

IMPROVING HIV SCREENING PRACTICES AT A COMMUNITY HEALTH CARE
CLINIC FOR THE UNDERSERVED IN SOUTHWEST NEW MEXICO

by

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As members of the DNP Project Committee, we certify that we have read the DNP Project prepared by Chelsea Colin Lopez entitled "Improving HIV Screening Practices at a Community Health Care Clinic for the Underserved in Southwest New Mexico" and recommend that it be accepted as fulfilling the DNP Project requirement for the Degree of Doctor of Nursing Practice.

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DEDICATION

I would like to dedicate this project to all persons affected by HIV/AIDS, especially those who have been my patients, and the vulnerable, marginalized, homeless, and underserved populations. This project is also dedicated to the fight to end the HIV/AIDS epidemic including the eradication of HIV-related stigma and discrimination.

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ABSTRACT

Background: Human Immunodeficiency Virus (HIV), the virus that causes acquired immunodeficiency syndrome (AIDS), has significant health implications and complications and deaths occur when HIV-positive individuals do not receive HIV testing, treatment, and care. Despite recommendations for universal HIV screening, practice is inconsistent and knowledge is deficient among clinic staff at a federally qualified health center (FQHC) that serves vulnerable homeless and underserved populations in Southwest New Mexico regarding HIV screening and appropriate referral for testing and care within the community.

Purpose: The purpose of this quality improvement project was to develop, implement, and evaluate a brief educational intervention to increase knowledge and influence intended practice behavior related to HIV screening practices and referrals at an FQHC that serves homeless and underserved patients in Southwest New Mexico.

Methods: The project included evaluation of a brief online, asynchronous webinar focusing on local HIV prevalence, risk factors, screening, testing, and referral. Anonymous online quantitative pretests and posttests were used to evaluate effectiveness and satisfaction.

Results: Nine clinical staff completed the pretest and six completed the posttest. Improvements in knowledge related to awareness of free or low-cost HIV screening options within the community and who should be screened and intended practice related to familiarity with clinic testing, documentation of testing, and referral within the community was demonstrated.

Conclusions: A brief asynchronous webinar focusing on appropriate HIV screening and referral is an effective tool for ongoing staff education at a FQHC that serves homeless and underserved

patients. Strengthening community partnerships may facilitate improved screening and access to further care.

INTRODUCTION

Despite recommendations for universal human immunodeficiency virus (HIV) screening, practice is inconsistent and knowledge is lacking among clinic staff regarding HIV screening and care referral at a federally qualified health center (FQHC) that serves homeless and underserved patients in Southwest New Mexico. HIV testing was performed in only 45% of adults between the ages of 18 and 64 in 2008 and 41% of patients newly diagnosed with HIV had never been tested before between 2006 and 2009 (Centers for Disease Control and Prevention [CDC], 2017). A lack of universal, routine HIV screening and appropriate referral in this setting can lead to missed opportunities for screening, detection, and connection to care. This is of particular concern for higher risk populations and those who experience disparities in health care, including homeless and medically underserved patients. HIV infection affects over 1.1 million people living in the United States and one of every seven are not aware of their infection (AIDS.gov, 2016). Some 30% of new HIV infections occur by spread of the virus from persons who are unaware of their infection (CDC, 2016a). Detection of HIV infection is necessary to inform an individual of their infection status. Early detection facilitates early connection to care and initiation of transmission risk-reduction strategies. Detecting and treating HIV infection can decrease disease progression and prevent AIDS-related opportunistic infections and cancer (CDC, 2018a). An individual who tests negative for HIV can be informed about ways to reduce infection risk and when to be retested. This project aimed to assess the effectiveness of a brief educational intervention at a Southwest New Mexico community health care clinic that serves homeless and underserved persons and to improve HIV screening practices including appropriate

referrals for further care. This educational tool may then be used for orientating the large number of new staff and volunteers that provide care at this clinic.

Background

HIV

Human immunodeficiency virus (HIV), the virus that causes acquired immunodeficiency syndrome (AIDS), has significant health implications. HIV is a virus that attacks the CD4 T lymphocyte cells of the immune system making an infected individual more susceptible to infection or cancer (CDC, 2018a). These resulting diseases, known as opportunistic infections and AIDS-related cancer, indicate that the HIV infection has progressed to AIDS (CDC, 2018a). Examples of opportunistic infections include herpes simplex virus 1, *salmonella* infection of the intestines, candidiasis infection of the mouth, esophagus, or vagina, toxoplasmosis infection of the brain, certain types of pneumonia, and tuberculosis (AIDSinfo, 2017). Examples of AIDS-related cancers include lymphoma and Kaposi sarcoma (Chu & Selwyn, 2011). Other potential complications of HIV infection include cardiovascular disease, dementia, enteropathy, nephropathy, impaired lipid and glucose metabolism, wasting, and neuropathy (Chu & Selwyn, 2011). AIDS is diagnosed when particular opportunistic infections are diagnosed or when the patient's CD4 count drops below 200 cells/mm (CDC, 2018a).

HIV transmission. HIV is found in blood, semen, pre-seminal, rectal, and vaginal fluids, and breast milk and can be transmitted through sexual contact, needles or syringes, and from mother to child during pregnancy, childbirth, or breastfeeding (CDC, 2018a). There is a 0.82% risk of HIV infection per exposure with receptive anal sex and a 0.55% risk of infection per exposure with vaginal sex when the source partner is in the late stages of the disease (NAM,

2009). While there is currently no cure for HIV, the infection can be managed with appropriate health care and antiretroviral therapy (CDC, 2018a). Treatment can decrease transmission risk. For example, vertical transmission risk can be as low as 0.1% if the infected mother takes combination antiretroviral therapy and has a viral load of less than 50 (NAM, 2009).

HIV risk factors. Although all persons, regardless of race, gender, age, ethnicity, or sexual orientation may be affected by HIV, certain populations with certain risk factors are at increased risk for HIV infection (CDC, 2018a). There is a greater prevalence of HIV among men, including young men between the ages of 13 and 24, who are gay or bisexual, transgender individuals, Blacks/African Americans, Hispanics/Latinos, sex workers, economically disadvantaged individuals, and individuals who inject drugs (CDC, 2018a). Having sex and sharing syringes or other injection equipment with someone who is infected with HIV increases the risk of transmission (CDC, 2018a). Substance abuse may affect this risk by affecting an individual's inhibition, increasing their risk of engaging in high risk behaviors (CDC, 2018a).

HIV impact. Complications and deaths related to AIDS result when HIV-positive persons do not receive HIV testing, HIV treatment, and HIV care (CDC, 2016b). Late diagnosis is associated with missed opportunity to benefit fully from treatment that can extend the HIV-positive individual's life (CDC, 2016b). In 2014, 23% of individuals diagnosed with HIV were also diagnosed with AIDS (CDC, 2016b), indicating that the disease had progressed; individuals with AIDS are at risk for developing a range of conditions including infections and cancer (AVERT, 2017). Awareness of infection allows an individual to begin treatment; treatment can help HIV-positive individuals live healthier longer and reduce the likelihood that they will transmit HIV to others (CDC, 2016b). The burden of HIV medical expenses is significant. The

medical cost savings associated with preventing one HIV infection could be as high as \$338,400 (Schackman et al., 2015). In addition to the negative socioeconomic impact, HIV infection is significantly associated with morbidity, mortality, and suffering (Vitoria et al., 2009); it is a burden to individuals and negatively greatly affects their quality of life (Basavaraj, Navya, & Rashmi, 2010).

Evidence-based HIV Care

Early detection of HIV infection and connection to HIV care is imperative for the infected individual's health and reducing the risk of transmission. After diagnosis is established, patients should be informed of the importance of initiating care without delay, what HIV care entails, and HIV treatment effectiveness (CDC, 2017). Prompt care is particularly important for patients with acute retroviral syndrome and advanced HIV infection (CDC, 2017).

