as proof of IRB approval and as a reminder of the expiration date. **To avoid lapses in approval of your research and the possible suspension of subject enrollment and/or termination of the protocol, please submit your continuation request along with all completed supporting documentation at least six weeks before the protocol's expiration date of 11/12/2017.**

Any problems of a serious nature must be brought to the immediate attention of the CDC IRB, and any proposed changes to the protocol are required to be submitted as an amendment to the protocol for CDC IRB approval before they are implemented.

If you have any questions, please contact your National Center Human Subjects Contact or the CDC Human Research Protection Office at (404) 639-5256 or e-mail: huma@cdc.gov.

cc: NCIRD Human Studies Review (CDC)
Amy L. Sandul, CIP, MPH, DHSc

0 1372A

IRB Authorization Agreement

Outside institution relying on a CDC IRB

This IRB authorization agreement is suitable for documenting a formal agreement between the Centers for Disease Control and Prevention (CDC) and an institution that relies on a CDC IRB for review of the research activities specified below. This agreement is permitted by human research regulations at 45 CFR 46.114 and 21 CFR 56.114.

1 *Institution providing IRB review (Institution A)*

Centers for Disease Control and Prevention (CDC)
IRB Registration #: IRB00000185 — Registration expiration date: 2/27/2014
Federalwide Assurance (FWA) #: 00001413 — FWA expiration date: 2/26/2019

2 *Institution relying on designated IRB (Institution B)*

Name of Institution B: University of Georgia
FWA #:00003901 — FWA expiration date: 11/18/2019

3 *Scope of authorization agreement*

The officials signing below agree that Institution B may rely on the CDC IRB both for review under 45 CFR part 46 (and 21 CFR parts 50 and 56, if applicable) and for continuing oversight of the involvement of human subjects in the research described below:

	Institution A: CDC	**Institution B:**
Title of research protocol	What Affects Influenza Vaccination Recommendations to Adult Hispanic or Latino Patients? An Analysis of Hispanic and Latino Physicians Perceptions	What Affects Influenza Vaccination Recommendations to Adult Hispanic or Latino Patients? An Analysis of Hispanic and Latino Physicians Perceptions
Protocol reference ID	6649	6649
Principal investigator (name, phone, fax, e-mail)	Vic Veguilla, MPH 404-639-0424 (w) 404-639-2350 (f) dhu3@cdc.gov	
Primary contact (name, phone, fax, e-mail)		Benilda P. Pooser, Ph.D., CIM Director, Human Subjects Office 617 Boyd Graduate Studies Research Center University of Georgia, Athens, GA 30602-7411 706.542.3199 (phone) | 706.542.3360 (fax) bpooser@uga.edu

Sponsor or funding agency: CDC — Award number, if any:

Additional comments

The review and continuing oversight performed by the CDC IRB will meet the human subjects protection requirements of the HHS regulations (and FDA regulations, if applicable) for the protection of human subjects, as well as the requirements of the OHRP-approved FWA at Institution B. The CDC IRB will follow written procedures for reporting its findings and actions to appropriate officials at Institution B. CDC will make relevant minutes of IRB meetings and related records available to Institution B upon request. Institution B remains responsible for ensuring compliance with the IRB's determinations and with the terms of its FWA. This document must be kept on file at both institutions and provided to OHRP upon request.

4 Signatures

Institution A: CDC
Jennifer McCleary, BA, CIP
Human Research Protection Office
Acting Senior IRB Administrator
1600 Clifton Road, MS: D73
Atlanta, GA 30033
404-639-4954, jlm8@cdc.gov

Jennifer McCleary 12/16/14
Signature Date

Institution B: University of Georgia
David Lee Ph.D.
Vice President for Research
University of Georgia
609 Boyd Graduate Studies Research Center
Athens, GA 30602-7411
706-542-5969 dclee@uga.edu

David Lee 11/21/14
Signature Date

National Hispanic Physician Influenza Vaccination Survey

Below is a set of statements about influenza disease severity. Please read through the statements carefully focusing only on the patients you treat who are of Hispanic or Latino origin, and indicate to what extent you agree or disagree with each.

