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Nurses and Needlesticks: Perceptions of Stigma and HIV Risk

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Nurses and Needlesticks: Perceptions of Stigma and HIV Risk

by

Bethany Sharon Moore

A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Arts in Applied Anthropology
with a concentration in Medical Anthropology
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DEDICATION

This thesis is dedicated to the countless nurses, physicians, respiratory therapists, and other healthcare workers that I have had to honor to meet and work with for the past 11 years; their example, support, and instruction has guided me to become the nurse that I am today. To my patients, who have stretched my perceptions and taught me empathy. To my Mamaw, Ginger, whose memory has inspired me to show love to everyone I interact with. And to my parents, Jimmy and Shawn, who taught me compassion and to treat every human with respect and kindness, for we are all made in the image of God.

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At the age of 14, I saw a musical performance that changed my life. I had known of the band U2 and their music since I was a child, but in 2002 I saw the lead singer, Bono, speak out about the AIDS crisis in Africa. He later went on to co-found ONE, an organization which advocates for and provides life-saving medication to people living with HIV/AIDS in developing countries. Seeing this artist use his platform to speak passionately about HIV/AIDS and convince leaders to act deeply affected me. That moment catapulted me into the research of HIV and the stigma surrounding it; it placed a deep-seated desire in my heart to do everything I could to help eradicate the discrimination faced by people living with HIV and shine a light on their humanity. I still greatly admire Bono and U2 and find that their music and message give me hope, inspiration, and motivation (I listened to countless hours of their music while writing this!). For this I am deeply appreciative.

In the same vein, I discovered the writings of Dr. Oliver Sacks while I was in nursing school, and was astounded to see such a pre-eminent physician and researcher focus on the humanity of his patients. He helped the world to look beyond the disease or condition, and see the face and beating human heart. His writings have been my constant teacher and companion, and have demonstrated what true empathy is, and how that empathy and compassion can directly decrease stigma. Dr. Sacks passed away in 2015, just as I was beginning this degree program. I hope that my own research into the experiences and stories of fellow nurses will reflect the principles passed on to me by his legacy. Thank you, good Dr. Sacks—sleep well.

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My sister, Sarai Moore, and I share the honor of being the first in our family to go to college. Sarai beat me to the record of ‘first to complete a Masters’, but now I can join her. Thank you, Sarai, for inspiring me to continue my education. I knew you would always understand where I came from and what I was striving for. Thank you to all of my siblings (William, Sarai, Olivia, Elishah, Josiah, & Havilah) for each supporting me and encouraging me throughout my academic career—thank you to the “little ones” for enduring me as a teacher for several years and always allowing me to be involved in your education.

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ABSTRACT

Health-care providers (HCPs) are vulnerable to occupational health hazards, including dirty needle-stick injuries (DNSIs), which increase the risk for infection with HIV and other blood-borne pathogens. This study examines the perceptions of nurses and nurse practitioners who work in various health care settings regarding HIV-risk and DNSIs, in order to ascertain how these perceptions inform their decision-making regarding their health and nursing practice. I utilize a phenomenological approach to analyze the lived reality and embodiment of the DNSI experience by HCPs. The study explores the personal and institutional level factors that may influence the timely reporting and treatment of DNSIs, including perceived stigma, lack of institutional support, and discrimination. The results will inform the development of a protocol that emphasizes prevention of DNSIs and improves post-exposure reporting and treatment.

PROLOGUE

I was twenty-one years old when I became a nurse. I had diligently worked my way through the grueling two-year program and completed the arduous board exam to obtain my registered nurse license. I was hired into an 18-bed Adult Intensive Care Unit where I trained for 4 months before practicing on my own. I had entered nursing school as a young, slightly cocky, ambitious, anxious, and somewhat outspoken person and I had come out significantly meeker and subdued, with a significant increase in anxiety. My confidence had been shaken and at times I felt as if I would crumble beneath the enormous responsibility of being the caretaker of another human life.

I was tasked with making judgments about a patient's condition, with alerting the physician to any complications, with administering potentially dangerous medications, and with making quick decisions that could ultimately impact a patient's outcome. Along with the pressure of such responsibility, I was eager to impress my fellow nurses and physicians, to prove to them that I belonged in this position and was their equal. Thus, having been a nurse for less than a year, and with these emotions and contradictions churning my mind, I began my shift and took my assignment one fateful night. At nine o'clock in the evening, it was time for Ann's evening dose of insulin. Ann was a sweet, timid, somewhat confused elderly woman with whom I had quickly bonded, and it seemed we were to have a smooth night ahead of us. I checked Ann's blood glucose via fingerstick, determined the appropriate sliding-scale dose of insulin, and proceeded to prepare the subcutaneous injection. Ann was very frail and did not like needles, thus, I was mindful about choosing an injection site that would minimize her discomfort.

Carefully, I cleaned the small bit of flab beneath her left upper-arm, removed the orange cap of the insulin syringe, and proceeded to inject the insulin as quickly and smoothly as possible. Whether it was poor technique or nervous jitters I do not know, however when I removed the needle from Ann's arm, the pliable spur bent and my shaky right hand half-dropped the syringe, causing the now contaminated needle to scratch my left hand, piercing the blue neoprene gloves and the porcelain skin beneath. Immediately, I deployed the safety hub of the syringe, set it aside as though nothing had happened, and finished taking care of Ann. "Is everything alright?" Ann queried, no doubt sensing my mishap. "Oh, yes, everything is great and you're all done with your insulin," I replied cheerily, anxious to hide the torn glove on my left hand.

I felt a rising panic clench my chest, and my mind was flooded with the portents of fatal disease, namely HIV—a disease that simultaneously fascinated and terrified me. Concurrently, I was mortified. How could I be so clumsy with such a simple procedure? Maybe I was not cut out to be a nurse? How could I work in an ICU with such high-acuity patients if I could not even administer a simple insulin injection without injuring myself? I forced myself to remain calm so as not to worry Ann, and continued some light conversation and banter until I could gracefully exit the room. All the while, my thoughts swirled with decisions about what to do. I knew I should apprise the charge nurse or supervisor of the situation and have appropriate measures and testing completed, but I did not want to be viewed as a liability or an inconvenience. It was a busy night and we were understaffed already—how could I add to that problem? No, Ann was a sweet woman and did not seem like she would have any type of "gruesome" history or secret diseases. Really, there was not any risk to speak of. Besides, the needle was very small—an insulin syringe—and injected into her subcutaneous tissue, without any bleeding. She was elderly

with very little fat so the area probably was not even that vascular. And such a small scratch— not even a puncture really! No, I would be fine. There really was no need to bring other people into this and make a big fuss. I did not want to call any undue or negative attention to myself. This was the time to show that I was a good nurse, who did not make clumsy mistakes; this was the time to prove my worth.

Thus, I cleaned the punctured area of my hand and continued with my job, putting the incident behind me until several years later when I was drawn into a conversation with several other nurses who had shared my same anxieties about injuries they had sustained. It was then that I felt utterly foolish for not reporting the incident. Thankfully, I never contracted any illnesses from the incident, but if I had I would not have been able to receive any workers' compensation or any help from my occupation. Additionally, what if Ann had a disease she did not know about and we missed an opportunity for her to discover it and treat it? In hindsight, I can feel silly and ashamed of my cowardice, but I also can see the looming presence of stigma and the fear of discrimination and retribution. I remember the force of that stigma keenly, and I now wish to shine a light on it and help other nurses to avoid the same mistake that I made.

CHAPTER ONE:

INTRODUCTION

The excerpt above describes a situation I experienced as a young nurse, which provides the basis for my thesis research. Over a decade has passed since I had my dirty needle-stick injury. Since that time I have had the benefit of hindsight, experience, and further education to inform my practice and cause me to wonder if other nurses are currently experiencing the same fears and uncertainties that I experienced so long ago. Now that I have delved into the field of anthropology, I have begun to think about the influencing factors in my own case and decided to research similar scenarios among other health care workers.

The purpose of this study is to examine the perceptions of nurses with regards to HIV-risk and dirty needle-stick injuries, and discover whether these perceptions are influenced by stigma.

The objectives of this study are as stated below:

- 1) Explore perceptions of HCPs regarding degree of significance a dirty-needlestick injury (DNSI) poses.
- 2) Explore perceptions regarding disease risk and DNSI repercussions that may pose barriers to seeking treatment.
- 3) Examine decisions regarding reporting and treatment of DNSIs among nurses who experience such events.

- 4) Discover and recommend methods to reduce structural violence, fear of discrimination, and shame.

Nurses make up a substantial portion of the workforce in the United States. According to the United States Department of Labor (2018), there are about three million registered nurses (RNs) currently practicing in the U.S., and 724,500 Licensed Practice Nurses (LPNs). Many challenges are inherent to nursing, including those that are emotional (e.g., losing a favorite patient, witnessing a trauma), physical (e.g., long hours, lack of breaks or mealtimes, constantly standing or lifting), psychological (e.g., verbal abuse from patients and family, witnessing a trauma, feeling inadequate, being yelled at by a physician), intellectual (e.g., having to critically think every situation, not wanting to make any mistakes), interpersonal (e.g., missing holidays and family occasions, not getting along with a coworker or physician, schedules not lining up with friends and family), and occupational (e.g., lack of standardized nurse patient ratios, burnout, chronic overwork without job fulfillment, lack of resources) (Greenslade et al 2020; Grobecker 2016; Knudsen, Brzozowski, & Steege 2018; Morrison & Joy 2016; Unruh & Asi 2018; Zhang et al 2018). This population is expected to maintain high levels of professionalism and critical thinking at all times while providing compassion and care to those who are ill, troubled, or dying. Oftentimes, the setting in which a nurse works is intense and highly stressful, adding to the complexity of tasks that must constantly be juggled in planning and managing patient care. Among the myriad of occupational hazards within the nursing field, one of the most predominant is that of exposure to blood-borne infections via dirty needle-stick injuries (Mehrdad et al 2014, 32). A dirty needle-stick injury (DNSI) is an injury sustained by the health care provider (HCP) from a needle that has come into contact with a patient's body fluids, placing the HCP at risk of contracting HIV, Hepatitis B, Hepatitis C, and several other

blood-borne infections (Gupta et al 2015, 17-18). The Occupational Safety and Health Administration (OSHA) estimates that 5.6 million HCPs are at risk of an occupational exposure to blood borne pathogens. The risk of contracting HIV via a dirty needle-stick is about 0.3%, which is relatively low, however it remains a cogent threat to nurses who receive a DNSI, and one that is frequently under-reported and not given the attention that it deserves (Gupta et al 2015, 17; Wyzgowski et al 2016). Specific guidelines and policies to safeguard against blood borne pathogens and deal with exposure are in place and constantly in development, however there can be a disconnect between the policies in place and the knowledge and agency that an HCP may have in reporting their injury.

This study examines the perceptions of a group of nurses and nurse practitioners who work in various healthcare settings regarding HIV-risk related to DNSIs. The research explores both personal and institutional level factors that may influence the timely reporting and treatment of DNSIs, as well as perceived risk and susceptibility to HIV by nurses. An important component of nurses' and nurse practitioners' responses to DNSIs relates to perceived workplace violence, and this will be demonstrated within the results and subsequent discussion. Workplace violence is a common phenomenon affecting health care providers on a global scale (Martinez 2016; Zhang et al 2017). It can involve physical violence such as kicking or biting, verbal abuse such as disrespect and harassment, threats such as promising to use physical or psychological abuse at a later date, sexual harassment and aggression, and bullying (Byon et al 2020; Martinez 2016; Morphet et al 2019; Zhang et al 2017). Workplace violence can be anticipated, such as the threat of losing a job or being treated differently; propagated stigma; compassion fatigue; and conflicting values between HCPs and administrators in the face of occupational injury and

HIV-risk. Additionally, HIV stigma will be explored as being actual, perceived, anticipated, and internalized. Finally, this research can be used to inform the creation of protocols and practices to better facilitate the disclosure and management of DNSIs.

CHAPTER TWO:

HISTORICAL CONTEXT OF HIV

Human Immunodeficiency Virus (HIV) has been cited as one of the most virulent and devastating disease agents in known human history (Whelehan 2007, 1). According to the Office of the Surgeon General and the United Nations, HIV will take a greater toll on the human species in absolute numbers than smallpox, tuberculosis, and the bubonic plague combined (Office of the Surgeon General 2001; Whelehan 2007, 1-2). Now believed to have originated in Africa as a zoonotic disease that jumped species through hunting practices (Gong, Xu, & Han 2016; Quammen 2015), HIV has become more than a simple virus: it is a social disease involving multiple factors including sexual orientation, sex practices, socioeconomic status, structural issues, political stances and agendas, morality, religion, race, and gender (Quammen 2015; Whelehan 2007, 44-45). For example, HIV was first discovered in gay men, thus it is often viewed as a “gay disease,” despite much evidence to the contrary. In recent times, there has been a disproportionate rate of HIV in the black population in comparison with whites or other races, leading many to classify this as a “Black disease” or “African virus”. These issues are related to complex structural and social issues, but the prejudices that cause the disease to be attributed to a certain races or classes remains. In the past 30 years, HIV has gone from being a death sentence to a manageable chronic illness, however it still retains much of the fears and stigma that it did when it first emerged (Bagchi et al 2018; Rintamaki et al 2019; Turan et al 2019).

In 1981, the Centers for Disease Control and Prevention (CDC) released a report describing five gay men in the United States who were treated for a rare pneumonia. This pneumonia was subsequently identified as a result of Acquired Immunodeficiency Syndrome (AIDS), a syndrome later demonstrated to be caused by the Human Immunodeficiency Virus (HIV). At the time, however, AIDS was labeled as “gay cancer” and became intricately linked to a gay lifestyle and later to drug use and sex work (Clair, Daniel, & Lamont 2016, 225). Indeed, homosexuality itself, rather than the virus, was considered to be the cause of AIDS, and the greater public descended into panic over the thought that their own heterosexuality might be “tarnished” by AIDS (Altman 1988, 301). HIV was seen as the result of a unique combination of sex, drugs, and infection. This association led to the equation of HIV with immorality and socially deviant behaviors. Those who thought that homosexuality was a deviant behavior now felt justified because the infection was seen as a consequence of this “immoral” behavior (Liamputtong 2013, 2-3). Indeed, a strong desire to assign blame to a group has been a hallmark of the HIV/AIDS epidemic. Particularly among politicians and even high-ranking health officials, the scientific explanations of HIV have often been peppered with the language of moral and/or religious censure (Irwin, Millen, & Fallows 2003, 19).

In July of 1980, after decades of discrimination and marginalization, the gay rights movement experienced a major advancement during the Democratic National Convention as the democratic party became the first political party to endorse a gay platform and officially state that gays would not be discriminated against (Gamble 1997, 258). This victory for the LGBTQ+ community was brought to a dramatic halt by the AIDS epidemic of the 1980s and 1990s-- indeed, the issue of civil rights for gay citizens took a large step backwards as the populace adopted a growing fear of AIDS and how it related to homosexuality (Fee 1988, 122).

Altman (1988) describes the conflation of AIDS and “being gay” as having two major consequences: unnecessary stigma and discrimination against the gay community. Consequently, those who do not have the appearance of engaging in “risky” sex behaviors can deny their risk of HIV infection (302). Because AIDS was identified first as being a disease of those who practice a homosexual lifestyle, the fear, stigma, moral attitudes, and discriminating beliefs that the larger populace held against the gay community were transferred onto anyone who was infected by HIV. Later, when drug-users and sex-workers (or others who practiced risky sex behaviors) were identified, this belief that HIV was the result of immoral behavior only grew and solidified in the minds of the public (Whelehan 2007, 10-11). Halkitis (2014) describes the first two decades of the AIDS epidemic as a period of “limited hope” (91). Indeed, those who found themselves either at risk of the disease or actually contracting it had two rather extreme options. They could continue as they lived and attempt to be active and healthy, or avoid talking about the illness and perhaps engage in even more risky behaviors (Halkitis 2014, 91-92).