Nonpharmacological care for patients infected with HIV includes screening for other sexually transmitted infections including syphilis, gonorrhea, and chlamydia, cervical cancer, and psychosocial support, including support and care for mental health and substance use disorders (CDC, 2017). Pharmacological care includes antiretroviral therapy, appropriate vaccinations, and opportunistic infection treatment and prevention of recurrence (AIDSinfo, 2018c). Antiretroviral therapy should be initiated early but must be taken consistently to reduce the risk of developing drug resistance which can occur with poor adherence (AIDSinfo, 2018c). This is an important consideration in patients with mental health and substance use disorders. Follow up is critical due to the need for periodic laboratory monitoring (AIDSinfo, 2018a). Pregnant women infected with HIV should be connected to HIV and obstetric care and informed of the benefits of antiretroviral therapy such that it can reduce the risk of transmission to her infant from 30% to

less than 2% (CDC, 2017). Persons at high risk for HIV infection can decrease their risk of sexual transmission by greater than 90% and injecting drug use transmission by greater than 70% by taking pre-exposure prophylaxis (PrEP) consistently (AIDSinfo, 2018b). PrEP is recommended for healthy adults at risk of HIV infection including men who have sex with men, heterosexually active men and women, and people who inject drugs (CDC, 2018b). The importance of comprehensive HIV care underscores the need for appropriate referrals within the community to support patients and help ensure they have the opportunity to access recommended care.

Importance of HIV Screening

HIV screening, using currently available testing methods, is imperative because it is necessary to inform an individual of their HIV infection status, knowledge which is necessary to make decisions about treatment options and prevent progression and transmission (CDC, 2016a). Moreover, persons who find out that they are HIV-negative can potentially make lifestyle changes to help prevent infection (CDC, 2016a).

HIV screening guidelines. The United States Preventive Services Task Force (USPSTF) recommends that all people age 15 to 65 receive screening for HIV infection (Moyer, 2013). Persons younger than 15 or older than 65 at increased risk for HIV infection and pregnant women should be screened for HIV infection (Moyer, 2013). The CDC recommends that people age 13 to 64 be screened for HIV at least once as part of routine care (CDC, 2016a). Both the CDC and USPSTF recommend an opt-out approach, where screening is completed after the patient is told that testing will be conducted unless they decline (Branson et al., 2006; USPSTF, 2016). The Health Care for the Homeless Clinicians Network recommends that homeless

individuals be informed about universal screening and given the opportunity to decline testing (Audain et al., 2013).

Optimal HIV screening intervals have not been determined (Moyer, 2013). Currently, the USPSTF recommends one-time screening to identify HIV-positive individuals with repeated screening for people at risk for HIV infection, people engaged in risk behaviors, and people who live in a high-prevalence setting (Moyer, 2013). The CDC considers geographic locations or communities with HIV seroprevalence of 1% or more high-prevalence settings (Moyer, 2013). Sexually transmitted disease (STD) clinics, correctional facilities, homeless shelters, tuberculosis clinics, clinics that provide care to men who have sex with men, and adolescent health clinics with high STD prevalence are considered high prevalence settings (Moyer, 2013). The CDC suggests that individuals with risk factors for HIV infection be tested for HIV infection at least annually (CDC, 2018a). Asymptomatic men who have sex with men should be screened at least annually (CDC, 2018a). For individual men who have sex with men who are at increased risk for HIV infection, the benefits of screening for HIV infection every three to six months should be considered (CDC, 2018a). One approach is to screen people who are at very high risk for new HIV infection at least annually and people at increased risk at longer intervals such as every 3 to 5 years (Moyer, 2013). If a person is found to be HIV-negative and has not been at increased risk since their status was discovered, they may not need routine rescreening (Moyer, 2013). Women should be screened for HIV infection in each pregnancy (Moyer, 2013) and persons initiating tuberculosis treatment or seeking STD treatment should be screened routinely (Branson et al., 2006).

Routine screening among populations with known undiagnosed HIV infection prevalence less than or equal to 0.1%, or with less than or equal to 1 HIV-positive person in 1,000 persons, is not recommended by the USPSTF because of low benefit per person (Moyer, 2013). In these situations, risk assessment should guide HIV screening (Moyer, 2013).

HIV screening methods. There are different methods for screening for HIV. An important consideration is the window period, which is a timeframe between infection and detection that varies between individuals and types of testing (U.S. Department of Health and Human Services [HHS], 2017). One method for HIV screening is called the antibody test. An antibody test detects HIV antibodies in blood or oral fluid between three and 12 weeks after infection (HHS, 2017). A second test is a combination antibody/antigen test, also known as a fourth generation test, which detects HIV antibodies and antigen between two and six weeks after infection (HHS, 2017). Rapid HIV tests are either antigen/antibody combination or antibody tests and home HIV tests are antibody tests (CDC, 2018a). A third test is called the nucleic acid test. This test detects HIV in the blood between one and four weeks after infection (HHS, 2017). This test is expensive and not commonly used unless a person has had a recent high-risk exposure or has been potentially exposed and is experiencing symptoms of HIV infection (HHS, 2017).

Combination antibody/antigen testing detects HIV infection sooner than tests that detect antibodies only (CDC, 2018a). An individual with a negative blood plasma antibody/antigen test conducted less than 45 days after possible exposure to HIV should receive follow-up testing 45 days after the possible exposure to HIV (CDC, 2018a). All other individuals with negative results of other HIV screening tests should receive follow-up testing at least 90 days after

exposure to HIV to confirm a negative test result (CDC, 2018a). An individual with positive initial antigen/antibody or antibody laboratory HIV test result should have follow-up testing conducted on the same blood sample used for the initial test (CDC, 2018a). An individual with a positive initial rapid HIV test result should receive follow-up testing conducted by a health care provider (CDC, 2018a). These actions ensure that the individual receives accurate diagnosis from a health care provider (CDC, 2018a).

HIV testing may be conducted at a provider office, health care clinic, mobile testing van, or at home using a home HIV test (HHS, 2017). Under the Affordable Care Act, HIV testing is free for individuals with health insurance (HHS, 2017). Uninsured individuals may be able to obtain free HIV testing at certain testing sites (HHS, 2017). Health insurance, federal, and non-federal resources can help HIV-positive individuals pay for HIV treatment (AIDS.gov, 2017).

HIV screening in primary care. Primary care provides an opportunity to address routine HIV screening with patients as a part of their general and wellness care. Such practice facilitates delivery of care based on evidence-based practice recommendations from the USPTSTF and CDC by primary care providers, particularly for nurse practitioners. Nurse practitioners as providers in primary care settings are well positioned to help improve HIV screening practices for a vulnerable population. Nurse practitioners can work to change practices and policies at the clinic level to ensure that vulnerable populations receive evidence-based, guideline supported care including recommended screening conducted using the recommended opt-out approach. In a clinic setting, nurse practitioners, along with other providers and clinic staff, can advocate for patients by ensuring they receive appropriate screening and referral to services within the community that support HIV care. One study demonstrated a positive correlation between

receiving HIV screening in an outpatient setting and linkage to HIV care compared to HIV screening received in the emergency department which was associated with being less likely to be linked to HIV care (Aaron, Alvare, Gracely, Riviello & Althoff, 2015).

Vulnerable Populations

There are over 560,000 homeless persons in the United States (National Alliance to End Homelessness, 2017). Homeless individuals experience greater amounts of respiratory, skin, dental, and mental health problems and infectious disease, including sexually transmitted infections (Aday, 1994). Homeless persons are at increased risk for HIV infection (National Coalition for the Homeless, 2012). Continued exposure to the environment, disease, malnutrition, stress, and substance abuse increases their risk (Bharel et al., 2011). Homeless persons with HIV also tend to have poor outcomes (Aidala et al., 2016) and may be less likely to disclose their status because of discrimination and prejudice (Bharel et al., 2011). The poor have the greatest concentration HIV infection; health behaviors, including substance use disorders, sexual partner mixing, high risk sexual practices, psychological factors, and access to care contribute to increased HIV infection and unfavorable disease course (Pellowski, Kalichman, Mathews, & Adler, 2013).