Every year, influenza causes serious health problems for:

	Strongly agree	Agree	Disagree	Strongly disagree	Refuse to answer
People in the general population	○	○	○	○	○
Pregnant women	○	○	○	○	○
A pregnant woman's fetus	○	○	○	○	○
Individuals age 65 or older	○	○	○	○	○
Me	○	○	○	○	○

1

National Hispanic Physician Influenza Vaccination Survey

Below is a set of statements about susceptibility to influenza disease. Please read through the statements carefully focusing only on the patients you treat who are of Hispanic or Latino origin, and rate each of them.

In a typical year, how likely are the following individuals to experience a serious illness as a result of influenza?

	Very likely	Likely	Unlikely	Very unlikely	Refuse to answer
People in the general population	○	○	○	○	○
Pregnant women	○	○	○	○	○
Individuals age 65 or older	○	○	○	○	○
Me	○	○	○	○	○

National Hispanic Physician Influenza Vaccination Survey

Have you ever treated a Hispanic or Latino patient that developed a life-threatening complication (i.e. pneumonia or death) and required hospitalization as a result of influenza illness?

- ○ Yes
- ○ No

3

National Hispanic Physician Influenza Vaccination Survey

Below is a set of potential control methods against influenza infection. Please read through the methods carefully and rate each of them.

How effective are the following methods at preventing influenza-related diseases?

	Much	Some	A little	None	Refuse to answer
Sanitizing surfaces with Lysol and antibacterial wipes	○	○	○	○	○
Washing hands frequently (with soap and water, or with alcohol-based hand rubs)	○	○	○	○	○
Avoiding close contact with sick people	○	○	○	○	○
Wearing face masks	○	○	○	○	○
Using prophylactic antiviral medication	○	○	○	○	○
Getting annual influenza vaccination	○	○	○	○	○
Practicing healthy lifestyle (i.e. dieting and exercising)	○	○	○	○	○
Other	○	○	○	○	○

For other (please specify)

4

National Hispanic Physician Influenza Vaccination Survey

In a typical year, how easy is it to manage influenza disease for your Hispanic or Latino patients?

Very Easy									Very Difficult
○	○	○	○	○	○	○	○	○	○

Compared to your other patients, how easy is it to manage influenza disease for:

	Very Easy									Very Difficult
Pregnant women?	○	○	○	○	○	○	○	○	○	○
Individuals age 65 years and older?	○	○	○	○	○	○	○	○	○	○
Me?	○	○	○	○	○	○	○	○	○	○

5

National Hispanic Physician Influenza Vaccination Survey

Below is a set of statements about influenza vaccination safety. Please read through the statements carefully focusing only on the patients you treat who are of Hispanic or Latino origin, and rate each of them.

How safe do you believe influenza vaccines are for:

	Very safe	Safe	Unsafe	Very unsafe	Refuse to answer
People in the general population?	○	○	○	○	○
Pregnant women?	○	○	○	○	○
A pregnant woman's fetus?	○	○	○	○	○
Individuals age 65 years and older?	○	○	○	○	○
Me?	○	○	○	○	○

6

National Hispanic Physician Influenza Vaccination Survey

Below is a set of statements about influenza vaccination. Please read through the statements carefully focusing only on the patients you treat who are of Hispanic or Latino origin, and indicate to what extent you agree or disagree with each.

Getting the influenza vaccine can greatly reduce the chances of becoming ill with influenza for:

	Strongly agree	Agree	Disagree	Strongly disagree	Refuse to answer
People in the general population	○	○	○	○	○
Pregnant women	○	○	○	○	○
Individuals age 65 and older	○	○	○	○	○
Me	○	○	○	○	○

7

How much do the following reasons deter you from recommending influenza vaccinations for your Hispanic or Latino patients?