In 1987, the director of the World Health Organization, Jonathan Mann, predicted that there were three phases to the AIDS epidemic. The final phase, and potentially the most devastating, was an epidemic of social, cultural, economic, and political responses heavily influenced by stigma and discrimination (Parker & Aggleton 2003, 13). Today, over 36.9 million people live with HIV around the world, and over 1.2 million of those individuals reside in the United States (Frain 2016, 129; HIV.gov 2017). Stigma has indeed become a huge hallmark of the HIV epidemic, and it is believed that no true progress can be made in eradicating HIV if the stigma is not also understood and eradicated (Brent 2016, 233; Chollier, Tomkinson, & Philibert 2016, e72-e73; Earnshaw et al 2013, 1786; Grossman & Stagl 2013, 2-3; Nyblade et al 2019; Pescosolido 2015, 95; Stangl et al 2019; Turan et al 2016, 284; Van Brakel et al 2019).

During the early days of the HIV epidemic in the 1980s (PublicHealth 2020), healthcare workers were a population at risk. Protocols for the use of personal protective equipment (PPE) such as masks, goggles, and gloves were not a standard in the United States until 1991 (Mitchell 2014). Similarly, guidelines for personal protection of healthcare workers were not released by the CDC until 1991 (CDC 2017). Thus, many HCWs were unsure of their risk when caring for patients who had confirmed or suspected HIV. Many risked exposure to blood and other bodily fluids. Additionally, patients with HIV/AIDS had relatively higher viral loads people living with HIV/AIDS today, making them more likely to transmit the virus (Mitchell 2014).

Although many advances in prevention and medical technologies have been made since the epidemic of the 1980s-1990s, and the risk of contracting HIV after a needle injury remains low at 0.3%, DNSIs remain a risk to HCWs. DNSIs pose a risk not only because they are a probable means of contracting HIV or another bloodborne pathogen (e.g., Hepatitis), but the fear of sustaining such an injury can lead to further propagation of stigma. Fear of contracting the illness or being treated differently for having HIV can lead to a person, such as a nurse, to forego the reporting of such an injury, thus placing themselves in greater danger, and allowing the stigma surrounding HIV to thrive.

CHAPTER THREE:

STIGMA AND HIV

In any study of HIV, stigma makes a featured appearance. Stigma is the concept that a specific social attribute discredits an individual or group. HIV stigma is especially pertinent, because it is made up of stigmas from various factors, including gender, sexual orientation and practices, race, belief systems, citizenship, and socioeconomic status. During the height of the AIDS epidemic in the 1990s, surveys revealed that the larger public had a sense of ‘disgust’ towards those who were suffering from HIV/AIDS. (Valdiserri 2002, 341). Stigma leads to discrimination, fear, prejudice, devaluation, and social exclusion. The individual’s worth and “humanness” are devalued, and prejudice and inequalities are increased as a result (Earnshaw et al 2015; Nyblade et al 2019). Stigma begins with an individual or group being seen as outside the norms of society, as participating in unnatural or morally reprehensible actions. It culminates in the formation of two groups, resulting in an “us versus them” mindset. Much like the scarlet “A” upon the adulterer in Puritan New England, social perceptions and stigma act as a “mark of disgrace” (Mahajan et al 2008). According to Rintamaki and colleagues (2006), stigma is “the most important social and psychological issue of the HIV experience” (360).

The first major study on stigma was spearheaded by Erving Goffman, a sociologist and professor at the University of California at Berkley. Per Goffman (1963), stigma not only shapes how an individual is perceived and received by society, but it changes one’s self-perception. The discrediting and othering result in the individual internalizing the perceptions of others, that they are undesirable or deviant, and thus their self-image is disrupted. Goffman refers to this as the

“spoiled identity” (Gagnon 2015, Goffman 1963, Mahajan et al 2008). This disruption of self-image serves to further reinforce the biases and perceptions forced upon the affected individual. Furthermore, there exists both actual and perceived stigma, both with the same effects. If one anticipates that they will be discriminated against, then the result will be the same as if they are actually discriminated against. Stigma then leads to social exclusion, victimization, barriers to accessing health care and other needed services, and internalization of the guilt and blame projected onto the individual by the outlying society. It aids in the production and reproduction of power relations within society, and allows for continuation of problematic structural issues (Earnshaw et al 2015, Mahajan et al 2008; Major & Schmader 2018, 86).

Stangl and colleagues (2019) expanded on Goffman’s theory by moving past the individual and “spoiled identity” to recognizing stigma as devaluing social relationships and interactions. Stigma, then, is a *social process* that is borne within a power structure (1161). Indeed, it is a manifestation of a power relationship that is unbalanced, between non-infected and infected; between those who are “good and moral” and those who are “immoral and unhealthy” (Earnshaw et al 2013, 1785-1787; Link & Phelan 2013, 24-25; Reyes-Estrada 2015, 3-4; Stangl et al 2019; Turan et al 2016, 284). Stigma, furthermore, can be classified into three main types: enacted (or actual), anticipated (or perceived), and internalized (or self-stigma). All three interact to create negative social, mental, emotional, and health consequences (Earnshaw et al 2013, 1785-1786; Helms et al 2017, 259; Link & Phelan 2013, 30; Stangl et al 2019; Turan et al 2016, 284-286).

Earnshaw and colleagues (2019) developed the Health Stigma and Discrimination Framework, in which they purport that stigma is manifested via three mechanisms which are prejudice, stereotyping, and discrimination (1162). These mechanisms interact to bring about the

various levels of stigma. *Enacted stigma* is the degree to which one actually experiences prejudice, discrimination, and negative stereotyping. An individual who is terminated from their occupation directly due to their HIV status would be experiencing enacted (actual) stigma. *Anticipated stigma* is the expectation of a person living with HIV (PLHIV) has that they will be discriminated against. An individual failing to seek treatment for their HIV because they expect that health care staff will treat them unkindly or refuse treatment would be experiencing anticipated (perceived) stigma. *Internalized stigma* is the degree to which PLHIV believe and accept the negative stereotypes, prejudice, and discrimination they experience. An individual who believes that they deserve to be discriminated against, or stays away from non-infected individuals because they feel they “don’t belong” may be experiencing internalized (self-) stigma.

Understanding HIV stigma is particularly important within healthcare as the stigma that PLHIV face from the healthcare institution and healthcare workers is one of the central barriers to effectively preventing and treating HIV and retaining patients (Frain 2016, 1-2; Stringer et al 2016, 124). The mechanisms of stigma keep both healthcare workers and patients from adopting preventive behaviors and accessing recommended care and treatment (Nyblade et al 2019). According to Nyblade and colleagues (2019), healthcare workers “may be reluctant to access the same testing, care and treatment they provide to their patients due to fear of stigma in the workplace and in the communities they serve.” A nurse receiving a needlestick injury may avoid reporting the incident because of the perception that he or she may be treated differently by coworkers or even face penalization from administration. Additionally, the fear of losing confidentiality is ever present, as the reporting process for a health care worker receiving a DNSI is not completely private. Privacy is compromised since the nurse must usually find a

replacement to watch his or her patients while they complete the reporting process, often being forced to explain the situation to colleagues. Additionally, the patient is usually witness to the incident and may discuss it with other staff or visitors. Internalized stigma may also play a role as a nurse who holds stigmatizing beliefs and is prejudiced against HIV patients may then internalize those beliefs and direct the stigma at herself/himself (Parker & Aggleton 2003, 15).

CHAPTER FOUR:

DIRTY NEEDLE STICK INJURIES

A Review of the Literature

A dirty needle-stick injury (DNSI) is a type of sharps-related injury in which a healthcare worker sustains a needlestick from a needle or other sharp instrument after it has come into contact with a patient's blood (OSHA n.d.). The Occupational Safety and Health Administration (OSHA) estimates that 5.6 million HCPs are at risk of an occupational exposure to blood borne pathogens, especially Hepatitis B Virus, Hepatitis C Virus, and Human Immunodeficiency Virus (HIV). The most common contributors to DNSIs are unsafe needle devices, improper handling of needle devices, and incorrect or improper disposal of sharps (OSHA). In 2002, the American Association of Nurses (ANA) published the *Needlestick Prevention Guide* in an attempt to improve safety practices and reduce the risk of bloodborne pathogen exposure to HCPs via DNSIs. This guide remains the standard for safe needle handling practices among healthcare institutions. The National Occupational Research Agenda (NORA), a branch of the CDC, maintains the Stop Sticks campaign, which is an informational initiative to educate HCPs about their risks and how they can prevent DNSIs and other sharps injuries. The main focus has been upon improving the technology (i.e., safer needle devices), increasing the education of HCPs regarding their risk and how to prevent a DNSI, and establishing an Exposure Control Plan.

An Exposure Control Plan is a set of standards and guidelines to provide guidance to a person involved in a DNSI. The ideal plan is fluid in that providers can give feedback and best

practice advice; thus the plan will always be evolving (OSHA). The OSHA guidelines for blood borne pathogens (2003) is laid out in step-wise fashion and provides recommendations and standards to follow in the event that a needle-stick injury occurs:

- 1) Initial first aid (wash site with soap and water)
- 2) Contact supervisor immediately to file a report
- 3) Immediate medical evaluation—either through employee health or the emergency department. This evaluation includes testing for HIV, Hepatitis B, and Hepatitis C
- 4) Post-exposure prophylaxis treatment should be started as soon as possible
- 5) The patient should be notified of the situation and be tested if their serostatus is unknown
- 6) The employee health office and the supervisor should follow up with the affected HCP. If the HCP started treatment, this should be monitored and discontinued when a confirmed negative result is present
- 7) A debrief with all involved should provide insight into ways to improve the process of reporting the incident or improve the methods by which needles are handled. The feedback can be used to inform the Exposure Control Plan in place and ensure that it is current and evidence-based

Below is a review of the literature regarding prevalence, prevention, cost, treatment, and reporting of DNSIs.

Prevalence of DNSIs and HIV-risk

DNSIs are a common occupational exposure among nurses in the United States, and it is estimated that there is an incidence of 770 to 839 DNSIs annually. However, this number is believed to be a gross underestimate due to the frequent underreporting of such injuries (ANA

2002, 4-5; Gupta et al 2015, 17; Kessler et al 2008, 129; Laramie et al 2011, 538; Lee et al 2005, 120; Mehrdad et al 2014, 32; Nagao et al 2009, 543; Stone et al 2004; Zenner 2009, 378). The Needlestick Safety and Prevention Act of 2001 set a standard of protocol for hospitals to follow, in accordance with the Occupational Health and Safety Administration (OSHA) regulations, and addressed strategies for safe practices within the workplace to reduce needle-stick injuries. The act brought to light the juxtaposition of hospital institutional goals of cost-effectiveness and the emotional and physical well-being of nurses. Often, institutions are so focused on achieving patient-satisfaction goals and remaining within budget that they may forget that its workers (e.g., the nurses) are also human beings with emotions and health to worry about. The act sought to reconcile the two by promoting safer needle practices and exploring how nurses understand and perceive their own health and risk (ANA 2002, 4). Among the various blood-borne pathogens that a HCP is exposed to with a DNSI, HIV has a relatively low risk of transmission at 0.3%. This risk can vary, however, depending upon several factors. Those factors that can increase the risk of HIV include hollow-bore or large gauge needle, deep injury, needle that has accessed a vein or artery, whether blood is visible on needle, high viral load of HIV positive source, and needles attached to tubing (figure 1) or larger apparatuses such as a butterfly-system (ANA 2002, 5; Bell 1997, 13; Lee et al 2005, 122; Panlilio et al 2005, 2, 5; Gupta et al 2015, 18; Kessler et al 2008, 129; Kuhar et al 2013, 877). A hollow bore needle is a needle that acts as a straw, in a sense. It can deliver medications and can be used to draw blood.

Needles that have a large amount of “dead space” (figure 2) where infected blood can pool pose the greatest risk and many efforts are expended in developing low dead-space systems (Zule et al 2018). Although the risk of seroconversion is relatively low, the sheer magnitude of

the nursing workforce in the United States translates to a potential for 240,000 seroconversions annually, making HIV a very real threat (United States Dept Labor 2018).



Figure 1: Butterfly Needle. A large apparatus with long tubing attached which allows for a large collection of blood pooling. Additionally, it has no safety features.
(<https://images.app.goo.gl/f1g7tGfEEwxQ2Hb37>)

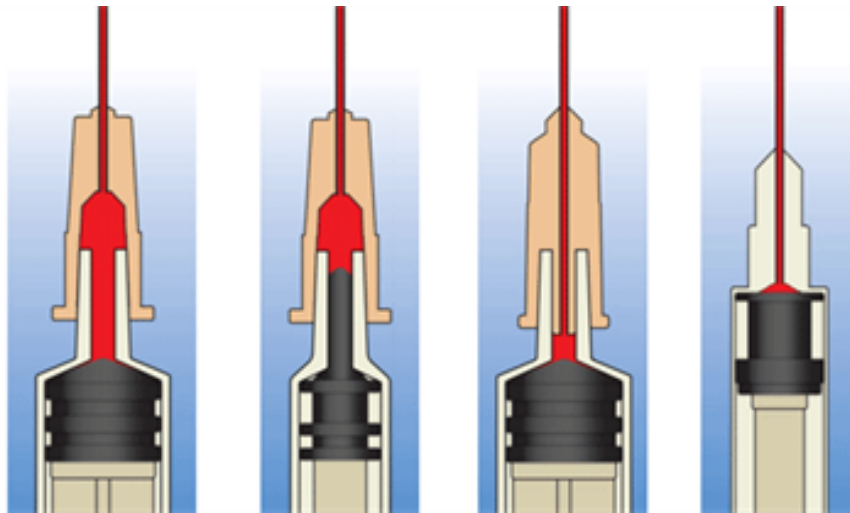


Figure 2: Dead Space. This is a comparison of the dead space in various needle systems. The dead space is highlighted in red. The needle to the far right has less space for organisms to congregate or blood to pool. (<https://images.app.goo.gl/z2eKaFqwxxywdMkoo9>)

Prevention Methods/Costs

The high cost of treating a DNSI, coupled with the frequency of occupational exposures, leads hospital administrators to adapt a cost-based approach to preventing DNSIs. To remain in compliance with OSHA standards, hospitals must provide their employees who have experienced a DNSI with lab tests, medical evaluation, treatment if indicated, and follow-up—all at no cost to the HCP. Estimated cost of a DNSI ranges up to \$4,838 per injury, with more than 384,000 sharps-based injuries occurring to hospital-based HCPs annually (Laramie et al 2011, 538; Lee et al 2005, 122; Puro et al 2004, 181). Several methods are employed in order to cut labor costs, one of which is by reducing staffing levels, which in turn can exacerbate the problem by increasing stress and emotional strain, increasing patient burden upon nurses, and lead to more distractions at work that can cause a lapse in proper needle-handling procedure (Cohen & Baran 1997, 102-103; Gupta et al 2015, 17; Stone et al 2004, 1987). Another method of cost-reduction is the focus on new needle-devices with safety features that reduce the risk of injury. One such method is a closed peripheral intravenous catheter system, which minimizes the leakage of blood from the catheter hub or the needle (figures 3 & 4).

The only difficulty with these devices is compliance by staff and whether the devices are effective and cause minimal discomfort to the patient (ANA 2002, 4-5; Jagger et al 2012, 49; Lee et al 2005, 120, 124; Mehrdad et al 2014, 36-38; Puro et al 2004, 181; Seiberlich et al 2015, 2-4). Compliance involves staff adapting the closed intravenous catheter system with safety features, rather than continuing to use more outdated versions of a venous catheter. See figure 4 for common needle-system safety features.