The homeless population is considered a vulnerable population (Aday, 1994). Other groups considered to be vulnerable include high-risk mothers and infants, chronically ill individuals, disabled individuals, individuals with AIDS, mentally ill individuals, individuals with substance abuse, individuals prone to suicide and homicide, families experiencing abuse, immigrants, and refugees (Aday, 1994). Vulnerable populations are at increased risk of developing physical, psychological, and social health problems as a result of their lower social

status, social capital, and human capital resources. These disadvantages decrease the vulnerable individual's ability to reduce their risk of and cope with poor health (Aday, 1994). Improving HIV screening practices and appropriate referrals within the community supports vulnerable persons at risk for and living with HIV infection and helps ensure that they are aware of and connected to the opportunities available to them.

Nurse practitioners have reported feeling that care of the homeless population is a rewarding and positive experience that provides an opportunity to practice the art of nursing and make true differences in lives (Seiler & Moss, 2012). Nurse practitioners have described that the challenging, emotionally straining experience contributed to feeling humbled and grounded and fostered personal growth and mutual enrichment (Seiler & Moss, 2012).

Local Problem

Local HIV Problem

HIV is a significant issue in New Mexico. The state averages 143 new HIV infections each year (New Mexico Department of Health [NMDOH], 2016). Minimal estimates indicate there were 3,327 persons living with HIV or AIDS and 132 new HIV diagnoses in 2014 (NMDOH, 2015). Las Cruces is in Dona Ana county in Southwest New Mexico and borders El Paso county in west Texas and Juarez, Mexico. Both counties had above median HIV prevalence rates in 2010 (National Rural Health Association Rural Health Congress [NRHA], 2014). Las Cruces lies in a region that has had some of the greatest numbers of dual HIV/AIDS diagnosis and is over 50% Hispanic, a higher number of whom account for new HIV cases (NMDOH, 2005; NMDOH, 2014). The incidence of HIV/AIDS in the Border region of New Mexico, which encompasses three Southwest New Mexico counties including Dona Ana, is higher than the non-

Border region of New Mexico (NMDOH, 2013). The area is characterized in part by agricultural land that draws migrant farmworkers. Migrant workers and persons who have recently immigrated to the United States from Mexico are at risk for HIV (NRHA, 2014). Factors that contribute to this risk include limited access to medical resources and high prevalence of risky behaviors including injection drug use, sex with sex workers, multiple sexual partners, and limited condom use (Rangel et al., 2012). The vulnerable homeless population who receive primary care at the clinic is of particularly high risk for HIV infection due to a number of factors including high risk behaviors, physical, psychological, and social health problems, and limited resources and access to care.

Local Homeless and Underserved Community

Point in time counts for New Mexico indicate that there were 1,186 homeless people in New Mexico on the night of the count in 2017 (New Mexico Coalition to End Homelessness [NMCEH], 2017). There were 207 homeless people in Dona Ana County on the night of the count in 2017 (NMCEH, n.d.). Point in time counts do not include persons who are staying in motels, couch surfing or in unstable, unsafe living situations with friends or family, those who decline to participate in data collection, and those who were not reached (NMCEH, 2017). Las Cruces, located in Dona Ana County, is one of largest cities in New Mexico. Although it is considered an urbanized area, it is surrounded by more rural areas. The rural per-capita income in New Mexico was \$35,941 with a poverty rate of 18.1%, and unemployment rate of 7.5% (Rural Health Information Hub [RHI Hub], 2016). The border region where Dona Ana County is located is underprivileged with regard to educational attainment, poverty, non-English speaking

households, and lack of health insurance (NMDOH, 2013). Eleven percent of New Mexicans are uninsured (RHI Hub, 2016).

Health Care Clinic

The primary care clinic at the focus of this quality improvement project is a Southwest New Mexico FQHC. The clinic serves homeless and underserved persons in Las Cruces, New Mexico, considered to be a medically underserved area (RHI Hub, 2018). It is the only primary care clinic in Las Cruces that specializes in serving this population. The only clinic in the Southwest region of New Mexico designated as such, it is a member of the National Healthcare for the Homeless Council (National Health Care for the Homeless Council [NHCHC], 2018). The only other clinics with this designation are hundreds of miles away in Albuquerque and Santa Fe (NHCHC, 2018). The clinic is situated on the Mesilla Valley Community of Hope campus with non-profit organizations including a tent city, shelters for adults and children, and a soup kitchen that provide services to homeless and indigent persons in Dona Ana County. All persons are served regardless of their ability to pay and discounts based on income and family size are offered. It is staffed by full-time and part-time employees and volunteers. There are approximately seven providers, including physicians and nurse practitioners, one registered nurse, two medical assistants, and other support staff. There is frequent rotation of new staff, students, and volunteers. Services provided include primary health care, including preventive care, laboratory and pharmacy services, chronic disease management, women's health care, Screening, Brief Intervention, and Referral to Treatment, referrals for specialist, vision, dental, maternal-child health, and behavioral health care, eye exam clinic, foot clinic, acupuncture detoxification, counseling, and community education. Assistance with scheduling and

coordinating transportation to and from appointments is provided as needed. Clinic stakeholders identified the need for enhanced HIV screening and referral practices as well as the inclusion of the registered nurse and medical assistants who have significant roles in these processes in a setting where interprofessional collaboration underscores care provision.

Purpose

The purpose of this quality improvement project was to develop, implement, and evaluate a brief educational intervention to improve HIV screening practices and referrals at an FQHC that serves homeless and underserved patients in Southwest New Mexico. This educational intervention can then be used as a future orientation tool for new staff and the numerous volunteers who provide patient care services at this clinic. The intervention incorporated evidence-based recommendations for screening and appropriate referrals based on community resources and patient needs. Recommendations were made for clinic policies and procedures for improving screening and referral processes. The webinar format will permit ongoing availability for orientation and the ability to update recommendations and resources.

Objectives

Objectives of this project related to each clinical staff member's role with regard to HIV screening practices. Providers assess, order testing, diagnose, make referrals, and may have standing orders for testing, registered nurses assess, educate, implement testing orders, and support the referral process, and medical assistants support the testing and referral process and implement testing orders. One objective of this project was to determine knowledge and practice related to HIV screening, facilitators and barriers to HIV screening, and satisfaction with the educational intervention at a Southwest New Mexico FQHC that serves homeless and

underserved patients by completion of this project. The second objective was to increase knowledge and influence intended practice related to HIV screening as indicated by improved posttest scores after an educational intervention at a Southwest New Mexico FQHC that serves homeless and underserved patients by completion of this project.

Broader goals for this project include future use of the webinar as an orientation tool for the project site and similar sites with updates to the webinar content made to reflect changes in HIV screening guidelines or community resources. Additionally, the early identification of HIV-positive individuals promotes timely referral for care to improve outcomes and decrease transmission risk.

Process objectives were completed during implementation and data collection. A pretest was administered to providers, the registered nurse, and medical assistants to determine sociodemographic characteristics, knowledge, practice patterns, and perspective on facilitators and barriers to HIV screening. The pretest was followed by an educational intervention in the form of a pre-recorded webinar. The educational intervention was followed by a posttest to determine if there had been a change in knowledge and intended practice behavior and to evaluate satisfaction with the intervention.

Stakeholders

Stakeholders for this project included the clinic's care providers, including nurse practitioners, physicians, registered nurse, and medical assistants; clinic administration, including the chief executive officer, clinical director, and chief medical officer; front office staff; the community; the homeless and underserved populations; and the community associated with the campus the clinic is a part of.