	Not at All									A Great Deal
Vaccinating my Hispanic or Latino patients does not help with herd immunity.	○	○	○	○	○	○	○	○	○	○
Influenza vaccines are not reliable for preventing influenza cases.	○	○	○	○	○	○	○	○	○	○
Influenza vaccines make people sick with influenza-related illnesses.	○	○	○	○	○	○	○	○	○	○
Influenza vaccines are unsafe.	○	○	○	○	○	○	○	○	○	○
Influenza vaccines lead to serious adverse effects.	○	○	○	○	○	○	○	○	○	○
Influenza vaccines are too expensive for my clinic to administer.	○	○	○	○	○	○	○	○	○	○
Influenza vaccines are too expensive for my Hispanic or Latino patients.	○	○	○	○	○	○	○	○	○	○

National Hispanic Physician Influenza Vaccination Survey

Below is a set of questions about influenza incidence in your community as well as vaccination practices at your primary site of outpatient clinic. If you practice at more than one outpatient site, please respond to this survey regarding the site at which you spend the most time. Please read through the questions carefully focusing only on the patients you treat who are of Hispanic or Latino origin, and select or enter the appropriate response.

What is the level of influenza-like illness activity in your state?

- ○ Minimal
- ○ Low
- ○ Moderate
- ○ High
- ○ Do not know

Approximately, how many patients did you treat at your clinic last week?

- ○ None
- ○ 1-20
- ○ 21-40
- ○ 41-60
- ○ 61-80
- ○ 81-100
- ○ >100

Approximately, what percentage of your Hispanic or Latino patients came to your clinic with influenza-like symptoms last week?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

9

Approximately, what percentage of your Hispanic or Latino patients did you diagnose with influenza at your clinic last week?

- None
- 1-5%
- 6-10%
- 11-15%
- 16-20%
- >20%

Do you or your medical staff administer influenza vaccinations at your clinic?

- Yes
- No
- Do not know

10

National Hispanic Physician Influenza Vaccination Survey

How active would you say you are in encouraging or promoting influenza vaccination to your Hispanic or Latino patients?

Very Active									Not Very Active
○	○	○	○	○	○	○	○	○	○

Please explain

11

Who in your clinic communicates the influenza vaccine recommendation to your Hispanic or Latino patients?

	Yes	No	Don't know
Me	○	○	○
Nurse practioner	○	○	○
Physician assistant	○	○	○
Medical assistant	○	○	○
Office administrator/non-clinical staff	○	○	○

During the influenza season, how often do you recommend influenza vaccination to your unvaccinated Hispanic or Latino patients?

	Yes	No	Don't know
At every patient's visit	○	○	○
At most patient's visit	○	○	○
When a patient presents him/herself with influenza-like illness	○	○	○
When a patient is high risk	○	○	○
When time permits	○	○	○

Other (please specify)

National Hispanic Physician Influenza Vaccination Survey

Approximately, what percentage of your Hispanic or Latino patients did you recommend vaccination against influenza, last week?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

13

National Hispanic Physician Influenza Vaccination Survey

How confident are you that most of your Hispanic or Latino patients will follow your advice when it comes to influenza vaccination?

Very Confident									Not Confident at All
○	○	○	○	○	○	○	○	○	○

14

National Hispanic Physician Influenza Vaccination Survey

If you or your staff administers influenza vaccinations at your clinic, approximately what percentage of your Hispanic or Latino patients received influenza vaccinations, last week?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Not applicable. We do not administer influenza vaccinations.
○	○	○	○	○	○	○	○	○	○	○	○

What percentage of your Hispanic or Latino patients initiated the conversation regarding influenza vaccination?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

15

National Hispanic Physician Influenza Vaccination Survey

Since July 1st, 2014, have you received an influenza vaccination (i.e. shot, spray, drop, or mist in the nose)?

- ○ Yes
- ○ No

Please explain, why or why not

16

Below is a set of statements about<u>your preference for information sources about influenza vaccines and recommendations</u>. Please read through the statements carefully and rate which sources you trust the most for information on influenza vaccines and recommendations and which sources you trust the least.