Figure 3: Closed peripheral intravenous catheter systems such as this help maintain sterility, but also contain safety features such as the needle retracting into the hub upon removal to minimize the risk of the HCP being stuck. (<https://www.medgadget.com/2018/03/deltaven-closed-system-peripheral-iv-catheter-cleared-in-u-s.html>)



Figure 4: Safety features. This includes a spring mechanism to retract the needle with the press of a button and avoid dangers of re-capping. Additionally, it is a closed system so the initial “flash” of blood remains enclosed.

**image provided by author*

Lastly, training and education are a primary focus. Best practice standards recommend that new hires undergo a training program regarding needle/sharps safety and when to report/how to report, and existing hires should undergo annual training to maintain competency (Gupta et al 2015, 18; Jagger et al 2012, 49; Kuhar et al 2013, 878; Panlilio et al 2005, 2-3). Educational initiatives involve safe needle handling, competency check-offs and demonstrations on how to use needles, and what to do in the event of an injury. Safe needle handling includes avoiding re-capping of the needle after use, and instead discarding the needle in a designated disposal bin (OSHA n.d.). Competency check-offs involve a list of skills that the nurse or other provider demonstrate to a designated proctor to obtain approval to practice with any type of needle device. In the event of an injury, a standardized plan of action and policy should be in place that the nurse and supervisors must follow to minimize risk of exposure to a blood borne pathogen.

Recommendations for Reporting/Post Exposure Prophylaxis

OSHA (2015) recommends that all HCPs report needlestick injuries immediately, and that the injury be treated as an emergency and attended to urgently. Reporting an injury immediately allows for the earliest possible window for treatment, and reduces the likelihood of contracting HIV (ANA 2002, 6-7; Beekman & Henderson 2014, 605; Breet et al 2014, 947; Kessler et al 2008, 133; Kuhar et al 2013, 883; Lee et al 2005, 117, 122, 129; Panlilio et al 2005, 5; Puro et al 2004, 179; Reutter et al 1995, 494). The OSHA guidelines are as follows: “post-exposure testing should involve a rapid HIV test, with results available within an hour post-testing, along with an enzyme-linked immunosorbent assay (ELISA) documented” (OSHA n.d.). Early testing is vital as it allows for the early initiation of post-exposure prophylaxis (PEP), if

indicated. For maximum effectiveness, a PEP regimen should be started within 48 to 72-hour post-exposure, or else protection against HIV will be incomplete (Beekman & Henderson 2014, 605; Kuhar et al 2013, 876; Mount Union 2012, 54-55; Panlilio et al 2005, 8; Wyzgowski et al 2016, 992). Early treatment with antiretrovirals (ARTs) such as zidovudine slows the proliferation of the virus and keeps it localized to the injury area, allowing time for the host to mount an immune response against the virus (Beekman & Henderson 2014, 602-603; Wyzgowski et al 2016, 993). The CDC developed a bloodborne pathogen handbook to aid in developing better DNSI prevention practices as well as providing recommendations for treating, reporting, and learning from a DNSI. The handbook is available to all healthcare institutions and is the current standard for reporting practices (2015).

Despite the evidence that early reporting and intervention are beneficial in preventing HIV and other blood borne pathogens (BBPs) with DNSIs, nurses consistently admit to not reporting the injury right away—if at all—or not following up after the initial report. In the United States, 41% to 58% of nurses attest that they have received a DNSI and not reported it (Akyol & Kargin 2016). Many nurses cited that the low risk of HIV seroconversion did not outweigh the “hassle” of reporting or treatment. In those nurses that have reported injury and begun PEP, many are unable to remain on the PEP regimen for the full 30-day treatment course due to debilitating side effects or drug toxicity, and 20% of HCPs did not begin PEP when indicated (Jones 2002, 29; Kessler et al 2008, 129, 133; Kuhar et al 2013, 878-879; Lee et al 2005, 128-129; Panililio et al 2005, 4-5, 8-9; Zenner 2009, 378). The most common side effect of antiretroviral drugs used to treat HIV is nausea. Patients have reported debilitating nausea with or without vomiting that can make normal activities of daily life extremely difficult (AIDSinfo 2019). Many of the medications accumulate in and are cleared by the liver, thus

hepatotoxicity is a complication of the drug treatment. Those with prior liver dysfunction or damage are at high risk for drug toxicity of the liver (AIDSinfo 2019). Failure to complete PEP regimen is problematic, as this can lead to retroviral resistance and potentiate an HIV seroconversion (Beekman & Henderson 2014, 609). Thus, continued follow-up is important to evaluate both the effectiveness of the medication and the adherence of the nurse to the medication.

Perceptions of HCPs

Reutter and colleagues (1995) describe five coping mechanisms utilized by nurses who receive a DNSI. The nurse will 1) minimize the impact and significance of the exposure, 2) reduce the sense of unease, 3) assess possibility of harm, 4) avoid any situations that arouse or exacerbate fear, and 5) confront and wrestle with decision about whether to undergo HIV testing (497-500). As an occupation that is often portrayed as being the lifeline betwixt life and death, nurses feel a sense of responsibility to maintain absolute composure, resolve, and professionalism at all times. Fear is the primary motivator for nondisclosure of DNSI or HIV exposure. This fear manifests as fear of rejection by peers (ostracization), fear of rejection by patients (disappointment), fear of rejection by employer (punitive action, job insecurity), and fear of rejection by profession (restrictions from State Board of Nursing) (Beanland et al 2015; Reutter et al 1995).

During the height of the AIDS crisis, those who revealed their HIV status were at risk of losing their jobs. This is no longer the case, however, as people are afforded legal protections against job discrimination. The possibility of professional rejection still remains a poignant fear in the minds of many, and persists as a sort of lore among health care workers. Many nurses

downplay the exposure and rationalize that the risk is so minimal, it is not worth the trouble to report or get tested. Simultaneously, the individual who has been exposed tends to either engage in self-blame or patient-blame in order to diffuse the high-anxiety surrounding the incident (Beanland et al 2015; Gupta et al 2015, 17-18; Jones 2002, 24, 27; Reutter et al 1995, 500-501).

CHAPTER FIVE:

STUDY THEORETICAL FRAMEWORK AND OBJECTIVE

Overview and Objective

This study focuses on the perceptions of nurses regarding HIV risk from DNSIs and how these perceptions inform their decision-making regarding their health after they suffer an accidental needle stick. Nurses as a population are held to a high standard of honesty, professionalism, compassion, and advocacy. While being held upon a pedestal, however, they often find themselves isolated and without an advocate of their own. They occupy a middle realm, serving as mediator between patient-doctor and institution-individual. As the mezzosupport within the healthcare system, nurses are subject to both structural-political and interpersonal factors that transform how they experience phenomena within their reality. For example, nurses may witness trauma, but must remain able to function professionally and cannot give in to any grief that he or she may be feeling. Thus, this grief is experienced differently and channeled into quick thinking or comforting. The nurse must become a witness to the grief, but cannot experience it as one normally would while on the job. A nurse must be able to be the voice of reason to both doctors and patients, but also a shoulder of comfort for patients and families to lean upon.

As a population most vulnerable to DNSIs, these factors can determine the level of importance a nurse assigns to the risk associated with a DNSI, and whether a nurse reports the injury, decides to have testing, or initiates treatment. Understanding the individual perceptions

and how they are shaped by outside influences and structures, as well as by personal agency, can shed light on why nurses minimize risk, choose not to report injury, and refuse testing. By casting light upon this interconnected web, more compassionate and holistic protocols and procedures can be developed, and nurses can feel that they are valued and essential members of the healthcare system.

Phenomenology

Broadly speaking, phenomenology seeks to study and understand consciousness from a first-person stance; the goal is to understand another's worldview and the experiences that contribute to and form that worldview (Gallagher 2012, 11-12; Merleau-Ponty 1962). I utilize a phenomenological approach to analyze the lived reality and embodiment of the DNSI experience by HCPs. Phenomenology understands events (phenomena) as being perceived by human consciousness, and thus having meaning because of that individual perception. Phenomenology examines the lived experience of each individual and how each person is situated within their own reality (Desjarlais & Throop 2011, 89-90; Gallagher 2012, 9-10). It is seeking to understand the experience of others to inform our own perceptions and understanding of the decisions they make (90). Phenomenology has been often used in qualitative research involving HIV as it is helpful to understand the realities of HIV-affected populations (Lee, Kim, & Chang 2020; Leyva-Moral et al 2019). Phenomenology has been used especially by nursing studies in an effort to bring awareness to the experience of others, and thus foster empathy—a hallmark of the nursing profession (Derico 2017; Paley 2018; Zahavi & Martiny 2019, 155-162). Because healthcare, and nursing in particular, is modeled upon empathy, I decided that using a

phenomenological approach to understand the experiences and perceptions of others was a perfect fit for this particular study.

Health Belief Model

The Health Belief Model (HBM) purports that people have a desire to avoid injury and illness, and that individuals believe that a specific action will help to avoid or cure an illness. What action an individual conducts to remediate an illness depends on their perceptions of benefits and risks (Boston University 2019). The HBM involves six constructs which include perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cue to action, and self-efficacy (Boston University 2019; Jones et al 2015). Self-efficacy is the confidence a person has in their own ability to either adopt a new behavior or change an old one (Boston University 2019). Using the HBM I will examine the power that perception plays in dictating the way in which each nurse acts in response to experiencing a DNSI. In the case of nurses who have received DNSIs, the perceived risk of contracting HIV often pales in comparison to the perceived barriers of testing and treatment, along with a loss of self-efficacy that is often informed by the cues of perceived workplace discrimination and loss of support from peers (U.S. Department of Health and Human Services 2012, 13-14).

Social Identity Threat Model

Major and Schmader (2018) utilized the idea of social identity threat to understand the ways in which stigma and its mechanisms work within a society to keep stigmatized individuals on the margins. Social identity threat stems from anticipated stigma, and is the fear that one will be stereotyped or discriminated against and thus feeling a threat to their very identity (86). This

threat causes stress to the individual or group and can lead to “downstream negative consequences for health” (87). When this threat then combines with internalized stigma to actually tarnish the self-image (“spoiled identity”), the individual’s decisions and interactions are affected. For example, a PLHIV may feel that they will be discriminated against and that they deserve poor treatment and thus will never seek healthcare or neglect to reveal their HIV status (89). Major and Schmader describe individuals who experience this threat as “appraising situations as potentially damaging to their identity and as exceeding their resources to cope” (90).

Various coping strategies are employed when one’s social identity is threatened, and often these strategies are ineffective or directly harmful. Avoidance, denial, self-segregation, failure to care for oneself are all negative coping strategies that can arise from a threat to social identity (Helms et al 2017, 263; Major and Schmader 2018, 94-95). A fundamental need for self-actualization in a society and for an individual is that of belonging. The mechanisms of stigma directly threaten social belonging of PLHIV and destroy the identity that one has, shoving them to the very edges of society as a pariah (97). This idea of Social Identity Threat Theory coincides with that of stigma power, a method used to keep certain people or groups of people “down” (Link & Phelan 2013, 24).

By understanding how stigma threatens the social identity, one can understand the mechanisms by which society exploits PLHIV, enforces negative social norms about HIV and PLHIV, and avoids contact with the disease or “diseased” all together (Link and Phelan 2013, 24-25). This combined approach strategy aids in reconciling the macrolevel of hospital administration, policy, and procedure with the microlevel of perception and individual cultural

awareness, and how each level informs the other. The goal then becomes to develop a holistic vantage point from which to explore the issue of DNSIs and HIV-risk.

CHAPTER SIX:

METHODS

Surveys/Questionnaire

This study employed several methods to obtain both qualitative and quantitative data. An anonymous, mixed-methods survey was developed using Qualtrics software through the USF College of Medicine. The survey was distributed via email and social media to two specific nursing networks, and to individual nurses employed at various hospital settings who distributed the survey to their own colleagues and friends. The final sample included total of 170 participants. The survey included both close-ended, multiple choice questions and open-ended, short-answer questions. The identities of respondents were completely anonymous and the questions were designed so as not to allow for any identifying information that the respondent did not desire to supply. The survey was distributed to nurses in general. 82 of the respondents had received a DNSI, whereas 88 had not.

The survey was also used as a method to recruit participants for a follow-up interview, by providing the option for the respondent to contact the interviewer if they were interested. Those who had sustained a DNSI at some point through their career were invited to participate in a more in-depth interview. Those who could not participate in an interview or were not willing to do so, were asked whether they were willing to participate in a more in-depth short-answer questionnaire via email. The questionnaire was sent to those who expressed interest, and was also then distributed by those who participated with more nurses that they knew. In this manner,

134 nurses were recruited to participate in the study at their own convenience via the email questionnaire.

The survey asked more general questions regarding whether the participant had received a DNSI and whether they had obtained treatment. The questionnaire was more personal, asking about specific events and feelings connected with those events. The in-depth interview used a question framework quite similar to the questionnaire, but was more loosely structured in that it allowed the participant to tell their story in their own pace. For the complete list of questions used in the survey and short-answer questionnaire, please see appendices A and B.

Interviews

Interviews were conducted via email and telephone with 10 registered nurses. Informed consent was obtained from each, and each respondent assigned a pseudonym to ensure anonymity. Interviews were semi-structured, mainly to prompt respondents to tell their story in their own words, at their own pace, with minimal interjection from interviewer. The nurses were asked to tell their story, and then asked questions regarding their decision to receive testing or treatment, and their perceptions of the cause of the incident and their treatment thereafter. No respondent was asked to disclose HIV status, as the interview was purely focused upon the phenomenological experience.

All interviewees were registered nurses who have been practicing at least one year and have received at least one DNSI during their practice. Other exposures to blood-borne pathogens were excluded. DNSI was defined as an injury resulting from a needle or other “sharps” object that was previously in contact with blood or other bodily fluid from a patient or other person. Nurses that have both reported DNSIs and not reported were included.

Reflexivity

I have been a registered nurse for eleven years, thus I am subject to the same perceived discrimination, workplace violence, risk of DNSI and HIV, and biases as the population that I am studying. In utilizing the phenomenological approach, I recognize my own position as both a researcher and a member of the population, and I used my own experiences and perceptions as a nurse to inform the direction of this research and the questions that I asked of my respondents. I also had to recognize that I have an advantage over other researchers due to nurses feeling more comfortable talking with “one of their own”, and I found that nurses were more than willing to share their experiences with me. Keeping this in mind, I attempted to remain both reflexive about my own biases and position within the research, and critically engaged so that my personal ties could inform and strengthen, but not discolor the integrity of the research. As a way of maintaining reflexivity, I kept a journal of my own initial feelings and reactions which I could reflect upon and analyze later. I remained critically engaged by working in the field and remaining up to date with all advancements and changes happening in the world of nursing.

Human Subjects Considerations

As this study explored perceptions related to HIV/AIDS, ethical considerations could arise regarding 1) a participant’s unwilling or accidental disclosure of his/her serostatus, and 2) the patient information present within each story. Thus, respondents were specifically not asked about their HIV status, as the focus was solely upon their phenomenological experience and perceptions related to DNSIs. Additionally, respondents were asked to adhere to the Health Insurance Portability and Accountability Act (HIPAA) regarding maintenance of private patient information. Any identifying information was removed, and interviewee names replaced with

pseudonyms. Surveys were completely anonymous, and no identifying information was included. Additionally, the hospital policies that were analyzed were policies that were currently available to the public via the internet, and were obtained using Google Search through public domain. The interviews were conducted over the telephone and informed consent was obtained prior to interview via emailing the form and allowing for ample time to answer questions and concerns. All forms were downloaded to a secure, password protect folder on the researcher's computer. The only person who had access to this folder and computer was the primary researcher. The original files were backed up to an external hard-drive, and the de-identified data was backed up to a Google drive.