Study Questions

The study questions for this project included:

In a Southwest New Mexico FQHC that serves homeless and underserved patients:

1. Does an educational webinar improve knowledge about HIV screening and intended practice behavior related to HIV screening?
2. What are the clinical staff perspectives on facilitators and barriers to HIV screening and referrals?
3. What is the satisfaction and feasibility, with regard to content and delivery, associated with an educational webinar?

FRAMEWORK AND SYNTHESIS OF EVIDENCE

Theoretical Framework

The Theory of Planned Behavior was used as a framework for this quality improvement project to improve HIV screening practices and appropriate referrals within the community. This theory is characterized by the notion that three types of considerations guide human behavior (Ajzen, n.d.) (Figure 1). These three considerations are *behavioral beliefs*, *normative beliefs*, and *control beliefs* (Ajzen, n.d.).

Theory Concepts

Behavioral beliefs. Behavioral beliefs relate to an individual's beliefs about probable consequences of a particular behavior (Ajzen, n.d.). These beliefs lead to favorable or unfavorable *attitude toward the behavior* (Ajzen, n.d.).

Normative beliefs. Normative beliefs are an individual's beliefs about others' normative expectations (Ajzen, n.d.). Normative beliefs lead to perceived *subjective norm* (Ajzen, n.d.).

Control beliefs. Control beliefs are an individual's "beliefs about the presence of factors that may facilitate or impede performance of the behavior" (Ajzen, n.d.). Control beliefs lead to perceived *behavioral control* (Ajzen, n.d.).

Behavioral intention. The three factors together— attitude toward a behavior, perceived subjective norm, and perceived behavioral control lead to behavioral *intention* (Ajzen, n.d.). The strength of an individual's behavioral intention is increased by more favorable attitude about the behavior and subjective norm (Ajzen, n.d.). If an individual has enough of a degree of actual control over a behavior, they should go through with the intended behavior when given the opportunity to do so (Ajzen, n.d.). Intention precedes behavior (Ajzen, n.d.). However, there may be difficulties that limit an individual's ability to proceed with a particular behavior; thus, perceived behavioral control should be considered along with intention (Ajzen, n.d.). "To the extent that perceived behavioral control is veridical, it can serve as a proxy for actual control and contribute to the prediction of the behavior in question" (Ajzen, n.d.).

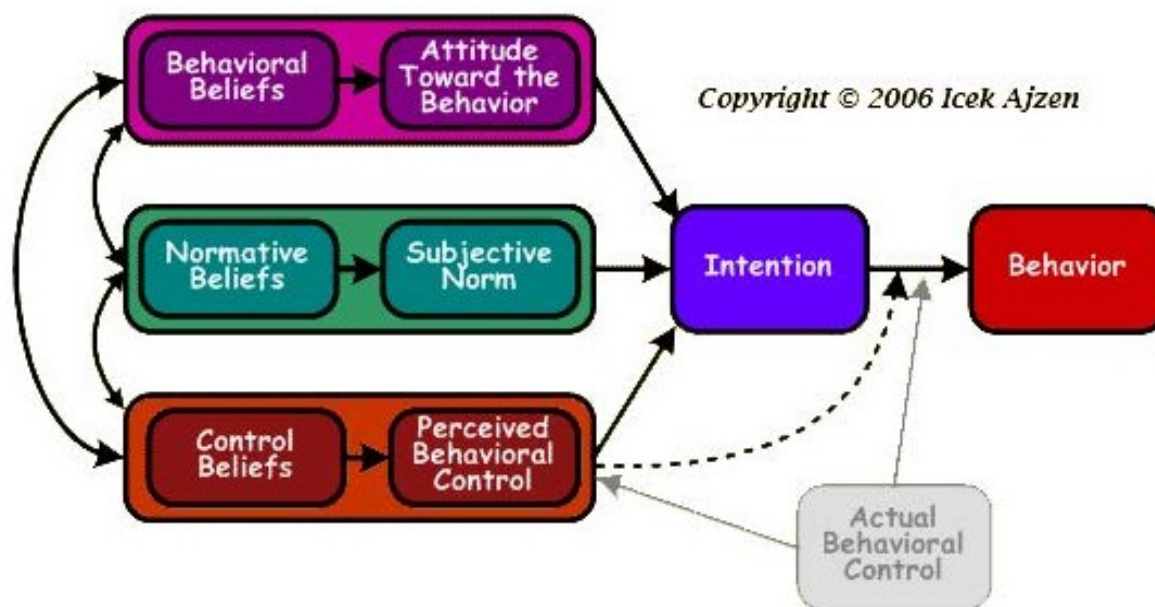


FIGURE 1. Theory of planned behavior diagram. (Used with permission - Appendix A.)

Application of Concepts to Project

The Theory of Planned Behavior is used to guide this project which aims to improve HIV screening practices including appropriate referrals within the community among higher risk populations at a Southwest New Mexico FQHC. It has been used successfully in similar projects including exploring factors influencing intention to use clinical guidelines in care (Kortteisto, Kaila, Komulainen, Mantyranta, & Rissanen, 2010) and intentional behavior and intention to use research in clinical practice (Appleby, Roskell, & Daly, 2015), as well as to predict cervical cancer screening (Roncancio et al., 2015). Providers, registered nurses, and medical assistants at a small FQHC that serves homeless and underserved populations will complete a pretest and posttest. The intervention will involve viewing an educational webinar about HIV screening practices including appropriate referrals within the community.

The pretest will serve to investigate individual behavioral beliefs, normative beliefs, and control beliefs. Pretest responses will provide information about perceived barriers and facilitators to HIV screening and appropriate community referral which will inform control beliefs. The information presented in the webinar is expected to influence provider knowledge and intended behavior. Test responses pertaining to knowledge and intended behavior will provide information about behavioral beliefs and normative beliefs.

Influencing attitude toward a behavior, perceived subjective norm, and behavioral control could lead to increased behavioral intention in regard to HIV screening and referral. Influencing these considerations may be accomplished by the webinar because its content will be meaningful and tailored to the local area, population, and screening and care resources available to staff and patients in addition to informing participants about HIV infection prevalence, risk factors, and

screening recommendation guidelines. If staff are informed about recommended guidelines, their normative beliefs will be influenced. If staff are informed about community resources for HIV screening and care in addition to the options for HIV screening and care at the clinic, their perceived behavioral control will be influenced. If staff are informed about the importance of HIV screening in a meaningful manner that is relevant to the local population and community, their attitude toward the behavior will be influenced. Then the intended behaviors, HIV screening and appropriate referrals within the community, should be performed when the opportunity to do so arises.

Synthesis of Evidence

A search was conducted in PubMed and Cumulative Index of Nursing and Allied Health Literature (CINAHL) using the terms homeless, high risk population, HIV screening, HIV screening guidelines, primary care, HIV test. Inclusion criteria for articles were published within the past ten years, human species, and English language. Articles that did not pertain to HIV screening or included outdated screening recommendations were not included. Twelve articles that applied to this project's purpose were retained (Appendix B). All but one article were published within the past five years.

Despite recommendations for universal HIV screening practices, missed opportunities for screening persist in outpatient settings even among higher risk populations. Liggett, Futterman, Umanski, and Selwyn (2016), Levy et al. (2016), Downing and Garcia-Diaz (2017), and Jenness et al. (2009) discovered missed opportunities for HIV screening. Liggett et al. (2016) had a sample that was 82% Black or Latino and the population served by the clinic is largely Hispanic. Jenness et al. (2009) examined high-risk heterosexuals; results are particularly relevant as high-

risk heterosexuals are seen at the clinic. Findings by Liggett et al. (2017), Downing and Garcia-Diaz (2017), and Jenness et al. (2009) indicate that missed opportunities for HIV screening persist despite universal screening guidelines which may suggest that there are barriers to implementation of the guidelines and failure to promote screening in accordance with the guidelines. The study by Levy et al. (2016) indicates that missed opportunities for HIV screening in the outpatient setting persist and diagnosis is made upon presentation of progressed disease, although clinical indicator diseases were frequently missed. These findings support the notion that early detection through routine screening could prevent delayed detection at the point where disease progression or possibly viral transmission may have already occurred. However, these results are limited due to the fact that the study was conducted in Israel where guidelines for universal HIV screening do not exist (Levy et al., 2016).