	Highly Trust	Somewhat Trust	Do Not Trust	Refuse to Answer
Professional Medical Associations (i.e. AMA)	○	○	○	○
Centers for Disease Control and Prevention (CDC) / Advisory Committee on Immunization Practices (ACIP)	○	○	○	○
Vaccine manufacturers	○	○	○	○
Private health insurance companies	○	○	○	○
Centers for Medicaid and Medicare	○	○	○	○
US Food and Drug Administration (FDA)	○	○	○	○
Scientific journal articles	○	○	○	○
Media (i.e. newspaper, TV, radio, etc.)	○	○	○	○
Social media (i.e. Facebook, Twitter, etc.)	○	○	○	○
Opinions and experiences of my colleagues/peers	○	○	○	○
Experience from my years in clinic	○	○	○	○
Other	○	○	○	○

For other (please specify)

18

National Hispanic Physician Influenza Vaccination Survey

Below is a set of questions about your primary site of outpatient clinic. If you practice at more than one outpatient site, please respond to this survey regarding the site at which you spend the most time. Please read through the questions carefully and select or enter the appropriate response.

What best describes your outpatient clinic structure?

- ○ Private clinic – solo practice
- ○ Private clinic – only OB/GYN, group practice
- ○ Private clinic – multi-specialty clinic
- ○ Government clinic – only OB/GYN
- ○ Government clinic – multi-specialty
- ○ University clinic or practice
- ○ Hospital owned practice – government
- ○ Hospital owned practice – private

Other (please specify)

Other than yourself, how many other medical doctors practice at your clinic?

19

What percentage of your patients are:

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Hispanic or Latino?	○	○	○	○	○	○	○	○	○	○	○
African American?	○	○	○	○	○	○	○	○	○	○	○
Native American?	○	○	○	○	○	○	○	○	○	○	○
Asian American?	○	○	○	○	○	○	○	○	○	○	○
White?	○	○	○	○	○	○	○	○	○	○	○
Other?	○	○	○	○	○	○	○	○	○	○	○

What percentage of your Hispanic or Latino patients are:

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Pregnant?	○	○	○	○	○	○	○	○	○	○	○
65 years and older?	○	○	○	○	○	○	○	○	○	○	○

What percentage of the Hispanic or Latino patients served by your clinic would you estimate<u>do not</u> have health coverage that includes influenza vaccination?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

National Hispanic Physician Influenza Vaccination Survey

Below is a set of demographic questions. Please read through them carefully and select or enter the appropriate response.

What is your gender?

- Male
- Female

What is your age?

In what country were you born?

If you were born outside of the United States, in total, for how many years have you lived in the United States?

- <1 year
- 1-5 years
- 6-10 years
- 11-20 years
- >20 years
- Not applicable. Born in the United States.

What language do you prefer to speak to your Hispanic or Latino patients?

- English
- Spanish
- Either language

21

What language do you prefer to receive your medical literature?

- English
- Spanish
- Either language

In what country did you complete or graduate with your technical qualification?

For how many years have you been practicing medicine, following completion or graduation with your technical qualification?

- <1 year
- 1-5 years
- 6-10 years
- 11-20 years
- >20 years

If you completed or graduated with your technical qualification outside of the United States, for how many years have you been practicing medicine in the United States, following completion or graduation with your technical qualification?

- <1 year
- 1-5 years
- 6-10 years
- 11-20 years
- >20 years
- Not applicable. Completed or graduated with technical qualifications in the United States

National Hispanic Physician Influenza Vaccination Survey

Thank you for participating in the survey. Your participation was very valuable.

We will forward your compensation to you electronically. To do so, we will need an e-mail to send it. You may also choose not to be compensated and we can make a donation to your favorite charity.