Policy Analysis

An internet search for hospital policies and protocols relating to DNSIs and the OSHA-mandated exposure control plan (ECP) was conducted, and eleven policies from notable hospitals across the continental U.S. were chosen for analysis. The policies selected were the eleven most recently updated policies available. The policies were obtained via a simple internet browser search and the available policies that had been updated within 10 years were chosen. ECPs/protocols were compared with current OSHA guidelines and the main results tabulated to compare the varying approaches to pre-exposure prevention and post-exposure reporting, treatment, and investigation. Hospital protocols that had not been updated in the last ten years, or were missing a "last-updated" date were not included in the cross-comparison. These policies were first accessed in the fall of 2015, then revisited in the summer of 2019. They were found through an internet search of publicly available, recently updated policies in U.S. hospitals. The policies were compared for common themes as well as any stark differences. Specifically, the

policies were compared with the OSHA standard to determine how closely the OSHA mandate is being followed by each hospital.

CHAPTER SEVEN:

RESULTS

Policies Regarding DNSIs and HIV Risk

OSHA (2015) provides a rubric for hospitals and other healthcare settings to follow when designing protocols and policies for needle-stick injury prevention, response, and education. It identifies that 5.6 million HCPs are at risk for exposure to blood-borne pathogens (BBP) such as HIV, HVB, & HCV, and that the most frequently injured and those most at risk for exposure to HIV are the nursing staff. The recommended format of how to both prevent and treat DNSIs as they occur is given by the Exposure Control Plan (ECP), which each healthcare institution is encouraged to adopt. The six components of the ECP that should be incorporated into hospital policies are 1) incorporation of new technologies that reduce exposure to BBP, 2) Fostering feedback to and from employer and employee, 3) Reporting and documentation of all DNSIs, 4) Utilization of personal protective equipment and universal precautions, 5) Maintaining worker training and evaluation, and 6) Follow-up and evaluation post-exposure must be made available, including PEP.

Eleven publicly available hospital ECPs/policies were analyzed to assess compliance with OSHA policies, and the components tabulated for comparison (see table 1). All hospitals were public hospitals from across the mainland United States representing the northeast, southeast, northwest, and southwest quadrants of the United States as is demonstrated in the comparison, many hospital ECPs contain important elements from the OSHA guidelines, however only two of the eleven hospitals contain all the necessary components. The majority

focus upon prevention of DNSI or employee training and safety, without establishing a protocol for what to do if injury occurs. This may lead to confusion by administrators or charge nurses in how to handle a situation in which a staff nurse (or other employee) sustains a DNSI.

Additionally, many ECPs contain a requirement for investigation of the issue, however lack the follow-up component. While investigation is important to protect the institution from liability, explore cost-effective safety methods, and determine what the target of employee education should be, the follow-up element is vital in ensuring that education and training has enhanced the proficiency of the employee, promote employee health and wellness, and evaluate the psychological and emotional stability of the injured employee. As incurring a DNSI can be a traumatic experience, it is important to maintain open communication and follow-through to promote employee health.

Survey Results

A total of 170 nurses completed the online survey. More than a quarter of them (27%) had been practicing between 5 and 10 years, with a mean length of practice of 3.85 years and a standard deviation of two. The majority (61%) practiced within the state of Florida, and the remaining 39% were practicing throughout the continental U.S. Eighty two participants reported having experienced a DNSI during their practicing years, while 88 reported no such incidents. The longevity of practice time was cross-tabulated with the incidence of DNSI, as is shown in Table 2.

Table 1. Policy Review & Comparison

| Institution/Year Updated | Policy Focus | Major Features of plan | Investigation of DNSI and cause | Post-Exposure follow-up | Cites OSHA |
|--------------------------|--|---|--|---|------------|
| CUH (2015) | Prevention | Wash wound, report, medical evaluation | Yes | No | Yes |
| USC (2014) | Employee Compliance | Report, medical evaluation | No | Yes | Yes |
| BH (2011) | Reporting DNSI | Report, treat on-site | No | No | Yes |
| JHUH (2016) | Prevention | Report, testing is voluntary, employee responsibility | Yes | Patient must pursue independently | Yes |
| GWU (2006) | Evaluation and update of needle systems | Report to ED, no treatment mentioned | Needles only | No | Yes |
| DUH (2015) | Employee Training/ Safety | Report to hotline, treatment offered promptly | Yes | Yes | Yes |
| WU (2011) | Best Practice IV Team | Report immediately, treatment and evaluation for all | Yes | Yes | No |
| UM (2013) | Employee training / safety | First aid, report, treatment | No | Patient must pursue independently | Yes |
| BU (2012) | Employee Training / Safety | Report to research occupational program, evaluation immediately | No | No | No |
| UMU (2012) | Punitive | Report, blood testing, sharps log | Document report, no follow-through | Yes | No |
| UWH (2012) | Prevention | Report, evaluation/treatment, sharps log | Document, report, no follow-through | Yes | No |
| OSHA (2015) | Prevention, ongoing training, adaption of safer needle drivers, post-exposure follow-up and evaluation | First aid, report immediately,, prompt medical evaluation, HIV testing, pre- and post-testing counseling, sharps log, investigation, treatment as indicated, continual follow-up and evaluation | Yes, to determine possible causes and what may be done to prevent future incidents | Yes. Evaluation, treatment, testing to be provided free-of-charge to employee. Follow-up must be carried out. | |

Table 2. Length of practice time vs. incidence of DNSIs

| LENGTH OF PRACTICE TIME VS. INCIDENCE OF DNSIs | | Have you ever received a dirty needle-stick injury? | | |
|---|-------------|---|------------|------------|
| | | Total | Yes | No |
| | | 170 | 82 | 88 |
| How many years have you practiced as a nurse? | 0-2 years | 18 (10.6%) | 3 (3.7%) | 15 (17%) |
| | 3-5 years | 27 (15.9%) | 13 (15.9%) | 14 (15.9%) |
| | 5-10 years | 46 (27.1%) | 22 (26.8%) | 24 (27.3%) |
| | 10-15 years | 24 (14.1%) | 10 (12.2%) | 14 (15.9%) |
| | 15-20 years | 18 (10.6%) | 16 (19.5%) | 2 (2.3%) |
| | 20-25 years | 16 (9.4%) | 7 (8.5%) | 9 (10.2%) |
| | 25-30 years | 6 (3.5%) | 3(3.7%) | 3 (3.4%) |
| | 30+ years | 15 (8.8%) | 8 (9.8%) | 7 (8.0%) |

As shown in Table 2, the nurses with the most common DNSI reports are those who have been practicing for 5 to 10 years, rather than the younger or older populations. Disturbingly, nearly half (48%) of the sample had received at least one DNSI during their career, which is higher than the national average of 41% (King & Strony 2020; Kuhar et al 2015, 878-879). Since 61% of the sample were nurses practicing in Florida, I decided to see what the percentage of DNSIs was in just Florida-licensed nurses. Of the 103 Florida nurses that took the survey, 47 (45%) had received a DNSI at some point during their career, again, a figure somewhat higher than the national average.

The 82 nurses who had experienced a DNSI were asked about whether they had reported the incident, received testing, and underwent prophylactic treatment. Seventy-one (86.5%) of them reported the incident immediately, while one person delayed reporting until the end of the shift, and two people did not report at all. Eight people did not answer this survey question. and

left it blank. Regardless, in this sample most of the nurses who received DNSIs did report the injury, and the majority of them received post-exposure testing as well. Eighty four percent were offered HIV-testing post-exposure and consented to undergo testing, however, one respondent underwent testing only after peers and administrators insisted upon it. Three nurses declined the testing despite it being offered. Unfortunately, these nurses did not go into much detail on the survey so there was no way to determine why they declined the testing. Eight nurses (11%) were not offered testing and did not undergo testing. This number is unsettling as it shows inconsistencies in protocols of hospitals across the United States, despite OSHA regulations and recommendations that are in place for all health care institutions.

Table 3 shows the follow-up that nurses received after experiencing a DNSI. Although there seems to be a clear focus within the existing literature upon the importance of education and improved training programs, there still seems to be a lack in follow-up from the education department or the infection control department. Only 28% of the 74 people that responded felt that the situation had been appropriately followed-up by the education department. Similarly, there appeared to be a lack of follow-up from administration, with only 35 of the 73 respondents stating that the situation had been appropriately followed up.

Table 3. Follow up

| Did a member of the education team/department (e.g. clinical educator, unit coordinator, etc) follow-up with you regarding the dirty needle-stick injury? | | Did a member of the hospital/healthcare setting administration follow-up with you regarding the dirty needle-stick injury? | |
|---|-----|--|-----|
| Yes | No | Yes | No |
| 28% | 72% | 48% | 52% |
| 21 | 53 | 35 | 38 |

Respondents were asked to describe their emotions and initial thoughts at the moment of injury, and fear tended to be the most common reaction. In response to the question “how did you feel in the situation of receiving a dirty needle-stick injury”, the most frequent and resounding response was “scared” or “worried.” Some of the participant’s remarks are stated below. The following comments are the initial feelings and reactions that were written on the survey, but due to the anonymous nature of the survey they are unable to be placed in a specific context. Some of the participants stated:

“Scared! Angry because it was caused by a patient’s purposeful actions.”

“Terrified.”

“Nervous, scared, embarrassed.”

“Panicked.”

“Worried because I was pregnant.”

“I thought for sure I had contracted HIV. Even though, according to the odds, it was unlikely. Every sore throat, ache, and pain worried me for a long time.”

“Scared and unprepared for future disease. Was told I may never know or may not know for ten years.”

“I felt like I was going to die. So nervous just waiting for the test results to come back.”

Fear is a predominant theme in these surveys; the concept of fear is also common to stigma. This can be fear of contracting HIV, fear of losing a job, fear of damage to reputation, fear of strained personal relationships—the list goes on. Fear can lead HCPs to underreport the occurrence of DNSIs and it can lead to prejudice against those who have HIV or seem at risk of having HIV. The fear experienced by an HCP who has received a DNSI may lead them to irrational thinking and severe stress that will increase their risk of contracting an illness. For the

nurse who was told she “might never know for ten years”, this stress likely remained with her for a decade until she was sure that she had not contracted the disease.

One respondent who had been a nurse for 10 years felt that her nursing career was at stake because of the ensuing investigation conducted to determine the details of the DNSI, which occurred in a home health care setting:

I felt the company was worried more about the impact the needle stick would be on their workers' compensation insurance than about me. I was told [that] if I did my job correctly, I wouldn't have been stuck, and if an incident report was filled out there would be a review [to determine whether] I followed proper needle protocol and possibly could face disciplinary action if it was found that the needle stick was my fault.

This is an example of the fear of workplace retribution, and administrators using fear tactics to prevent HCP from reporting important data such as errors and accidents. This could be to avoid having to possibly pay for workman's compensation for health care costs, or it could be to ensure that the injury and accident rates for workers in the company remain low. Either way, this is an instance yet again of fear being employed to keep a HCP from knowing their full rights and the actual protocol.

Several nurses felt alone or abandoned, wishing that they had someone to back them up:

“[I felt] like my hospital didn't care about the injury. And that it was a major inconvenience. No follow care at all.”

“The patient was [Hepatitis C Positive] confirmed but didn't want HIV testing therefore I had to worry for a whole year. I wish an education person or doctor would have talked to him.”

“[I felt] scared, mad at hospital for not following up.”

“I felt scared that I would be exposed. I felt like the charge nurse that day was so baffled how it had happened that she seemed incredulous.”

Per OSHA guidelines, hospitals are required to follow up with employees and obtain HIV

testing from the patients. Nurses in these situations felt that they could not speak up or defend themselves for fear of punishment as severe as losing their job.

Many nurses questioned their own professional skills and engaged in self-blame at the moment of the DNSI:

“[I felt] stupid, embarrassed, lost, scared of possible implications.”

“[I] felt like I needed a new profession. Getting a dirty needle stick was not worth it.”

“[I was] upset with myself that I wasn’t more careful.”

“Although it was unintentional, I felt that I should have been more careful when using/disposing dirty needle. Safety will always be a priority when using needles.”

“[I felt] neglectful.”

“Dumb, how could I make this mistake?”

“Scared about the outcome and aggravated with myself for being careless enough to let it happen.”

These reactions are reminiscent of the “spoiled identity” coined by Erving Goffman (1963) and utilized in the Social Identity Threat Model (Major & Schmader 2018). Many HCPs direct the blame for the injury on themselves and feel that perhaps they deserve whatever consequence will come from the injury (94-95). Furthermore, they feel revealing their mistake will threaten their social identity further, thus it seems much less harmful to ignore the situation or hide it, thus placing themselves at greater risk. The internalized feelings of blame can then manifest in the HCP feeling prejudice towards or nervous around people that the HCP perceives may have HIV.

Some respondents felt that either the situation was handled well, or that the risk of contracting HIV or another BBP was so minimal as to not be worried about it. Familiarity with a patient seemed to ameliorate the feelings of fear of that many experienced.

“[I felt] Indifferent”.

“Felt like it was handled well. Knew my options.”

“I wasn’t worried because it was a patient I was very familiar with.”

“Not worried as the patient was an infant.”

“I was upset with myself but it couldn’t have been helped. He was a dementia resident.... Well known to medical director who is my physician as well. Testing offered and declined by me based on [the patient’s] history from physician.... Handled timely, appropriately, and professionally. No need for unnecessary treatment.”

“Fine. It happens, no one’s fault. That’s why it’s called an accident.”

The more calm or cavalier attitudes displayed by HCPs may be related to the image they have in their head of the “typical” HIV patient. If the HCP had known the patient a while or the patient was an infant or a “nice elderly person,” then it was less likely that the HCP would feel any risk from the DNSI. Conversely, those that felt they knew the protocol well and had a good knowledge of their risk did not feel fear because they felt they had the tools with which to deal with the injury appropriately.

Finally, some nurses felt that their fear impacted their ability to make rational decisions, and had to reason with themselves to report injury and initiate testing:

“[I was] frightened but determined not to allow fear to outweigh intelligent choices.”

“[I felt] scared, uncertain.”

“Initially I felt mad that it had happened so unexpectedly, then reluctant to report it. Shortly followed by a reality-check of what had happened and the overwhelming ‘what ifs’. A very frightening experience.”

The experience of receiving a DNSI prompted fear, shame, uncertainty, and a re-evaluation of professional skills. Feelings of unimportance or abandonment were also experienced in the lack of follow-up, thorough evaluation, or counseling, as well as the perceived threat of punitive action. This demonstrates an apparent disconnect between the stated need for

and the actual presence of follow-up and education, as well as a culture of internalized blame that is perpetuated by overburdening of responsibility and the lack of prompt response by the administrative structure.

Short-Answer Questionnaire

134 nurses were asked two questions to establish perceptions both “pre-stick” and post-exposure: “If you were to receive a needle-stick injury would you be likely to report it?” and “If you did report it, would you be likely to take prophylactic medication?” Nurses that had not actually received a DNSI tended to speculate that they would report it, but their decision about taking medication would depend upon the situation and the patient:

“I would report and take the prophylaxis.”

“Yes, would report if contaminated needle and would use risk versus benefit of meds.”

“Yes, to reporting all needle sticks. But not so clear cut on prophylactic meds. Depends on exposure—probably.”

“I would report it and take meds if patient tested positive for something infectious or if we were unable to test the patient.”

“Yes and yes. Everyone has [Hepatitis] C around here.”

It is interesting to note that many of these answers demonstrate that reporting a DNSI is conditional. Nurses were not reporting because that was just the policy, but *if* there seemed to be a danger of sorts. The same theme is true for taking prophylaxis. One respondent above discussed using “risk versus benefit of meds.” The risk that they are referring to is the possibility of side effects from medications. Severe, debilitating nausea is the most common side effect of post-exposure prophylactic medications such as emtricitabine and tenofovir, which are generally

taken as a combination dose (CDC 2018). Some HCPs would consider that side effect “not worth it” and rather take the 0.3% risk of contracting an illness.