Conducting HIV screening at sites where homeless individuals receive care and other support services may increase HIV screening among this high risk population. Ober, Martino, Ewing, and Tucker (2012) found that HIV testing among homeless youth was significantly more likely at a drop in center and concluded that increasing widespread testing through greater availability and accessibility of HIV testing and messages about HIV at places patronized by homeless youth may be associated with their willingness to test. Wenzel et al. (2012) found that the likelihood of HIV testing was significantly associated with access to medical services or military veteran status (known to be associated with access to services) for heterosexually active homeless men. Thus, offering HIV screening in accordance with routine screening recommendations at centers where homeless persons receive services may increase HIV screening (Ober et al., 2012; Wenzel et al., 2012).

Conducting HIV screening in the outpatient setting is associated with connection to HIV care. Aaron et al. (2015) found that HIV testing in the outpatient setting was associated with greater linkage to HIV care compared to HIV testing in the hospital setting. This information supports increasing routine HIV screening in the primary care clinic as doing so could potentially improve linkage to care for HIV-positive homeless individuals who receive care and HIV screening in this setting (Aaron et al., 2015).

Despite recommendations for universal HIV screening practices, barriers exist that affect whether this practice is performed. Addressing perceived barriers could improve practice behavior. Sison et al. (2013) found that most primary care providers did not offer routine HIV testing and there were misunderstandings about informed consent laws and perceived stigma among patients, and some thought that HIV testing was the responsibility of the health department. Simmons et al. (2011) found that although most providers were supportive of routine HIV testing, their perception of routine was variable. Barriers cited by the providers included time to conduct HIV counseling and testing, financial constraints, and inadequate HIV education and training whereas facilitators included empowering their patients and reduced stigma (Simmons et al., 2011). Thus, educating primary care providers about the recommended guidelines for HIV screening, the meaning of and rationale for an opt-out approach to screening, and how HIV screening cost may be covered may affect primary care provider willingness to offer HIV screening routinely (Simmons et al., 2011; Sison et al., 2013).

Despite recommendations for universal HIV screening practices, variations and inconsistencies in practice persist. There are variations in HIV screening practices in regard to race, age, and contact with primary care (Carter, Owens, & Lin, 2017). This may indicate that

there is a tendency to offer HIV screening to patients perceived of being at greater risk of HIV infection and insurance, privacy, and parental consent are factors that may be related to variations in testing related to age (Carter et al., 2017). This data supports the notion that providers should be educated about the concept of routine HIV screening including which populations should be screened and how often screening should occur (Carter et al., 2017).

Using the recommended opt-out approach to HIV screening may improve HIV screening rates. Kinsler, Sayles, Cunningham, and Mahajan (2013) found that primary care provider-initiated opt-out approach to HIV screening was associated with HIV test acceptance among underserved populations. This information supports the idea that adding opt-out HIV screening to the duties of providers may be an effective way to increase HIV screening rates among such populations who are greatly affected by the HIV epidemic (Kinsler et al., 2013).

Educating providers may improve HIV screening practices among those who do not screen using the recommended routine approach. Sutherland and Spencer (2016) investigated nurse practitioner routine HIV screening intentions, behaviors, and practices in a national sample of 141 nurse practitioners and found that only one quarter reported routine HIV screening. Thus, routine HIV screening has not been widely adapted by nurse practitioners (Sutherland & Spencer, 2016). Prior HIV education affected screening behavior (Sutherland & Spencer, 2016). Education about HIV screening is necessary to help nurse practitioners translate routine HIV screening recommendations into practice and online continuing education credits and training webinars are two possible forms suggested (Sutherland & Spencer, 2016).

Several aspects pertaining to HIV screening were investigated including access to services, utilization of HIV testing services, attitudes toward and decision making about HIV

screening, missed opportunities for HIV screening, facilitators and barriers to routine HIV screening, connection to care upon positive result, approach to HIV screening, and HIV screening behaviors and intended behaviors in the literature reviewed (Aaron et al., 2015; Carter et al., 2017; Downing & Garcia-Diaz, 2017; Kinsler et al., 2013; Jenness et al., 2009; Levy et al., 2016; Liggett et al., 2017; Ober et al., 2012; Simmons et al., 2011; Sison et al., 2013; Sutherland & Spencer, 2016; Wenzel et al., 2013; Appendix B).

Overall, the evidence demonstrates that variation in HIV screening practices persist, connections to care are inconsistent, perceived barriers to and missed opportunities for HIV screening and detection exist, location may affect whether homeless individuals receive HIV screening, and education and addressing barriers may improve practices. The evidence examined supports improving HIV screening practices. A significant gap exists in that research that pertains specifically to guideline-recommended HIV screening practices among clinics that serve the homeless population is lacking. Strengths of the literature reviewed include identification of facilitators and barriers to HIV screening and support for universal, routine, opt-out screening practices and education to support adoption of such practices in primary care settings, especially where homeless and underserved patients receive care. Weaknesses include study setting in a country that lacks guidelines for HIV screening and a lack of literature reflecting the HIV screening practices of the Southwest New Mexico community in focus. More research is needed to determine the state of current practice, provider and patient attitude, specific barriers and facilitators, the number of positive test results, subsequent connection to care, and missed opportunities for screening and diagnosis in light of universal HIV screening recommendations, particularly among higher risk populations, including the vulnerable homeless and underserved

populations, and specifically at the clinic in focus. Furthermore, there is a need for information regarding which forms of educational effectively influence knowledge and intended behavior related to HIV screening practices, including appropriate referrals for HIV care among providers who care for homeless and underserved patients.

METHODS

The purpose of this project was to improve HIV screening and referrals among high risk populations at a Southwest New Mexico FQHC that serves homeless and underserved patients. This project included an evaluation of a brief online asynchronous educational intervention with an online pretest and posttest to evaluate knowledge and practice related to HIV screening and referral. The goal was to increase clinic staff knowledge and influence intended practice behavior related to HIV screening and referral. The intended long-term impact of this project was to improve HIV screening practices and appropriate referrals at this clinic to improve patient outcomes.

Design

The project was an evaluation of a brief online, asynchronous webinar focusing on local HIV prevalence, risk factors, screening, testing, and referral within a Southwest New Mexico FQHC that provides primary care services to local homeless and underserved patients. Anonymous online quantitative pretests and posttests were used to evaluate effectiveness, including knowledge and practice intent, and satisfaction.

Setting

The setting is a small FQHC in Southwest New Mexico. It is a community stand-alone clinic in the process of establishing itself as a patient centered medical home. The clinic is

situated on a campus with outreach and shelter services. Approximately 100 homeless individuals access the campus organizations each day, up to 225 individuals eat lunch at the soup kitchen, others access the food bank, and more than 50 children may be sheltered. The clinic sees approximately 500 patients and conducts approximately 5,000 patient visits per year. There are approximately fifteen clinic staff members.