E-mail:

Name of charity you prefer to donate your compensation:

23

Appendix B:
Interview Guide:

The following section is to be read by the interviewer to the physician:

The purpose of this interview is to better understand some of the answers you provided in the electronic survey, specifically those concerning your thoughts and opinions regarding influenza vaccination. You are invited to complete this interview which can be conducted in the language of your choice (i.e. English or Spanish). The interview completion should take no longer than an hour. There are no right or wrong answers. Data gathered from this interview will be strictly confidential and any individual identifying collected information will be deleted or destroyed upon study's completion. If you have any questions about the study, at any point, please contact the study's Principal Investigator, Vic Veguilla, at 404-639-0424 or dhu3@cdc.gov, *for assistance.*

Before we begin, I would like to clarify my role. I am not a CDC staff member, nor am I an expert in influenza or immunization, so please feel free to offer your open and candid opinions. In an effort for researchers to better analyze the data from the study, I must ask the questions in a standardized way, even if at times it may seem formal or unnatural. Also, please remember from the Informed Consent Statement that the interview will be audio-taped, so please speak up and speak clearly.
Do you have any questions at this point?
- ***(If the answer is YES, answer the physician's questions)***
- ***(If the answer is NO)***
  - *Do I have your permission to begin audio-taping?*

Your verbal consent indicates that you understand the conditions described and that you agree to participate in this interview.
Do you consent to participating in the interview?
- ***(If the answer is YES, proceed with the interview)***
- ***(If the answer is NO, terminate the interview)***

Before we begin, I would like to remind you that your answers to this interview should be focused on the patients you treat who are of Hispanic or Latino origin.

Introduction:

1. Can you tell me a little bit about yourself and your clinic? For example:
   - How long have you been practicing medicine at this clinic?
   - From the survey, you indicated that over (50%) of your patients are Hispanic or Latino? Of that population:
     - What are the most common nationalites?
     - What is the most common age group (i.e. pediatric, young adult, older adult)?
   - In your best estimate, what proportion of your Hispanic or Latino patients suffer from chronic conditions?
     - Which are the most common chronic conditions?
   - How would you define your experience with your Hispanic or Latino patients when treating their illnesses? For example: Do you believe most of your patients are responsive to public health recommendations they receive from you?
     - What type of patient you think is **most** responsive to your recommendations?
     - What type of patient you think is **least** responsive to your recommendations?

Influenza and Influenza Vaccine Knowledge:
Now, I would like to get your thoughts about your experiences with influenza and influenza vaccines.

2. Where does influenza and influenza vaccination come in with respect to being a health issue or priority for your Hispanic or Latino patient population? Is it high, medium or low priority? Please explain.

3. How often do you treat Hispanic or Latino patients with influenza-like-illness, at your clinic, during the flu season?
    - **(HBM Element: Severity)**
        - Have any of your Hispanic or Latino patients developed life-threatening complications (such as pneumonia or death) as a result of the flu? Please describe.
        - If you treat either individuals ≥ 65 yrs or pregnant women, have they developed life-threatening complications (such as pneumonia or death) as a result of the flu? Please describe.
        - Among individuals infected with influenza, what factors do you think are attributed to differences in the severity of their symptoms or outcomes?
            - ***(PROBING QUESTIONS):**
                - Are individuals with medical conditions at a higher risk for influenza complications?
                - How about the elderly (i.e. individuals ≥ 65 years), pediatrics, and pregnant women, are they at a higher risk for influenza complications?
                - **(HBM Element: Benefits)**
                    - Are individuals previously vaccinated against influenza likely to experience milder symptoms if infected with the virus? Please explain.

Influenza Vaccine Recommendation Experiences:
Now, I would like to get your thoughts about your experiences with influenza vaccine recommendations.