Nurses that had incurred a DNSI tended to have more varied responses. Many had taken prophylactic medications and cited extreme side effects that could possibly deter them from taking the medication in the future:

I have been stuck, I did report it, and I refused the medication. Patient was tested, I was tested, the meds are expensive and really hard on your liver (and Lord knows I'm hard enough on my liver), plus it's a ridiculously low chance of HIV which at the time I was concerned about. Oh, and the meds make you sick.

Here again, we see the idea that “the meds make you sick.” This seemed to be a very common theme with the respondents. While it is true that there can be side effects with post-exposure prophylaxis, and some of these can be severe, in general patients report that the side effects dissipate after a week or two. Additionally, the “debilitating nausea” that many HCPs expect with the treatment has actually been found to occur in about 9% of patients, with kidney dysfunction also affecting about 9% (Fang et al 2019).

I've been stuck a needle from a little old religious lady and just checked her records and didn't report it. But when I got squirted in the eyeball with blood from a maximum security prisoner, I reported that! Depends on the patient.

HCPs base their reaction to a DNSI on their perception of the patient. Does the patient pose a “threat” to their social identity or do they seem “harmless”?

Middle management is not fully aware of the policies in place for reporting and responding to a DNSI.

My employer had no idea what was to be done. When I reported it to the office leader, her response was 'what do you mean?' No testing was offered/required-- they totally dropped the ball on it.

In smaller companies and institutions, a proper DNSI action plan or blood borne pathogen policy may not be in place or may not be widespread enough for newer members of the team to know about. This demonstrates that there is much inconsistency in knowledge about DNSIs and action plans within the world of healthcare.

I had a stick. Unknown patient. And I did report and take prophylaxis. It was not fun and it was not my fault. But I would do the same again to keep my family, myself, my coworkers, and my patients safe.

There are many HCPs who have experience a DNSI, followed proper procedure, and are satisfied with their reaction and experience. These are a pool of experienced empathizers who could educate and support team members as they learn about DNSIs and how to handle them.

In congruence with the results of the survey, most respondents stated that they would report a needle-stick, or in fact had reported a needle-stick. Many felt that employers, supervisors, or charge nurses were uninformed regarding what action to take after a needle-stick exposure. Several tended to minimize the risk of HIV seroconversion by reminding themselves of the low risk, and rationalizing that the injury was not severe enough for HIV transmission to occur. Similarly, HCPs would often gauge their risk based on the appearance/status of the source patient.

Interview Results

For the interviews, registered nurses were recruited either directly through the general survey, or as recommendations from other nurses who took the survey. A total of 10 nurses participated and shared their personal encounters with DNSIs. Five interviews were conducted over the phone, while the other five were via email exchange. Phone interviews were conducted due to the geographic distance from the interviewer, and email exchange was chosen due to

scheduling conflicts. The interviews were open ended to allow interviewees to share their stories in their own words as they were comfortable. What follows is a description of the events shared by each participant, in order to highlight the way in which their experiences impacted their actions regarding the management of the DNSI event. The data are presented through actual segments of the dialogue between the participant and the interviewer to present each participants story and point of view in their own words. Each participant has been given a pseudonym to protect their identity. The final story is my own, and I use this autoethnographic style to compare experiences and understand the different stories of each nurse.

Carla

Carla has been a registered nurse in the state of Florida for eight years, and she received her DNSI during her first year of being a nurse while doing contract work at a flu shot clinic. Due to difficulty in finding a job at a hospital, Carla went straight from nursing school to independently administering vaccinations, and had no in-person supervisors to report to or provide support.

Carla: [I] was giving flu shots at Walmart. Early on, probably my second week doing that. That was my first job as a nurse--oh my God--and I gave the guy a shot. I don't know what happened, but I stuck myself with it. Putting it in the sharps container, I think. The first thing I did was excused myself and milked it and cleaned it. Milked it for probably ten minutes or so. I didn't report it 'til the end of the day, or maybe the next day. Probably the end of the day. I just didn't know if I wanted to go through the hassle of [reporting] it, honestly.

Interviewer: How did your employers handle the situation when you reported it? Did they follow-up to test the patient?

Carla: You know—I gave the company all the information. Because it was outpatient, and it was such a weird situation, I want to say that they told me that he refused to be tested. They said they reached out to him and he refused. I had lab work done: two times. I think there was a still a follow-up that they wanted me to do, but at that point I wasn't working any more. It was just a pain—they never followed up with me. I didn't want to go

through the hassle. The whole thing was pretty weird. It's not like I could go to [Human Resources] and talk to anyone. It was a unique setting.

Interviewer: *After you were tested, were you offered any treatment? Did you take any prophylactic meds?*

Carla: *No treatment. They didn't offer it to me. I don't think they did.*

Interviewer: *What was going through your mind when you were stuck with the needle?*

Carla: *I felt horrified at first. I felt embarrassed, actually—part of it. I stuck myself with a needle! What kind of nurse was I? I felt annoyed with it all; the whole situation. I knew I should follow-up and do lab work, but you know.*

Interviewer: *How did you feel the whole situation was handled? Did you feel supported?*

Carla: *I would say poorly--they handled it poorly. I would say partially because the way the job was set up, it was hard to have support or a system because they were based out of [California]*

Interviewer: *How do you think your life would be different if you had contracted HIV?*

Carla: *I feel like my whole life would be different, honestly. I feel like I would be worried about being sick all the time and [even] dying; worry about if I should expand my family or if I wanted to invest time in my career as a nurse. [The incident] changed the way I think about HIV because 1) it can happen in a moment, 2) it can happen to anyone, 3) your whole world can be changed, and 4) it should not be associated as a 'dirty disease'.*

Interviewer: *can you elaborate a little more on that statement: "a dirty disease"?*

Carla: *It's not a dirty disease—it could really happen to anyone. There is a stereotype that it's related to drug addicts or people who are sexually promiscuous. Hence, people think it's a 'dirty' association.*

Carla's story arc seems to be a fairly common one. She was a new nurse and was worried about her job and her professional reputation, thus she was hesitant about reporting the incident immediately and "waited until the end of the day". She felt isolated due to her "new" status and additionally due to the "uniqueness" of her job. She worked remotely for a company based in another state, thus did not have a physically present support person through her occupation, such as a counselor or human resources, and did not feel entirely supported because of the isolation.

Agnes

Agnes has been a registered nurse for five years, and is licensed in multiple states. Within the last two years, she transitioned to the Emergency Department (ED) and sustained her DNSI as a new employee in a busy ED.

Interviewer: *Tell me about getting stuck by the needle.*

Agnes: *It was the end of my shift, and I was starting an IV on a patient with known HIV who was in severe pain. I inserted the needle into his skin, he jerked his arm, the needle slipped out of his arm and jabbed into my finger. I threw the needle down, took off my gloves, and walked out of the room without saying a word. I was so angry!*

Interviewer: *Did you report the injury?*

Agnes: *I reported it right away.*

Interviewer: *How did your employers handle the situation when you reported it?*

Agnes: *They just kept saying “oh, you’ll be fine, you’ll be just fine”--they downplayed it, oddly enough. I was really freaking out and there were just like, “oh, it’ll all be fine, nothing’s going to happen. Was there blood on the needle”? I don’t know if there was blood on the needle but it was inside of his arm and it was inside of my finger, and he has HIV so I wanted all the testing.*

Interviewer: *So, did you end up getting the testing? Did you end up testing the patient’s viral load as well?*

Agnes: *I had the initial testing and the testing 3 months, 6 months, and 9 months afterwards to make sure. Even though we knew the patient was HIV positive they wanted to see his levels and everything so we tested him again. The patient had no problem with consenting. He felt really bad about what happened after another nurse told him.*

Interviewer: *Did you receive the prophylactic treatment? How was that experience for you?*

Agnes: *I did the treatment. It was awful. I almost stopped taking the meds at least half a dozen times since I had such bad reactions to the meds. I missed work because of it. There would be times I would go in for a shift, thinking I’d be just fine, but then I’d end up with such pain and nausea that I had to leave work. They ordered all kinds of stuff...tried to switch around the meds and regimen but none of it helped. They just kept telling me “don’t stop taking the meds! That’ll be worse!” But I finished the whole course-- all 30 days. Thankfully, administration was understanding about it and didn’t give me a hard time about missing work.*

Interviewer: *What was the first thought in your head when you were stuck with the needle?*

Agnes: *My husband. Crazy enough, my husband. Trying to tell my husband.... So many questions about what would that mean if I ended up with HIV, what our future would be like, how could I not pass it to him. I was freaking out.*

Interviewer: *Did you feel supported? Did anyone follow up with you?*

Agnes: *Afterwards, a few managers came up and asked me how I was doing with my meds, but no one else ever followed-up. Employee health, the screening people—no one ever got back to me or followed-up. I followed-up with my blood-work but that was all me. No one ever pursued me or pushed me to do it— it was all on my own.*

Much like Carla in the first story, Agnes felt much isolation with her DNSI and was left alone to do much of the reporting and follow-up. She keenly felt that the seriousness of the situation was minimized by superiors and peers as they “downplayed it” and told her that there was nothing to worry about. Later, when she was taking medication she became quite ill but was then told that “that’ll be worse” to stop taking the medication; instilling fear in her but not offering any real support. Much like Carla above, Agnes was a new nurse and worried about what this might do to her career and reputation, but she was more concerned about the risk of disease thus she was insistent upon receiving testing and treatment. Her mind immediately went to her husband and their future together if she were to contract HIV.

A common fear that affects partners and spouses is that of marital infidelity—HIV is tied to this in that it is most commonly a sexually transmitted disease. Thus, if one partner is positive and the other is not, then the illness must have been contracted through extramarital means. Carla certainly worried that contracting this disease would damage the trust in the relationship, despite her having contracted it through occupational means. She feared that although she did nothing unfaithful in the relationship, her spouse might have lingering doubt due to the stigma that HIV

holds. Additionally, Carla worried that if she were to contract HIV, this would cause a disruption in the sexual relationship she had with her husband; he might be afraid to have sex with her even if they were using a condom, and this may place an untenable strain on their marriage.

Donna

Donna is a Registered Nurse in Florida, working in trauma and critical care for the last 24 years. Donna has experienced two DNSIs during her long career, yet the instance of this interview is her most recent experience. Donna provided a photograph of her injury that is provided below in Figure 5.

Donna: *My philosophy is based on providing competent, empathetic, compassionate, and optimal holistic care to the best of my ability.*

Interviewer: *Tell me about your needle-stick injury and your experience.*

Donna: *[I] sustained needle-stick injury during trauma call on gunshot victim. [A] used needle was dropped by MD and actually impaled into my hand. [I] reported the incident to [the] charge nurse as per policy. She was dismissive of [the] situation and I had to remind her of procedure. Also, my attending I work for had to intervene and insist on testing me and the patient. Charge nurse made me feel like I was wasting her time and that I should really let it go.*

Interviewer: *Did you receive HIV testing after the incident? Was it offered to you or did you have to demand it?*

Donna: *[I] did have HIV testing, and yes it was offered to me. [The] patient was also drawn, and there was no difficulty in obtaining consent.*

Interviewer: *Did you receive prophylactic treatment?*

Donna: *No prophylactic treatment as [the] patient tested and was negative.*

Interviewer: *At the time [I was] more concerned with treating [the] patient. After, [I] flushed with soap and water. I was concerned about ramifications of injury. [I was] apprehensive about possibilities [for my future].*

Interviewer: *Did you feel supported?*

Donna: [I felt] supported fully by my attending and trauma team.



Figure 5: DNSI.

In this case, Donna followed policy immediately and reported the incident to her charge nurse, as was the protocol. Donna felt that the charge nurse was dismissive, however, and the attending physician had to get involved to remind the charge nurse of the hospital protocol and demand testing for both the patient and Donna. Thankfully, Donna had the support of her attending and trauma team, however she could easily have been isolated in a “my word against hers” war with her superior, who is supposed to be the “go-to” person for incidents such as these. Herein lies another education opportunity for those who are in supervisory and administrative positions and should have the knowledge and expertise to handle such situations. The appropriate response of the charge nurse would be to either take Donna’s place or assign another nurse to

take her place while Donna cleaned the wound, filed a report with the supervisor, and went to either employee health or the emergency department to be evaluated and treated if necessary.

Regrettably, the charge nurse was dismissive and did not take Donna seriously until Donna reminded her of the proper protocol. Unfortunately, there are many new nurses who would not fully know the protocol and go with the charge nurse, or would be too afraid to say anything and thus miss their opportunity of testing and treatment. When queried, Donna was unsure whether the physician who dropped the needle received proper education for disposal of sharps, and the onus of the accident was largely placed upon Donna.

Lucy

Lucy is a registered nurse in New York, and has worked for three-and-a-half years, primarily with children, which is the context in which she sustained her DNSI.

Lucy: *I became a nurse because I genuinely love helping people. As nurses, we see our patients at some of their most vulnerable times and I wanted to help and support my patients through those times. [I aim] to be an advocate for my patients and their families and provide compassionate care to address their physical and psychological needs.*

Interviewer: *Tell me about your experience getting stuck by a needle.*

Lucy: *I was giving a Lovenox injection to a baby in the [unit] and upon injecting the needle, the baby kicked her leg and the Lovenox pricked me in the finger. I informed my charge nurse at the time (who also informed the nursing director on duty) and was instructed to go to the ER (since Workforce Health and Safety was closed overnight). The ER staff reviewed my history as well as the patient's history and explained the risks of the injury, follow-up procedures, and prophylactic treatment that could be offered. My blood was drawn in the ER and the patient's blood upon returning to the unit (HIV was drawn the next day as there was a delay in consent from the parents). I went to Workforce Health and Safety after my shift that morning. Prophylactic treatment was offered and a 3-month follow-up/blood draw was scheduled.*

Interviewer: *How did the administrators/"higher ups" handle the situation?*

Lucy: *The charge nurse and nursing director on duty were very helpful in explaining the steps to be taken post needle-stick injury. The “higher ups” did not address the injury past that night.*

Interviewer: *Did you receive HIV testing? Did the patient?*

Lucy: *Yes, I received testing after the incident-- it was offered that night in the ER and was done 3 months after at a follow up at Workforce Health and Safety. Yes, the patient received testing (Hepatitis, HIV). HIV testing required consent which was obtained the day following the incident as the family was no present at the time.*

Interviewer: *Did you receive prophylactic treatment?*

Lucy: *I was offered prophylactic treatment in the ER that night. I was told to follow up with Workforce Health and Safety-- I went the following morning after my shift was over was told the prophylactic treatment is most effective a couple of hours post-incident. Since it was a low-risk patient, many hours after the incident, and knowing the side-effects, I opted not to undergo the prophylactic treatment.*

Interviewer: *What was going through your mind when you received the needle-stick?*

Lucy: *I was worried that I could potentially contract a bloodborne illness. I was also embarrassed that it even happened.*

Interviewer: *Did you feel supported?*

Lucy: *I felt supported by my fellow staff nurses, friends, and family. I do, however, wish that I had received more support or follow up from my nurse manager, educator, etc.*

Lucy followed proper injection procedures, yet was still injured due to the unpredictability of the patient. This speaks to the case that education initiatives often focus on needle safety and injection practices, but do not take into account that a patient may move suddenly (like the baby above) or become combative and cause injury to the HCP. Similarly to Donna’s case where the physician dropped the needle in the bed rather than properly disposing of it, Lucy faced unpredictability in the form of a baby moving and causing the needle to stick her. In Lucy’s case she did receive support and help from her peers and support system, but she did feel that those above her were not as concerned or invested in her well-being. This can lead

to a form of social isolation as well and a loss of trust when one does not feel fully supported by those in a superior position.