Sample

All clinical staff who participate in HIV screening services at this Southwest New Mexico FQHC were eligible to participate. This included all primary care providers, including physicians and nurse practitioners, registered nurses, and medical assistants who care for patients at the clinic. The total potential sample was approximately ten, including two medical doctors, five nurse practitioners, one registered nurse, and two medical assistants. At the request of clinic administrators, the registered nurse and medical assistants were included in the sample due to their critical and long-standing involvement in the patient care team, including conducting screening and education as appropriate for their role, scheduling and coordinating referrals and appointments, as well as the close working relationship all these team members have in providing this care. The aim was to ensure consistent messaging to the patients among all members of the health care team, as well as facilitate the process from screening to accessing appropriate care. The target for participation was 50%, for a target sample of five.

Intervention

The main focus for the webinar was to present information specifically for this clinic about HIV, screening recommendations, and community referrals for care. An evidence-based educational session was developed and recorded by this Investigator and available to be viewed

online as an asynchronous webinar. The webinar was a voice-over PowerPoint that was approximately fifteen to twenty minutes in length. The webinar was tailored to the site and included the following information: overview of Las Cruces and the local environment and population served, evidence-based recommendations for HIV screening, options for HIV screening within the clinic and community, and local community referral information including where patients can go for HIV testing and what resources are available to patients who test negative and positive for HIV. Webinars have been shown to effect change in provider behavior at federally qualified health centers (Moss, Reiter, Dayton, & Brewer, 2012). Given that clinical staff who serve homeless and underserved populations typically have limited time and provide care to patients with complex needs, a short webinar may be most convenient. This method of delivery for the educational intervention may have been advantageous in that there is less pressure to participate than with an in-person setting and it is associated with greater confidentiality for the participants. Webinars have been demonstrated to help nurse practitioners adopt HIV screening recommendations in practice (Sutherland & Spencer, 2016). A voice-over PowerPoint allows for revision to individual slides as indicated and updates if guideline or local information or resources change. An asynchronous webinar format will also enable the clinic to use the educational webinar for orienting new oncoming or rotating staff and volunteers. This is particularly important given the large proportion of volunteer medical staff that come through this clinic. Finally, this format was requested by clinic administrators to improve accessibility and potential future use as a clinic orientation tool.

Data Collection

Pretest

The pretest was an online, anonymous quantitative survey designed to evaluate sociodemographic characteristics, HIV screening knowledge, practice, and clinic or practice facilitators and barriers (Appendix F). The pretest included questions to obtain sociodemographic information to determine participant characteristics. These questions addressed clinic role, length of time in practice, and length of time at the clinic. The pretest also contained questions regarding knowledge, practice patterns, and facilitators and barriers to HIV screening practices. Content and elements were based on evidence-based recommendations, clinic policies and procedures, community resources, observation, and input from clinical staff and administration. Selected survey questions were tailored based on clinical staff role: provider, registered nurse, and medical assistant, using survey logic as appropriate (i.e. participants who selected “provider” were to receive different knowledge and practice questions than participants who selected “medical assistant”). The survey tool was reviewed by administration and clinicians with expertise in HIV and the underserved. Qualtrics was used to create and administer the pretest. The pretest was expected to take approximately five to ten minutes to complete.

Posttest

The posttest was an online, anonymous quantitative survey designed to evaluate changes in HIV screening knowledge and intended practice, as well as satisfaction with the webinar (Appendix G). The posttest included the same questions about knowledge included on the pretest. There was also questions about intended practice behavior included on the posttest. The posttest also included questions to assess satisfaction with and feasibility of the activity. These

questions addressed how providers felt about the length of the webinar, if there was any information they would have liked to have been included, and their overall satisfaction with the activity. There was an option for a free text response. Content was based on evidence-based recommendations, clinic policies and procedures, community resources, observation, and input from clinical staff and administration. The survey tool was reviewed by administration and clinicians with expertise in HIV and the underserved. Qualtrics was used to create and administer the posttest. The posttest was expected to take approximately five to ten minutes to complete.

Data Collection Methods

As requested by clinic administrators, potential participants were personally introduced to the project. Clinical staff were approached during four separate mutually agreed upon meetings where the project was introduced. Elements of the project and the disclosure (Appendix C) were reviewed with clinical staff. Potential participants were instructed regarding how to access the disclosure, pretest, educational webinar, and posttest as well as who they could contact with any questions. An invitation email (Appendix D) containing the disclosure and three links were emailed to each potential participant by the chief executive officer. The disclosure outlined an overview of the project, purpose, risks, benefits, and voluntary nature of participation, as well as links to the pretest, asynchronous online educational webinar, and posttest. After the invitation email was sent, a reminder email containing the same disclosure and three links (Appendix E) was sent at the beginning of weeks two and three. The introduction and first reminder email were emailed to the chief executive officer who then forward the message to potential participants. The final reminder email was emailed to the clinical director (due to CEO unavailability) who then forwarded the message to potential participants. This Investigator communicated with both

the CEO and clinical director to confirm that all emails had been forwarded to all potential participants. Data collection was set to close at the end of three weeks but was extended for an additional week at the request of the clinical director.

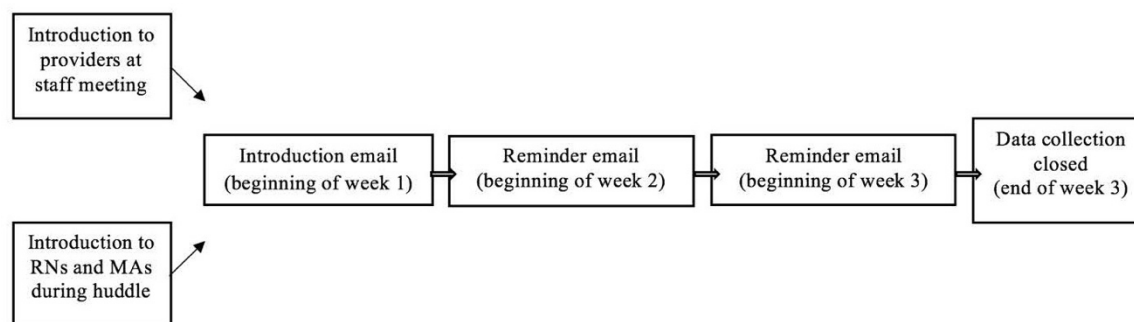


FIGURE 2. Data collection methods.

Data Analysis

Descriptive statistics, including frequencies, were used to summarize quantitative data from the pretests and posttests. Sociodemographics, knowledge, practice, facilitators and barriers, and satisfaction and feasibility responses were analyzed. Free text responses were summarized. The proportion of correct answers to knowledge questions will be compared to determine change in knowledge. Pretest and posttest practice responses were compared to determine change in intended practice behavior. Due to limited sample size, statistical analysis were not performed. Data was managed in Qualtrics and exported into an Excel spreadsheet.

Dissemination

An executive summary and PowerPoint presentation presenting aggregate data, including key findings and evidence-based recommendations and community referral information will be provided to the clinic upon completion of the project. Additionally, a link to the webinar will be

provided to the chief executive officer and clinical director so that the webinar can be accessed for future orientation purposes.

Ethical Considerations

Respect for Persons

The process by which this project was conducted maximized autonomy of participants. Participants accessed the disclosure form and proceeded with completing a pretest, viewing an educational webinar, and completing a posttest electronically. Anonymity and participant privacy were maintained throughout this process. The pretest and posttest were conducted in a manner that is consistent with safeguarding the privacy of participants. It was ensured that participants entered the project's activities voluntarily with sufficient information about the project and could withdraw at any time (Office for Human Research Protections, 2016). Consenting was voluntary and information was given in an understandable manner (Office for Human Research Protections, 2016). To maintain privacy of participants, only aggregate findings will be shared with the CEO and clinical director. All information was secured in encrypted files in a locked, password protected computer.

Beneficence

The risks associated with this project involved privacy of participants. Every effort was made to treat participants in an ethical manner by protecting them from harm and securing their well-being (Office for Human Research Protections, 2016). If anonymity/privacy were not maintained, participants may not have felt comfortable with

participating and revealing their answer to pretest and posttest questions. The design ensured that participant identity was not revealed; this was important so that participants could participate in the educational webinar and answer pretest and posttest questions in a manner that did not subject their responses to review and possible criticism. The CEO and clinical director emailed potential participants directly. No identifiable information was collected. The project was conducted using an anonymous online design.