4. Based on your responses to the web-survey, you indicated that your recommendation of influenza vaccination to your Hispanic or Latino patients is not very active. Please explain

5. Are there any challenges that you have encountered when communicating the influenza vaccine recommendation to your Hispanic or Latino patients?
   (HBM Element: Barriers)
    - ***(If the answer is YES),**
        - Can you describe these challenges?
            - ***(PROBING QUESTIONS)**
                - ***(If challenges are unique to PATIENTS)**
                    - Can you describe, in general, the type of patient that brings about these challenges? (i.e. general education, nationality, etc.)
                    - Do you find that different issues related to influenza vaccination emerge when talking with patients from a different nationality background than yours? If so, what issues?
                    - What are your Hispanic or Latino patients' interests and concerns when it comes to influenza vaccination?
                - ***(If challenges are unique to VACCINE SAFETY)**
                    - Are your Hispanic or Latino patients concerned about any short-term or long-term risk or side effects associated with influenza vaccines? What kind of risks? Please describe.
                    - Are you concerned about any short-term or long-term risk or side effects associated with influenza vaccines? What kind of risks? Please describe.
                - ***(If challenges are unique to VACCINE AVAILABILITY)**
                    - Does your clinic stock influenza vaccine for adults?
                        - ***(If the answer is YES)**

        - Does your clinic have a standing order for influenza vaccines?
        - Is there a financial discincentive for physicians like yourself to stock influenza vaccine for your patients?
        - How often do you run out of vaccine supplies during the flu season?
        - If you run out of vaccine supplies during the flu season, does that alter your level of influenza vaccination recommendation persistence?
      - ***(If the answer is NO)**
        - Do you recommend and refer your Hispanic or Latino patients to go to other providers for their influenza vaccination?
        - Do you share the responsibility for recommending and referring your patients to go to other providers for their influenza vaccination, with other staff members in your clinic?
        - Do you refer them to a non-traditional location like a pharmacy or clinic?
        - Do you have any concerns about referring your Hispanic or Latino patients out for influenza vaccinations?
    - ***(If challenges are unique to VACCINE COST)**
      - Is the patient ability to pay for influenza vaccination influential in your level of influenza vaccination recommendation aggressiveness?
      - For your insured patients, is cost still an influential factor in your level of influenza vaccination recommendation aggressiveness?
    - ***(If challenges are unique to medical specialty – specifically for OB/GYN interviewees)**
      - In your opinion, should OB/GYN share the responsibility for recommending and administering influenza vaccination to their patients along with Family Practitioners or Internists? Why or why not?
  - Are there any solutions that in your opinion could help you overcome these challenges? Please describe.

6. **(HBM Element: Susceptibility)**
   - If your patients were not given a recommendation to get vaccinated against influenza, in your opinion, what is their likelihood to get vaccinated against the virus?
   - For those patients that do not receive a recommendation and do not get immunized against influenza, how likely are they to get sick with flu?
   - For those patients that do not receive a recommendation and do not get immunized against influenza, how likely are they to infect those immediately around them?

Sources of Influenza Vaccine Information:
Now, I would like to ask you about the different sources you use for influenza vaccine information.
(HBM ELEMENT: CUES TO ACTION)

7. What is the most common information source you turn to for information about influenza vaccines and recommendations (i.e. professional associations or organizations, websites, peers, journal articles, media, etc.)?
   - Which source do you trust the most for information?

- Which source do you trust the least for information?
- From the sources that you trust most, what type of information do you get from them?
- How does this information help you most?

8. Do you participate in trainings or continuing education programs such as workshops, conferences, and webinars related to influenza vaccines and recommendations?
   - How often?
   - From who?
   - What type of information do you get from the trainings?
   - Is the information presented useful?

9. What helps you determine whether a patient of yours should be recommended to receive influenza vaccines?
   - Are you familiarized with CDC's current ACIP recommendations?
   - Do you agree with ACIP's recommendations? Please explain

10. Are there any tools that might be useful in enhancing communications between you and your patients when recommending influenza vaccination to them?
    - ***(If the answer is YES),**
      - What would those be (i.e. written materials, audiovisuals, etc.)?

Lastly, the final question I wanted to ask you is:

11. In your opinion, do you believe that there are better ways to prevent influenza diseases other than with an influenza vaccine? Please describe.

Concluding Remarks (Q14):

12. This concludes our interview.
- *Is there anything else that you would like to say about the study?*
- *We once again thank you for your time and participation in the study. Your comments were very valuable.*