In this case, Lucy refused prophylactic treatment because she felt that she was low-risk as the patient was an infant with a low likelihood of carrying blood borne pathogens. Additionally, Lucy was aware of common side effects of PEP such as severe nausea and dizziness, as well as more severe complications like kidney and liver damage. She felt that the risk of discomfort and side effects was greater than her risk of contracting a BBP, and thus declined treatment immediately rather than waiting for the results of the HIV test to come back.

Carolyn

Carolyn is a Registered Nurse in Florida and has been practicing for ten years. She states that she became a nurse because “I love to help people”. She is now an educator, but sustained her DNSI while practicing in the inpatient setting.

Carolyn: *I was giving a patient an injection and after I was done, I was asked a question by the patient and instead of going to the sharps box to dispose of the needle, I held the needle in my hand to answer her question. I was so involved with the conversation of the patient that I forgot I had a needle in my hand and thought it was a pen and went to switch hands and stuck my hand with the dirty needle. At the time my unit did not have safety needles with a safety shield on it. I immediately realized that I was stuck with the needle and disposed of it and washed my hand to squeeze as much blood out as I can.*

Interviewer: *What were your perceptions of the “higher-ups” and how they handled the situation and treated you during that time?*

Carolyn: *I notified my charge nurse of the needle stick and she immediately sent me to the emergency room and told me she would discuss what happened to my patient and asked her if she would consent to an HIV test. My charge nurse did what she said and followed the procedures to get the patient HIV tested. I do not feel that my charge nurse treated me any different. I felt that she was very empathic and made sure that I was ok with what had happened as I was quite upset. She even had another nurse go with me to the ER.*

Interviewer: *Did you receive HIV testing? Did the patient?*

Carolyn: Yes, I received a series of HIV testing after the incident. It was offered as a benefit from the hospital after post exposure from a needle stick. The patient [received] HIV testing with informed consent. The only thing different about the consent is that the charge nurse told the patient that I was stuck with the needle so she was aware why we were doing it.

Interviewer: Did you receive prophylactic treatment?

Carolyn: I did not receive prophylactic treatment because I refused when it was offered. I was working on a unit where we had recent prenatal labs of the patient with their HIV status, so I did not want to expose my body to the antiretroviral. I was educated that they can have some side effects.

Interviewer: What was going through your mind when you received the needlestick injury?

Carolyn: I was very scared and worried because as a nurse you [know] that that HIV is bloodborne and even if the patient is negative it can be dormant for some time without showing positive on a test. I was also scared because I was newly married and did not want my husband to think anything different of me for being exposed to a dirty needle.

Interviewer: Did you feel supported?

Carolyn: I did feel supported. I was referred to the employee health nurse for follow up and after she interviewed me, she made me aware that she was going to follow up and make sure that my unit has safety guard needles in the future and they did after the incident.

Much like Agnes above, Carolyn's first thoughts went to her new husband and what an HIV diagnosis might mean for her marriage. The fear of being thought of differently or negatively by those closest to her is a manifestation of the knowledge of stigma and the fear of its effects. Additionally, Carolyn feared that she would face suspicion of infidelity to her husband if she were to become HIV positive. Regardless of her proof that she had a needle stick injury, HIV as a disease transmitted by sex (especially "immoral" sex) is a pervasive stigma that is difficult to completely eradicate. Carolyn feared that contracting this disease would not only be devastating physically and professionally, but potentially destroy her new marriage and her reputation.

Carolyn felt she could trust her charge nurse and the charge nurse repaid that trust well by following protocol. Interestingly, even though she was afraid of contracting a disease, Carolyn refused any prophylactic treatment due to fear of side effects. Though her risk was low, she still decided that the possibility of immediate negative side effects outweighed any long-term risks of contracting HIV or another blood borne illness.

Nathalie

Nathalie knew that she wanted to be a nurse when she was eight years old. After practicing as an EMT and working as an emergency room tech for five years, Nathalie obtained her registered nurse license and has been practicing for 8 years. Her philosophy is to do her best, and “do no harm to others.”

***Nathalie:** I was cleaning up a suture tray for a [nurse practitioner] in the ER and when I picked up the tray and felt something stab my thumb, I remember looking at my hand and thinking ‘oh crap.’ I was already bleeding in my glove, I dropped the tray and went straight to the sink to wash my hands, while yelling at the [nurse practitioner]. The patient was hepatitis B positive and HIV positive, so I was pretty upset. I let my charge know and proceeded with occupational health and risk management.*

***Interviewer:** What were your perceptions of the “higher-ups” and how they handled the situation and treated you during that time?*

***Nathalie:** Everything went really quickly, I got blood done in the ER and I started drugs to prevent illness, the antivirals I was on for 3 months they made me extremely nauseous. Everyone involved was super helpful.*

***Interviewer:** Did you receive HIV testing after the incident?*

***Nathalie:** Yes, I got tested the day of, a month later, at 3 months, at 6 months, and yearly. Thankfully I am still negative*

***Interviewer:** Did the patient receive testing? Was there in difficulty in obtaining consent?*

***Nathalie:** The patient saw how upset I was so had no problem consenting, we already knew the status of the patient.*

***Interviewer:** Did you receive prophylactic treatment?*

***Nathalie:** Yep, I was placed on antivirals for 3 months, I couldn't do more than 3 months because I got extremely ill from the medicines. The goal was to keep me on them for 6 months to a year.*

***Interviewer:** What was going through your mind when you received the needle-stick injury?*

***Nathalie:** My first thought was anger, I still can't look at the [nurse practitioner] without getting mad, all [nurse practitioners] and Doctors are supposed to throw away all sharps and this [nurse practitioner] was just on the lazy side and decided she wouldn't do it. I just knew my life was changed forever.*

***Interviewer:** Did you feel supported? Did you have a social or professional support network?*

***Nathalie:** Everyone was super supportive; I did have to go to support services just because with all the HIV testing it was super stressful. I feel like I was lucky, but I feel like this experience did change me as a person.*

For Nathalie, the injury sustained was because of a team member failing to follow proper procedure, thus costing Nathalie much emotional, physical, and psychological stress. In this case, the patient was known to have HIV and other infectious diseases, thus the risk of contracting the disease and the fear of it were compounded even further. Follow-up with Nathalie a few months later confirmed that her being “changed as a person” is manifested in how she perceives those with the illness (“more compassionately”) and how careful she is with sharps to avoid injury in herself and others. Regardless, this situation caused a lot of stress for Nathalie, that could have lowered her body’s natural immune defenses and made it more likely for HIV to find a home within her.

Additionally, Nathalie was unable to complete the full cycle of treatment because of the debilitating side effects she experienced (severe nausea and vomiting, gastrointestinal upset,

headaches, and dizziness). Knowing that she had been exposed to HIV-positive blood made the situation even worse as she could not rely on the medication regimen to fully cover her. In this situation, Nathalie was fortunate to remain seronegative, however others may not be so fortunate. She followed through with the recommended testing so that she could have that assurance, however if Nathalie had tested positive and required lifetime medication, this could have posed another severe stressor as she already knew she couldn't tolerate the recommended treatment regimen.

Much like in the case of Donna, Nathalie's injury was caused due to the mistake of a coworker—of someone she is supposed to trust each day to do their job well and safeguard her. Nathalie was not sure if the practitioner ever received any re-education in needle safety, and instead felt that the practitioner brushed it off. To this day, Nathalie admits that this relationship has been damaged, and though she continues to work professionally with this person, Nathalie feels she cannot trust the practitioner any longer and instead feels anger.

Marcy

Marcy is a registered nurse specializing in pediatric cardiac care and neonatal intensive care. She has worked in this field for the past nine years and worked in facilities in multiple states. She states that she became a nurse because “the mix of medicine and caring for others was intriguing to me.”

Marcy: *I was drawing blood for an arterial line and the common practice was to draw blood by using the method of inserting the needle into the hub, allowing the blood to drip, re-attaching the syringe to the needle & recapping when finished. When recapping the needle, I missed and that's when I stuck myself.*

Interviewer: *What were your perceptions of the “higher-ups” how they handled the situation and treated you during that time?*

Marcy: *If I can remember correctly, the situation was handled properly. I notified my charge nurse and the [nurse practitioner] that was on and we followed the protocol for needlesticks accordingly.*

Interviewer: *Did you receive HIV testing after the incident?*

Marcy: *No*

Interviewer: *Did the patient receive testing? Was there in difficulty in obtaining consent?*

Marcy: *Yes the patient received testing and we notified the parents. We had no difficulty in obtaining consent.*

Interviewer: *Did you receive prophylactic treatment?*

Marcy: *No- I can't recall if it was offered.*

Interviewer: *What was going through your mind when you received the needle-stick injury?*

Marcy: *Panicked and angry that it happened.*

Interviewer: *Did you feel supported?*

Marcy: *Yes, I did.*

Marcy was practicing at an institution that did not practice the recommended safety practices for blood draws at the time. This is because Marcy worked in a neonatal setting, where the blood draw practices were focused on minimizing the blood loss to the patient, rather than the risk to the health care worker. Though she had the support of her team, she still experienced anger and anxiety over the incident. Such stress responses can lead to an increased vulnerability to infection or to risky behaviors such as not reporting the incident. Thankfully, Marcy had a good support system around her and followed the proper procedure when she incurred the injury.

Justine

Justine is a registered nurse in the state of Florida and specializes in general Pediatrics. She decided to go into nursing while in junior high-school, and has been a nurse for twenty-three years. She sustained a needle-stick injury during her first year in nursing, and had a rather harrowing experience.

Justine: *I was in my first year of nursing and had to give my patient an [intramuscular] injection. When I gave the shot in the patient's thigh I "rebounded" when pulling the needle out and stuck myself in the hand.*

Interviewer: *What were your perceptions of the "higher-ups" and how they handled the situation and treated you during that time?*

Justine: *At first after the stick I didn't know what to do, I was still new and was afraid of looking stupid. The patient even immediately asked me "did you just stick yourself?" and I said "No." I went and washed my hands then after about 30 minutes told my former preceptor who told me to call the supervisor. They treated me fine, didn't make me feel bad, however the hospital had just instituted a new needlestick policy where you have a very limited amount of time to draw blood and initiate treatment, so they came across as panicked which made me panicked. People were literally running around trying to figure out the new policy.*

Interviewer: *Did you receive HIV testing after the incident?*

Justine: *Yes. It was part of the hospital protocol, so it was automatically initiated.*

Interviewer: *Did the patient receive testing? Was there in difficulty in obtaining consent?*

Justine: *Yes. He had no problem giving consent. When I came back to work the next day, he said "I knew you stuck yourself!" I felt pretty dumb, but he was nice and said he had actually been involved in a needlestick incident before and already knew all his tests had come back negative, so that made me feel better.*

Interviewer: *Did you receive prophylactic treatment?*

Justine: *I did take the meds. I honestly didn't even think about the option of refusing them, it was just presented to me as protocol. They were rushing to get me food and saying it was going to make me sick, but I had no problems or side effects with it actually besides the anxiety the staff was causing me by saying I was going to be so sick.*

Interviewer: *What was going through your mind when you received the needle-stick injury?*

Justine: *I was absolutely terrified and embarrassed. I didn't want anyone (co-workers, admin, or even my patient) to think I didn't know how to do my job.*

Interviewer: *Did you feel supported? Did you have a social/professional support network?*

Justine: *I honestly think the whole policy and way they handled needlesticks was so new, everyone was acting so panicked that it did make me feel scared and kind of alone at the time everything was happening. I really don't remember anyone following up with me about it. I just eventually got my test results in an envelope, which were negative, and they told me to stop taking the meds. No one made me feel bad about it, but nothing was really said at all either way.*

Justine was a new nurse, still learning, and those that she turned to for help were not as informed as she would have hoped. This demonstrates the need for not only implementation of effective policies and procedures, but also education and ensuring that everyone understands and is fully apprised of the new or updated information. The panicked attitude of the “higher-ups” led to Justine feeling anxious and alone. Another new nurse witnessing this situation could perhaps become more discouraged from reporting the incident if they were to find themselves with a DNSI. Feelings of “being alone” and “panic” are again repeated here with Justine as in many cases above. The risk that the nurse may contract a disease as stigmatized as HIV contributes to the isolation and distress.

There is also the additional problem of the nurse not wanting to be viewed as incompetent by peers, administrator, and patients. Justine stated, “I didn’t want anyone to think I didn’t know how to do my job.” This is especially true for a new and inexperienced nurse. The pressure of getting through the first few years and gaining enough experience to feel competent and be viewed as competent is already quite daunting. If a DNSI is added to the mix, this can lead to a nurse possibly compromising her own safety by not saying anything in order to “save face.”

Angie

Angie has been a nurse for 8 years. She has worked in pediatric critical care for 5 years and recently completed her degree and certification as a Nurse Anesthetist (CRNA). She is currently licensed in Maryland, however her incident occurred during her time in CRNA school in Pennsylvania.

Interviewer: *Why did you become a nurse?*

Angie: *To help others and be a voice for those who do not have one.*

Interviewer: *What is your nursing philosophy?*

Angie: *To treat each patient as a whole and their families as well. To stand up for what I believe is right for the patient. To come into work every day and treat each patient as if they were a part of my own family.*

Interviewer: *Tell me about the needle-stick injury you received.*

Angie: *I [was still a nurse anesthetist student at the time]. I was putting an epidural into a patient and got stuck with the needle used to localize the site.*

Interviewer: *What were your perceptions of the “higher-ups” (administration, education, charge nurse, etc) and how they handled the situation and treated you during that time?*

Angie: *The higher ups were very understanding. I said I wasn't sure if I was stuck or not or if it broke skin through my sterile gloves. They told me to go get tested anyway. One of the [Certified Registered Nurse Anesthetists] assigned to working with me accompanied me to the emergency room.*

Interviewer: *Did you receive HIV testing after the incident?*

Angie: *I got HIV tested. I didn't really know what I was being tested for but saw it in my labs.*

Interviewer: *Did the patient receive testing? Was there in difficulty in obtaining consent?*

Angie: *I am not sure if the patient received testing.*

Interviewer: *Did you receive prophylactic treatment?*

Angie: No prophylactic treatment was offered. They looked at the patient and said that none was needed.

Interviewer: What was going through your mind when you received the needle-stick injury?

Angie: I was terrified. In my field in anesthesia we deal with so many sick patients and put many invasive lines into patients. We hear stories of CRNAs being stuck and developing hepatitis after being tested. You don't want to be that person who develops an infectious disease on the job.

Interviewer: Did you feel supported?

Angie: I felt very supported! The school reached out to me after and they did follow up testing for HIV and hepatitis 3 and 6 months later. I felt very supported and I see that when people are stuck in the operating room people are very supportive. We used to draw labs in the OR without letting the patient know they were being drawn but now there is a new consent form that patients fill out preoperatively that says that if we are stuck that we will need to test their blood.

Fear was added to Angie's injury as she recalled tales of other nurses that had received injuries and contracted a disease. This served to make the experience more stressful. She felt very supported and followed the necessary protocols and received testing. There was a lot of uncertainty, however, as she was not certain what she was being tested for and was never offered any prophylactic treatment. Per the bloodborne pathogen guide put forth by OSHA, she should have been started on treatment immediately while waiting for test results to come back. "They looked at the patient and said that none was needed" is especially misleading as HIV does not have a face, and it is impossible to tell by simply looking at a person and assuming their serostatus. Luckily, in Angie's case she did not contract any diseases, but another may not be so fortunate.

Rrola

Rrola has been a nurse for less than a year. After a difficult trek through nursing school, she finally obtained her license and became practicing as an RN in the state of Florida. Her goal is to “help others and relieve their pain.” She seeks to help change the lives of people in a positive manner. She likes nursing because of the focus on interpersonal relationships as she believes that “creating a relationship [with patients] decreases anxiety and possibly pain.”