Justice

Recruitment for this project targeted the population that would benefit from the research— clinical staff who care for a vulnerable population of patients at increased risk for HIV infection. All clinical staff who provide HIV education and screening services at this site were eligible to participate. Participants will benefit from the knowledge they gain so that they might feel better prepared to provide HIV screening care to their patient population. This was a quality improvement project which aimed to benefit and minimize any risk for harm to participants and consisted of an intervention in the form of education and pretest and posttest evaluation.

Vulnerable persons, such as pregnant women, fetuses, neonates, prisoners, children, persons at risk for suicide, or those with impaired decisional capability (National Institutes of Health, 2016) were not included in this project.

Institutional Review Board

Before this project began, clinic site approval (Appendix H) and review from the University of Arizona Institutional Review Board (IRB) were obtained (Appendix I).

RESULTS

Participant Characteristics

The disclosure with links to pretest, educational webinar, and posttest was distributed to 12 clinical staff at a community health care clinic for the underserved in Southwest New Mexico. Nine clinical staff completed the pretest and six completed the posttest (Table 1). The pretest participant sample included four NPs, one RN, two MAs, one MA/pharmacy technician, and one MA/EMT. The posttest participant sample included two NPs, one RN, two MAs, and one MA/pharmacy technician.

TABLE 1. *Participant characteristics.*

CLINIC ROLE	PRETEST		POSTTEST	
	N	Percent	N	Percent
MD/DO	0	0%	0	0%
NP	4	44%	2	33%
RN	1	11%	1	17%
MA	2	22%	2	33%
OTHER (PLEASE SPECIFY)*	2	22%	1	17%

Note. *MA/pharmacy technician and MA/EMT (pretest); MA/pharmacy technician (posttest).

Participants had a range of clinic experience. One provider had been practicing in their role for greater than 10 years, two had been in practice for between two and five years, and one had been in practice for less than one year. Two providers had been practicing at this clinic for between two and five years, one for greater than ten years, and one for less than one year. The RN had been practicing in their role for greater than 10 years and at this clinic for greater than five years. One MA had been in practice for greater than 10 years, one for greater than five

years, and two between two and five years. One MA had been practicing at this clinic for between two and five years and three for less than one year. Overall, with the exception of no MD participation, this sample was representative of clinic staff with a variety of roles and length of time in practice and at the clinic.

Implementation Barriers

During data collection, it was noted that a participant was unable to hear the audio portion of the educational webinar in voice-over PowerPoint format after downloading using the anonymous link. Upon making this discovery, the webinar was tested by a member of this Investigator's committee who determined that software version may affect ability to hear audio. Additionally, the webinar was tested by two other individuals using different personal computers and operating systems without issue. The webinar was emailed as an attachment to the CEO so it could be emailed to all potential participants. A second participant indicated an inability to hear the audio portion. The webinar was then converted to Panopto format and emailed to the clinical director to be emailed to all potential participants.

Knowledge Results

Responses to assessment questions regarding clinical staff knowledge about HIV epidemiology, infected individuals' awareness of infection, clinic screening, and community screening before and after the webinar intervention are presented in Table 2.

TABLE 2. *Proportion of correct knowledge responses pretest and posttest.*

	Pretest (N=9)	Posttest (N=6)
	Correct Responses N (%)	Correct Responses N (%)
<i>Knowledge- New Mexico epidemiology</i>		
Provider	3 (33%)	1 (17%)
RN	0 (0%)	0 (0%)
MA	1 (11 %)	1 (17%)
Total	4 (44 %)	2 (33%)
<i>Knowledge- awareness of infection</i>		
Provider	1 (11%)	0 (0%)
RN	0 (0%)	0 (0%)
MA	0 (0%)	1 (17%)
Total	1 (11%)	1 (17%)
<i>Knowledge- HIV screening at clinic</i>		
Provider	4 (44%)	2 (33%)
RN	1 (11%)	0 (0%)
MA	3 (33%)	1(17%)
Total	8 (89%)	3 (50%)
<i>Knowledge- free or low-cost HIV screening in community</i>		
Provider	2 (22%)	2 (33%)
RN	0 (0%)	1 (17%)
MA	1 (11%)	3 (50%)
Total	3 (33%)	6 (100%)

Pretest Knowledge Results

Epidemiology and awareness. Regarding HIV epidemiology, four (44%) participants correctly estimated the number of people infected in New Mexico. One (11%) participant knew the number of persons who are infected but unaware of their status.

Increased risk and HIV screening. No (0%) participants were able to correctly identify all persons at increased risk for HIV infection; pregnant women and Caucasians/Whites were incorrectly selected. However, six (67%) participants selected the eight correct answer choices, two (22%) selected seven of the eight correct choices, and one (11%) selected four of the eight correct choices.

Four (44%) participants knew that all persons should be screened for HIV and correctly selected all six choices. Two (22%) selected five of the six correct answer choices, one (11%) selected four of the six correct choices, one (11%) selected three of the six correct choices, and one (11%) selected one of the six correct choices.

Clinic and community screening options. Eight (89%) participants knew that blood draw is the only option for HIV screening at the clinic; one (11%) participant indicated that blood draw is the option for HIV screening but also incorrectly indicated finger stick is also an option. Three (33%) participants were familiar with free or low-cost community screening options.

Missing data. No participant responses were recorded for the following questions:

- What are the potential complications of HIV infection? (select all that apply)
- How often should HIV screening be performed as a routine screen if no additional risk factors?
- What is the window period between infection and confirmed detection?

Posttest Knowledge Results

Epidemiology and awareness. Regarding HIV epidemiology, two (33%) participants correctly estimated the number of people infected in New Mexico and one (17%) participant knew the number of persons who are infected but unaware of their status.

Increased risk and HIV screening. No (0%) participants were able to correctly identify all persons at increased risk for HIV infection; pregnant women and Caucasians/Whites were incorrectly selected. However, four (67%) selected the eight correct answer choices, one (17%) selected seven correct choices, and one (17%) selected six correct choices.

One (17%) participant knew that all persons should be screened for HIV and correctly selected all six choices. One (17%) selected five of the six correct answer choices, three (50%) selected four correct answer choices, and one (17%) selected three correct answer choices.

Clinic and community screening options. Three (50%) participants knew that blood draw is the only method used for HIV screening at the clinic; the other three participants indicated blood draw but also incorrectly identified saliva and finger stick, finger stick, and saliva, respectively as options at the clinic. All (100%) six participants indicated they were familiar with free or low-cost community screening options.

Missing data. Among participants who completed the posttest, no participant responses were recorded for the following questions:

- What are the potential complications of HIV infection? (select all that apply)
- How often should HIV screening be performed as routine screen if no additional risk factors?
- What is the window period between infection and confirmed detection?

Practice Patterns Results

Responses to assessment questions regarding current and intended practice behavior related to HIV screening, documentation, and referral before and after the webinar intervention are outlined in Table 3.