Rrola: *After administering insulin to one of my patients, as I was activating the safety device, I stuck the needle in my left thumb.*

Interviewer: *What were your perceptions of the “higher-ups” and how they handled the situation and treated you during that time?*

Rrola: *[They were] very nice and helpful. Not only that they moved very fast to test the patient and schedule me for testing, they also had a great role in decreasing my anxiety as I was freaking out worrying that the patient may have had a positive result to any of the tests. Results were very fast and needless to say all was free; no charge.*

Interviewer: *Did you receive HIV testing after the incident? Was it offered to you or did you have to demand it?*

Rrola: *HIV and Hep B panels were all offered to both I and the patient*

Interviewer: *Did the patient receive testing? Was there in difficulty in obtaining consent?*

Rrola: *Yes patient received testing within 30 minutes of the incident, and there were no problems*

Interviewer: *Did you receive prophylactic treatment?*

Rrola: *No treatments, as patient tested negative. All my tests showed immunity except Hep B vaccine for which they offered me vaccine*

Interviewer: *What was going through your mind when you received the needle-stick injury?*

Rrola: *Was off course too worried thinking I could have receive a disease that easy. HIV is aggressive and develops to AIDS. Patients have to be under treatment all the time and [it makes you] sick all of the time. [I was worried] about what would happen emotionally and financially. When this happened, I thought about my family first: if something were to happen who will be there for my child? Plus, what if I am not in a good enough*

condition to practice my job?

Interviewer: *Did you feel supported?*

Rrola: *Yes, I did. My family were by me throughout the whole process till my results came back negative. [They] would never leave my side.*

Rrola's story is that of a young, inexperienced nurse sustaining a DNSI and experiencing emotional distress and worry about the situation. She also displayed a bit of an outdated understanding of HIV. True, the virus can be aggressive and progress to AIDS, however with modern treatments most who are HIV positive can live their lives with very low and nearly undetectable viral loads and never progress to AIDS. The medications run the risk of adverse side effects, however many patients do not experience these side effects or report them as tolerable. Rrola's account serves to illustrate, however, the pervasiveness of the lore and history surrounding this virus. Though there are advances and decreased risks, the threat that it posed in its height still looms large in the minds of those who might be affected.

Rrola's main concerns were of her family and child, and the financial burden that treating HIV would cause. Rrola states that she has a strong family support system, thus her thoughts turned to her family when her health was at stake. She did not want to become a burden to them financially or otherwise, and she was worried that she might become too ill to care for her child, thus shifting that responsibility to her family. Rrola's financial concerns stemmed from her fears that she may be unable to work if she is extremely ill. As she holds the primary source of income for her and her immediate family, this would place a severe strain on everyone within the support system. Thus the stress of the situation not only affected Rrola, but boiled over to cause stress for the supporters around her.

CHAPTER EIGHT: DISCUSSION

Much Ado About Nothing

As previously established, the risk of seroconversion to HIV with a DNSI is 0.3%, however this still poses a threat to nurses, and the threat can be increased in circumstances of deep injury, visible blood, high viral load, etc. (ANA 2002, 5; Bell 1997, 13; Lee et al 2005, 122; Panlilio et al 2005, 2, 5; Cardo et al 1997, 1488; Gupta et al 2015, 18; Kessler et al 2008, 129; Kuhar et al 2013, 877). The Health Belief Model (HBM) as described above offers a useful framework for the analysis of the actions reported by the nurses interviewed. According to the HBM, an individual will only be motivated to adopt a behavior or undergo behavior change if the perceived threat of not changing the behavior outweighs the perceived benefits of remaining static (Boston University 2019; Jones et al 2015). This motivation is affected by various cues that either spur on or demotivate the individual. In the case of Carla, the anticipation of “the hassle” of reporting, testing, and treatment lead her to delay reporting, downplay the significance of the injury, and ultimately lapse in testing and follow-up care: *“It was just a pain--they never followed up with me. I didn’t want to go through the hassle. The whole thing was pretty weird.”* Two levels of cues exist in this instance, and both serve to demotivate the nurse: anticipation of unnecessary rigmarole, and perceived apathy of superiors. The nurse (Carla) is frustrated by the DNSI and the inconvenience that this interruption imposes upon her highly organized day. The

prospect of stopping to obtain a blood test, undergo medical evaluation, and fill out paperwork is unwelcome in comparison to the relatively low risk of HIV seroconversion.

The nurse reasons that all the fuss over a small needle stick is simply “much ado about nothing,” and decides to delay reporting/testing, or not be tested at all. The superiors (employers/supervisors) of the nurse either do not press the issue of testing/treatment, or portray the reporting process as an unnecessary ordeal that the nurse would be better off ignoring. Due to the lack of concern from employers, the nurse’s assessment of HIV risk is reinforced, and the perceived benefit of dismissing the injury is justified.

Fear as a Motivator

Fear can be a major motivator or demotivator in reporting DNSIs and testing for HIV/BBP. Fear of contracting disease can push a nurse into reporting the injury and receiving treatment, yet the fear of disciplinary action, discrimination, or loss of license/job status can drive a nurse from reporting and lead to downplaying of the injury. Receiving a DNSI is a high-anxiety event, and can lead to symptoms of post-traumatic stress disorder in some cases (Breet et al 2014, 947). Four primary levels of fear exist that can lead to a nurse choosing not to disclose injury or to deny testing/treatment, and levels tie into the anticipation of rejection post-exposure: 1) fear of being ostracized by peers/family/friends, 2) fear of disappointing the patient, 3) fear of job insecurity, and 4) fear of restriction by peers/administrators/society. Fear of ostracization relates to how a nurse perceives peers/family/friends will react post injury. It is a perceived rejection by the support system. Agnes relayed that her immediate thought post-injury was her husband and how she was going to disclose a possible-HIV-positive status to him, as well as how to protect her husband from contracting HIV. She worried especially because the marriage was

still newly established and she did not want an injury to turn into a disease that could have crippling ramifications. Fear of disappointment is a fear of rejection by the patient. The nurse is supposed to be the caregiver of the patient, and a DNSI not only causes distress to the nurse, but a disruption of the patient care and a re-focusing of the caregiving to the nurse and away from the patient. Agnes cited that the patient “felt really bad” after a colleague informed him of the mishap, and thus the caregiving roles were flipped, with Agnes placed in the patient role and the patient in the role of compassion. Fear of job insecurity is a perceived rejection by the hospital institution that houses the nurse. Agnes worried that her missed work due to medication-induced illness would induce disciplinary action. Another nurse summed up worry as being a barrier against reporting the DNSI: *“Sometimes the [backlash] from reporting and fear of retribution from management can be a deterrent. Loss of a permanent job or travel assignment can be scary to think about.... [I] want to say yes [I] would definitely report it but reporting doesn’t always happen related to fear of retribution.”* Fear of restriction is a perceived rejection by the institution of nursing. Practice restrictions still exist in some states, although regulations protecting the HIV positive nurse are in place. The fear of becoming HIV positive and the possibility of limitations on professional development and clinical work are still quite prevalent in nursing culture. These four levels of fear interact with one another and deter the injured nurse from reporting or following through with treatment and follow-up, and color the perceptions that determine how the experience is embodied by the nurse.

Multilevel Discrimination

HIV is a disease laden with stigma. The stigma begins with the HIV-negative individual (*the “intrinsic”*) perceiving the HIV-positive individual (*the “extrinsic”*) as being something

other and thus posing a threat to the wellbeing of the “healthy” HIV-negative population. This perception that the extrinsic is commensurate with the dangerous transforms the interactions that an individual will have with and within the world. This internal classification as the intrinsic and the extrinsic manifests itself as discrimination. Though seen as operating within a caring, non-judgmental profession, nurses are not immune to the biases that lead to discrimination against certain groups of people, including those with HIV. Upon receiving a DNSI and being at risk of seroconversion to HIV, the nurse is then susceptible to both the perceived and actual discrimination from administration, peers, and the public. One nurse recounted an experience from nursing school, where she incurred a DNSI from a patient terminally-ill with AIDS:

My school didn't want me to continue clinicals with only two weeks left to graduate. I did take the meds around the clock every four hours for six months. It was horrible. The discrimination by my school and other medical professionals was worse. It was a great lesson learned on compassion and empathy. They let me go to the hospital and sit in a room with charts. No patient contact.

Due to the high viral load of the source patient and the possibility of having contracted HIV, the school and hospital limited the educational and professional development of the nurse, stating that she may be a danger to patients and other clinical staff. While nurses face discrimination from above, they also perpetuate biases against patients. Thus, the discrimination occurs on multiple levels. It is both projected onto the nurse, and acted out by the nurse.

One respondent to the survey stated that whether a DNSI should be reported or testing received, “*Depends on the patient.*” She relayed her method of judging whether a patient was “ok” or not:

I've been stuck a needle from a little old religious lady and just checked her records and didn't report it. But when I got squirted in the eyeball with blood from a maximum security prisoner, I reported that!

Another respondent stated that while she reported the incident, she did not follow-up or take meds as “*I knew the patient was clean.*” These comments illustrate that nurses have perceptions

of a patient's health status based upon their appearance or cursory history, and these perceptions greatly influence not only how they care for and treat the patient, but also how they evaluate their own safety versus risk, and what course of action to take in the event of a DNSI. These reactions fit into the Social Identity Threat model (Major & Schmader 2018). Each nurse has a prior perception of each patient based on appearance or background, and this perception triggers an anticipated stigma that will influence whether the nurse feels "threatened" or not.

Workplace Violence

The current market economy of the United States majorly influences the structure and development of the health care system in how policies are developed, how hospitals are staffed, and how staff are maintained/retained. Cost-effectiveness and efficiency are the major aim of hospital administrators, who are frequently evaluating new methods to keep cost down without compromising patient satisfaction (Alameddine et al 2012). To drive healthcare expenditures down, institutions attempt to reduce the number of paid employees (usually nurses), and instead rely on hospital census averages and specific formulas to utilize the least number of nurses in a given shift as is possible given the number of patients present on a unit. Other methods include the utilization of more cost-effective equipment, such as peripheral IVs. Though some companies are seeking to merge safety, efficiency, and low cost, often the needle chosen is not appropriate for the patient population, or the nurse has not received appropriate training in the needle device. Both of these factors contribute to an increased risk of DNSIs. The reduction of staff can lead to shortages and overburdening of the patient care-load per nurse. As a result, the nurse is overstressed and makes rash decisions such as beginning an IV in a patient that is combative without having appropriate support staff. Under-training of new needle devices results in poor

technique, which can cause injury. Although the new devices may seem safer, they are not patient friendly and the nurse has to stick a patient multiple times in order to obtain an IV. The frustration of missing an IV and the harm of multiple attempts to access a patient's vein can lead to high-anxiety which can cause poor skill utilization and lead to DNSIs.

On the other hand, the business model of cost-efficiency that is adopted by hospital institutions is directly at odds with the nursing care model of treating every patient, regardless of socioeconomic status or background. This conflict of core philosophies and goals causes a hostile relationship between the institution and the core workforce (nurses) to emerge, resulting in nurses that do not trust their superiors to act on their behalf or the patients' behalf. The nurse is caught in a middle realm of carrying out the duties required by the institution to increase profits, and attempting to give professional care and compassion, and advocate on behalf of the patient (Water et al 2016; Young 2019). When a DNSI does occur, the perceived lack of support or ascribing of blame to the nurse deters the HCP from reporting or following-up with the injury. The larger structures of the institution cause further harm by coloring the perceptions of the nurse and leading to a decision that can be detrimental. All ten interviewees felt that their institution was lacking in follow-up or support. Donna recalled that she had to remind the charge nurse of proper protocol, even though the charge nurse attempted to downplay the incident. Lucy wanted the nurse manager and educator to follow-through and evaluate the situation, rather than just letting it go. This conflict between the nurses' ideology and the economic goals of the institution result in a form of structural violence that can influence the beliefs and perceptions of the nurse, and thus impose upon decision-making.

Internalized Blame

The combined factors of minimizing HIV-risk, fear, perceived discrimination, and workplace violence culminate in self-blame by the nurse, and discredits their own validity as both an individual and a professional. Self-deprecation and self-blame are coping mechanisms in which the individual feels that “attacking” oneself will be less painful than being “attacked” by another person (Felblinger 2008, 238). The reactionary anger of the needle-stick incident and surrounding factors lead the nurse to assume all fault for the incident. Focused upon prevention and worker training, the institution immediately assumes that the injury was caused by poor technique or an oversight on the nurse’s part, thus the nurse perceives blame from outside and within. This blame is internalized and becomes a part of the nurse’s embodiment of the experience. When surveyed, nurses recalled feeling, “*scared, angry at myself*”, “*nervous, scared, embarrassed*”, “*dumb, how could I make this mistake*”, and “*...I felt that I should have been more careful when using/disposing dirty needle.*” While remaining reflexive and maintaining accountability are important skills for a nurse to utilize, there is a disproportionate disconnect where the nurse is given complete agency in the situation and held fully responsible, without taking into account the larger structural and interpersonal factors that influence behaviors, perceptions, and decisions. This total ascribed agency can influence how a nurse perceives the self, and ultimately lead to the internalization of blame.

Autoanalysis

Present reflection of my own DNSI experience as a young nurse exemplifies the various factors at place that influenced my decision to not report the injury or seek testing/treatment. I was eager to impress peers as a fairly new healthcare professional, and allowed the opinion of

other nurses, doctors, and patients to influence my own perception of self. When the injury occurred, I hid it from Ann so as to not muddle the patient-nurse relationship or cause undue stress for her. I also hid the injury from peers and superiors because I perceived that the mishap would change their perception of me, and that I would be seen as clumsy or incompetent. I also hid the injury from myself by minimizing the potential gravity of the situation, and choosing to ignore it. This resulted in an internalization of blame that altered the way I saw myself and the world around me, and seriously hindered my confidence in my own abilities for many years. My distrust of the institution played a role in allowing me to ignore the injury, as I was in fear of backlash or a loss of employment. Finally, the patient did not meet my internal image of what an HIV-positive patient should look like, thus I dismissed the incident. My own perceived threat of discrimination and public shame, along with sheer embarrassment, outweighed the perceived benefit of reporting and testing. My self-efficacy was challenged by the internalized blame that I experienced and imposed upon myself, and my perception of a lack of institutional support led me to dispense of the ordeal entirely.

CHAPTER NINE:

ANTHROPOLOGICAL IMPORTANCE

A Gap in the Literature

Anthropology, broadly, is the study of human behavior and culture. The anthropological perspective is unique in that it seeks to understand the how and the why of the behavior of specific groups, and how this behavior is influenced and guided by culture, structural issues, belief systems, political systems, socioeconomic status, and many other factors. Much anthropological research has been conducted on specific groups affected by HIV/AIDS, most notably gay men (Basu, Dillon, & Romero-Daza 2016; Heckert 2019; Silenzio 2003); African-Americans and others of African-descent (Halperin 2008; Parker, et al 2017; Singer & Weeks 1996; Wilson et al 2016;); Intravenous drug users (Argento et al 2017; Romero-Daza, Weeks, & Singer 1998; Singer & Ziegler 2017); sex workers (Bazzi et al 2019; Lakkimsetti 2014; Romero-Daza, Weeks, & Singer 2005; Sangaramoorthy & Kroeger 2013); and third-world countries (Bulled 2015; Castro & Farmer 2005; Mackworth-Young, Bond, & Wringe 2020; Romero-Daza 1994). Research with health care providers and their perceptions of stigma, especially in the face of risk to themselves (e.g., a DNSI) is limited in the Anthropological canon, and the research that does exist is mainly found internationally in the discipline of public health, rather than in the United States. Stigma research, while present among anthropology, is mostly found in the disciplines of sociology and psychology (Brown et al 2019; Chaudoir & Fisher 2017; Link & Phelan 2001; Whelehan 2009).

This study contributes to HIV research, stigma research, and helps to fill the anthropological gap in this specific area of study. Whelehan (2009) states that applied medical anthropology, in particular, can aid in HIV/AIDS research because it is a “cultural liaison” between those affected by the epidemic and the various agencies and organizations involved (6). Applied anthropology, instead of disregarding theory, takes these perspectives and actualizes them to be used in practical settings and solve problems within HIV/AIDS research (Whelehan 2009, 5-6). By marrying a critical, applied anthropological perspective with theories from sociology, psychology, and public health, I believe that this research has yielded unique and helpful insights into how perceived and internalized stigma begin, foster, and perpetuate among specific groups. By understanding this stigma, we can better combat it in the face of HIV, and determine methods to accept stigmatized groups and provide them with better medical care and treatment options.

CHAPTER TEN: FUTURE IMPLICATIONS & CONCLUSION

Future Implications

This anthropological understanding of stigma can help to inform more human-focused policies and procedures within healthcare settings. Rather than simply focusing on the mechanisms for preventing injury or the procedure to follow in the event of an injury, organizations can use this information to create educational “campaigns” to help HCPs understand that reporting a DNSI is not going to result in punitive action, loss of privacy, or loss of respect from peers. Education can also tackle some outdated and erroneous ideas about HIV, and help to make organizations a safer environment for not only HCPs, but also for patients living with HIV that are seeking treatment for HIV or co-morbid conditions. Outside of healthcare institutions, this deeper understanding of HIV stigma can be used to educate the public and be incorporated in popular literature or entertainment venues to help lessen the spread and effects of HIV stigma.

Education and knowledge sharing are among the best means of reducing stigma (Mak et al 2017; Payne-Foster et al 2018; Thornicroft et al 2016). A large part of stigma is the fear that surrounds it and fear is often a result of uncertainty or lack of knowledge. By creating collaborative educational strategies involving every member of the health care team and utilizing the experiences of those who have been directly impacted by DNSIs and the fear that surrounds them, this stigma can be greatly reduced and prevented (Bauermeister et al 2018; Nyblade et al

2018; Mak et al 2017). One particularly powerful way to do this is to incorporate these principles into popular media. Creating knowledge sharing campaigns that are easily understood, relatable, and widespread could help to generate understanding and empathy. This empathy will directly work against the stigma (Luna, Jurich, & Quintana 2019; Nyblade et al 2018).

The results of this research can also be used outside of the hospital and in public health institutions at large. Educational initiatives can be formed with public health nurses to better train HCPs who draw blood, administer vaccines, and perform HIV screening in a clinic. Finally, this information can be used in nursing schools to educate and prepare the future workforce of nurses.

My own plan for disseminating these research results involves meeting with nurse educators and managers to develop specific educational initiatives for each institution. The information can be used to form collaborative committees of nurses, nurse educators, and nurse leaders to develop an educational campaign that will be specific to each nursing unit. Additionally, collaborations could be made with employee health to conduct knowledge checks during annual employee health exams and new hire appointments. This will help to assure that every clinical employee will receive regular information on needlestick safety and reporting protocols, as well as have the opportunity to provide their own concerns and ideas for improvement.

Study Limitations & New Research Avenues

This was a small exploratory study, thus the results cannot be taken to represent the experience of U.S. nurses at large. These results can be used to inform larger-scale studies to fully understand the issues of DNSI among the health care force. Additionally, the study

participants were limited to the nursing profession. Many other health care professionals (physicians, respiratory therapists, phlebotomists, surgical technicians, etc.) come into contact with dirty needles and are at risk for injury. Future studies could focus on these different groups.

Another opportunity for future research lies in how the stigmas and beliefs about HIV and other blood borne illnesses influence patient care. Future studies can focus on how the personal beliefs and lived experiences of HCPs form the basis of their clinical practice, and how this can be challenged and improved.

Conclusion

Nurses are held to a high standard of honesty, professionalism, compassion, and advocacy. They are the mezzo- support within the healthcare system, speaking for both patient and doctor. Because they are given such high responsibility, nurses are subject to both structural-political and interpersonal factors that transform how they experience situations. Nurses are vulnerable to DNSIs, and the political and interpersonal factors that influence them can determine the level of importance a nurse assigns to the risk associated with a DNSI, and whether a nurse reports the injury, decides to have testing, or initiates treatment. Understanding the individual perceptions and how they are shaped by outside influences and structures, as well as personal agency, can shed light on why nurses minimize risk, choose not to report injury, and refuse testing. By casting light upon this interconnected web, more compassionate and holistic protocols and procedures can be developed, and nurses can feel that they are valued and essential members of the healthcare system.

Identifying the stigma that surrounds DNSIs can aid in identifying and understanding the stigma that pervades the issue of HIV as a whole. Understanding its origins and how it is

propagated is key in eliminating stigma and making further strides in the fight against HIV and discrimination. Nurses are a prime population to further champion the cause of compassion. By using compassionate techniques to understand the experience of nurses, researchers that can find colleagues and allies within this population to help them further combat HIV and ultimately decrease the stigma surrounding it.

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APPENDIX A:

SURVEY

Q0. I am a graduate student at the University of South Florida, and I am conducting a small research study for a graduate course that will also be used to formulate an article for a poster presentation and hopefully a nursing journal. This survey is a part of a project looking at the prevalence of dirty-needlestick injuries in nurses, their access to treatment and/or prophylaxis, and their perceptions regarding their treatment by administration.

If you are willing to participate in this survey, please acknowledge the statements below:

"I acknowledge understanding that this survey is completely anonymous, and the results will be used in the context of this article and poster-project. All results are coded and confidential. I understand that I am not mandated to take this survey or to answer any questions, and I may stop survey at any time."

"I acknowledge that I will not be compensated for this survey or any part of this project."

"I am under no obligation to disclose any information I am uncomfortable with, and I am under no obligation to reveal identity or sero-status if I choose not to. I may refuse to answer a question at any time. I understand that this is a completely voluntary survey, and has no affiliations to any corporations or other agencies other than the University of South Florida."

- Agree
- Disagree

Q1. What type of license/certification do you currently hold and practice under?

- Registered Nurse (RN)
- Licensed Practical Nurse (LPN)
- Advanced Registered Nurse Practitioner (ARNP)

Q2. What state do you currently practice in? (If retired/inactive, what was your latest state of licensure?)

Q3. What is your licensure/practicing status?

- Active
- Inactive
- Retired

Q4. How many years have you practiced as a nurse?

- 0-2 years
- 3-5 years
- 5-10 years
- 10-15 years
- 15-20 years
- 20-25 years
- 25-30 years
- 30+ years

Q5. Have you ever received a dirty needle-stick injury?

- Yes
- No

Q6. Have you ever received a dirty-needlestick injury from a needle that has had direct contact with a patient who was HIV positive?

- Yes
- No
- Unknown

Q7. Have you ever received a dirty-needlestick injury from a needle that had contact with a patient of unknown HIV status, who later was confirmed to be HIV positive?

- Yes
- No

Q8. Upon receiving a dirty-needlestick injury, was the involved patient consent and tested for HIV?

- Yes
- No

Q9. Upon receiving a dirty-needlestick injury, did you report the incident?

- Yes, I reported the incident immediately to the appropriate supervisor
- Yes. I did not report the incident immediately, but reported at the end of the shift.
- Yes. I reported the incident after significant time had passed.
- No, I did not report the incident.

Q10. Upon reporting dirty-needlestick injury, did you receive testing?

- Yes, I was offered testing and accepted it.
- Yes. I was not offered testing, but I insisted upon it.
- No. I was offered testing and I declined.
- No. I was not offered testing and I did not receive it.

Q11. If you were tested, did you receive pre- and post-test counseling regarding HIV status, and the possibility of an HIV-positive result?

- Yes. Pre- and post counseling were offered and I accepted.

- yes. Counseling was not offered, but I insisted on it.
- No. Counseling was offered and I declined.
- No. Counseling was not offered and I did not receive it.

Q12. Did a member of the hospital/health care setting administration (e.g., manager, supervisor, etc.) follow-up with you regarding the dirty-needlestick injury?

- Yes
- No

Q13. Did a member of the education team/department (e.g., clinical educator, unit coordinator, etc) follow-up with you regarding the dirty-needlestick injury?

- Yes
- No

Q14. How did you feel in the situation of receiving a dirty-needlestick injury?

Q15. Upon receiving a dirty-needlestick injury, did you perceive any barriers to you receiving testing and prophylactic treatment? Please outline what those barriers were.

Q16. If you have any information, comments, or would like to share your story of receiving a dirty needle-stick injury and your related perceptions and feelings, please use the box below.

APPENDIX B:
QUESTIONNAIRE

- 1) How many years have you practiced as a nurse?
- 2) What state(s) are you licensed in and currently practicing?
- 3) Are you an RN / LPN / APRN?
- 4) Why did you become a nurse?
- 5) What is your nursing philosophy?
- 6) In as much detail as you are able, please tell me your story and experience about the dirty needle-stick incident/injury you received?
- 7) What were your perceptions of the “higher-ups” (administration, education, charge nurse, etc) and how they handled the situation and treated you during that time?
- 8) Did you receive HIV testing after the incident? Was it offered to you or did you have to demand it?
- 9) Did the patient receive testing? Was there in difficulty in obtaining consent?
- 10) Did you receive prophylactic treatment? If yes, please tell me about your experience with the medication. If no, please tell me about why you chose not to undergo treatment or if it was not offered.
- 11) What was going through your mind when you received the needle-stick injury?

- 12) Did you feel supported? Did you have a social/professional support network?

- 13) Is there anything that I did not ask or touch on that you would like to share or feel is important/relevant?

APPENDIX C:
SEMI-STRUCTURED INTERVIEW QUESTIONS

- 1) How many years have you practiced as a nurse?
- 2) What state(s) are you licensed in and currently practicing?
- 3) Are you an RN / LPN / APRN?
- 4) Why did you become a nurse?
- 5) What is your nursing philosophy?
- 6) In as much detail as you are able, please tell me your story and experience about the dirty needle-stick incident/injury you received?
- 7) What were your perceptions of the “higher-ups” (administration, education, charge nurse, etc) and how they handled the situation and treated you during that time?
- 8) Did you receive HIV testing after the incident? Was it offered to you or did you have to demand it?
- 9) Did the patient receive testing? Was there in difficulty in obtaining consent?
- 10) Did you receive prophylactic treatment? If yes, please tell me about your experience with the medication. If no, please tell me about why you chose not to undergo treatment or if it was not offered.
- 11) What was going through your mind when you received the needle-stick injury?

- 12) How do you think receiving a diagnosis of HIV would change your life personally?
Professionally?

- 13) Did you feel supported? Did you have a social/professional support network?

APPENDIX D:

IRB LETTER OF APPROVAL



RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
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May 14, 2019

Bethany Moore
Anthropology
Tampa, FL 33612

RE: **Expedited Approval for Initial Review**
IRB#: Pro00039613
Title: Nurses, Needlesticks, HIV, Stigma, & Disclosure

Study Approval Period: 5/14/2019

Dear DMs. Moore:

On 5/14/2019, the Institutional Review Board (IRB) reviewed and **APPROVED** the above application and all documents contained within, including those outlined below. **Please note this study is approved under the 2018 version of 45 CFR 46 and you will be asked to confirm ongoing research annually in place of a full Continuing Review. Amendments and Reportable Events must still be submitted per USF HRPP policy.**

Approved Item(s):

Protocol Document(s):

[Protocol, Version #1, 3/27/19](#)

Consent/Assent Document(s)*:

[Adult Consent no signature, Version #1, 5/11/19](#)

[Survey Consent, Version #1, 4/28/19](#)

*Please use only the official IRB stamped informed consent/assent document(s) found under the

APPENDIX E:

VERBAL CONSENT FORM



Informed Consent to Participate in Research Involving Minimal Risk

Information to Consider Before Taking Part in this Research Study

Title: *Nurses, Needlesticks, HIV, Stigma, & Disclosure*

Pro # 00039613

Overview: You are being asked to take part in a research study. The information in this document should help you to decide if you would like to participate. The sections in this Overview provide the basic information about the study. More detailed information is provided in the remainder of the document.

Study Staff: This study is being led by *Bethany S. Moore* who is a *graduate student at the University of South Florida*. This person is called the Principal Investigator. *Bethany* is being guided in this research by *Nancy Romero-Daza, who is her faculty advisor*. Other approved research staff may act on behalf of the Principal Investigator.

Study Details: This study is being conducted via telephone interviews and online surveys and is supported by the University of South Florida Department of Anthropology. The purpose of the study is to understand the *perceptions of health care workers health care workers regarding HIV-risk and dirty-needlestick injuries among nurses and nurse practitioners working in various health care settings. The study will focus on the life-experiences and stories of nurses and nurse-practitioners who have sustained a dirty-needlestick injury, and will seek to understand the role of stigma in their reactions to and recovery from such an injury. Information will be gathered through personal interviews that will last 20-30 minutes each depending on how much the participant would like to share.*

Participants: You are being asked to take part you are a registered nurse or advanced nurse practitioner who has sustained at least one dirty needle-stick injury during your practice. Your perspective and story could help to bring more understanding to the experience of nurses who receive dirty-needlestick injuries and help to prevent such injuries and the stigma that may accompany them.

Voluntary Participation: Your participation is voluntary. You do not have to participate and may stop your participation at any time. There will be no penalties or loss of benefits or opportunities if you do not participate or decide to stop once you start. Your decision to participate or not to participate will not affect your job status, employment record, employee evaluations, or advancement opportunities.

Benefits, Compensation, and Risk: We do not know if you will receive any benefit from your participation. There is no cost to participate. You *will not* be compensated for your participation. This research is considered minimal risk. Minimal risk means that study risks are the same as the risks you face in daily life.

Confidentiality: Even if we publish the findings from this study, we will keep your study information private and confidential. Anyone with the authority to look at your records must keep them confidential.

Study Procedures:

You will be asked to participate in a 20-30 minute interview and to share your story surrounding your dirty-needlestick injury. You will not be asked to provide confidential patient information or violate HIPAA—this information should be your story and your perspective on the events.

Total Number of Participants

About 20 individuals will participate in the interview portion of study at USF. An anonymous survey will also be distributed to about 200 participants as part of the study.

Alternatives / Voluntary Participation / Withdrawal

You do not have to participate in this research study.

You should only take part in this study if you want to volunteer. You should not feel that there is any pressure to take part in the study. You are free to participate in this research or withdraw at any time. There will be no penalty or loss of benefits you are entitled to receive if you stop taking part in this study.

Benefits

We are unsure if you will receive any benefits by taking part in this research study.

Risks or Discomfort

This research is considered to be minimal risk. That means that the risks associated with this study are the same as what you face every day. There are no known additional risks to those who take part in this study.

Compensation

You will receive no payment or other compensation for taking part in this study.

Costs

It *will not* cost you *anything* to take part in the study.

Privacy and Confidentiality

We will do our best to keep your records private and confidential. We cannot guarantee absolute confidentiality. Your personal information may be disclosed if required by law. Certain people may need to see your study records. These individuals include:

- The research team, including the Principal Investigator and study coordinators.
- Certain government and university people who need to know more about the study. For example, individuals who provide oversight on this study may need to look at your records. This is done to make sure that we are doing the study in the right way. They also need to make sure that we are protecting your rights and your safety.
- The USF Institutional Review Board (IRB) and its related staff who have oversight responsibilities for this study, and staff in USF Research Integrity and Compliance.

We may publish what we learn from this study. If we do, we will not include your name. We will not publish anything that would let people know who you are.

You can get the answers to your questions, concerns, or complaints.

If you have any questions, concerns or complaints about this study, call *Bethany S. Moore* at 386.383.0956 or email at bethanymoore@mail.usf.edu. If you have questions about your rights, complaints, or issues as a person taking part in this study, call the USF IRB at (813) 974-5638 or contact by email at RSCH-IRB@usf.edu.