TABLE 3. *Pretest practice patterns and posttest intended practice behavior responses.*

	Pretest N=9	Posttest N=6
	Responses N (%)	Responses N (%)
<i>Practice- determining if patient has been screened</i>		
Ask patient	9 (100%)	6 (100%)
Check EHR	6 (67%)	6 (100%)
I don't ask	0 (0%)	0 (0%)
RN/MA report	1 (11%)	3 (50%)
Not sure	0 (0%)	0 (0%)
<i>Practice- if patient tests negative*</i>		
Inform the patient	9 (100%)	**
Risk-reduction counseling	7 (78%)	**
Connection to HIV care if high risk	4 (44%)	**
Not sure	0 (0%)	**
<i>Practice- community referral</i>		
Department of Health	8 (89%)	6 (100%)
HIV specialist	5 (56%)	6 (100%)
Infectious disease specialist	6 (67%)	6 (100%)
Alianza	2 (22%)	4 (67%)
Community Collaborative Care	2 (22%)	4 (67%)
Other (please specify)	0 (0%)	0 (0%)
<i>Practice- familiarity with clinic testing</i>		
Yes	4 (44%)	5 (83%)
No	3 (33%)	0 (0%)
Not sure	2 (22%)	0 (0%)
Other (please specify)	0 (0%)	1 (17%) ***
<i>Practice- documentation of testing</i>		
Progress note	7 (78%)	5 (83%)
Labs	8 (89%)	6 (100%)
Orders	5 (56%)	4 (67%)
Other (please specify)	0 (0%)	0 (0%)

Note. *Question intended for providers/RN only but was also visible to MAs on pretest.

** Missing data; question not visible to any participants on posttest.

*** Free text response “need education”.

Current Practice

Prior to the intervention a range of practice patterns were reported.

Screening and documentation. A range of assessments for screening status were reported. Participants were able to select more than one response. All nine (100%) participants indicated they ask the patient, six (67%) indicated they check the EHR, and only one (11%) indicated they use RN/MA report to determine if a patient has been screened for HIV.

Less than half of participants had been familiar with HIV testing at the clinic. Four (44%) participants responded yes to the statement, “I am familiar with performing HIV testing at this clinic”, three (33%) responded no, and two (22%) responded not sure.

A range of documentation related to HIV screening was reported. Seven (78%) participants reported documentation of HIV testing is performed in the EHR using progress note, eight (89%) using labs, and five (56%) using orders. Participants were able to select more than one response. Four reported progress note, labs, and orders, three reported progress note and labs, one reported orders, and one reported labs.

Follow up. For patients who tested negative for HIV, all nine (100%) participants indicated they inform the patient, seven (78%) indicated they conduct risk reduction counseling, and four (44%) indicated they connect high risk patients to HIV care. No participants indicated no follow up.

Referral. Prior to the intervention, a range of referral responses were reported. Eight (89%) participants indicated they refer to the department of health, five (56%) indicated they refer to an HIV specialist, six (67%) refer to an infectious disease specialist, two (22%) refer to Alianza, and two (22%) refer to Community Collaborative Care. Participants were able to select more than one response. Of those who refer to the department of health, two also refer to an HIV specialist and infectious disease specialist, one also refers to an HIV specialist and Community Collaborative Care, two also refer to an infectious disease specialist and Alianza, one also refers to an HIV specialist, infectious disease specialist, and Community Collaborative Care, and one also refers to an HIV specialist. One indicated referral to an infectious disease specialist only.

Missing data. No participant responses were recorded for the following questions:

- Who do you screen for HIV? (select all that apply)
- Do you obtain consent before screening for HIV? What type of consent?
- How often do you routinely screen patients for HIV?
- How often do you screen low risk patients for HIV?
- How often do you screen patients who engage in high-risk behaviors (sex or injection drug use) for HIV?
- How often do you screen patients who have engaged in new high-risk behavior (new high-risk partner, injection drug use since last HIV screen)?
- What do you do for a patient who tests positive for HIV? (select all that apply)

Intended Practice

Following the intervention, participants reported improved intended screening and referral practice.

Screening and documentation. All participants indicated they intend to ask patient regarding HIV screening status. Six (100%) intended to check EHR, and three (50%) to use RN/MA report to determine if a patient has been screened for HIV.

There was improved intention related to performing HIV screening and documentation. Five (83%) participants responded yes to the statement, “I am familiar with performing HIV testing at this clinic.” One (17%) responded using the free text option to indicate “need education.”

Five (44%) participants reported they intend to document HIV testing in the EHR using progress note, six (100%) intend to use labs, and four (67%) intend to use orders. Participants were able to select more than one response.

Referral. All participants indicated they intend to refer to the department of health, HIV specialist, and infectious disease specialist. Four (67%) intend to refer to Alianza and Community Collaborative Care. Participants were able to select more than one response.

Missing data. Among participants who completed the posttest, no participant responses were recorded for the following questions:

- Who will you screen for HIV? (select all that apply)
- Will you obtain consent before screening for HIV?
- How often will you screen for HIV as a routine screen if no additional risk factors?
(select all that apply)
- What will you do for a patient who tests positive for HIV? (select all that apply)
- What will you do for a patient who tests negative for HIV? (select all that apply)
- How is an HIV test performed at this clinic?

Facilitators and Barriers to HIV Screening Results

All (100%) of participants indicated that they feel comfortable talking with patients about HIV screening. Most (77%) indicated that documentation of HIV status, including previous test results, is easy to find in the chart. All (100%) of participants indicated that an alert notifying them that their patient should be screened for HIV would be helpful. Four participants indicated that the referral process, to refer HIV-positive patients for care, is easy to use and one indicated

that it is not easy to use. Four participants indicated that they were either not sure of the referral process, patient follow up is a problem, or lack of referral options is a problem.

No participant responses were recorded for the following questions:

- What factors prevent you from screening for HIV? (select all that apply)
- Obtaining consent for HIV testing is too complex or takes too much time.

Satisfaction and Feasibility Results

All (100%) of participants indicated that the activity was informative, the format of the activity was enjoyed, and the activity length was appropriate. One participant indicated they would have liked to have “HIV statistics specific to NM” included in this activity. Of note, this data was included in the webinar; it is unclear if this participant had issues with the audio which contained most of the content. Two participants indicated that the activity was extremely helpful, three indicated it was very helpful, and one indicated it was somewhat helpful. Participant comments included “vocal narrative would have made this more informative I think, perhaps there was one but it didn’t work if there was” and “audio was not functional, however the PPT covered the information well” while one participant commented, “I didn’t know we had so many resources here in Las Cruces.” It was noted that two participants reported not being able to hear the audio portion of the original voice-over PowerPoint version; no data were available if these participants subsequently accessed the emailed attachment or Panopto versions that were made available after this discovery.

DISCUSSION

This quality improvement project evaluated the effectiveness of a brief educational intervention for HIV screening and referrals at a Southwest New Mexico FQHC that serves

homeless and underserved patients. Baseline knowledge, practice, and facilitators and barriers related to HIV screening and appropriate referral for HIV care within the community as well as effectiveness, satisfaction, and feasibility of this educational intervention were evaluated. The primary objective of this project was to increase knowledge and influence intended practice related to HIV screening and appropriate referral among clinic staff. Findings revealed improved provider, RN, and MA knowledge, current and improved intended practice patterns related to HIV screening and appropriate referral for care within the community, as well as satisfaction and feasibility related to the educational intervention.

Nine clinical staff, including four NPs, one RN, two MAs, one MA/pharmacy technician, and one MA/EMT, completed the pretest and six clinical staff, including two NPs, one RN, two MAs, and one MA/pharmacy technician completed the posttest. Overall, the sample with a range of roles and experience was representative of the clinic staff with the exception of no MD participation.

Knowledge

Overall, this brief educational intervention resulted in an improvement in knowledge related to HIV screening and referrals. The results for knowledge questions indicated an increase from 33% to 100% in participant knowledge related to free or low-cost HIV screening options within the community and RN knowledge related to who should be screened for HIV indicated by increased number of correct choices selected. No increase in knowledge was indicated in the areas of New Mexico epidemiology, awareness of HIV infection, populations at increased risk for HIV infection, and options for HIV screening at the clinic.

Information related to New Mexico epidemiology, awareness of infection, populations at increased risk for infection, who should be screened, and clinic screening options was presented in the webinar. Given that the audio contained most of the content, knowledge improvement may actually be significantly lower, presumably, for those who were unable to hear it in the original format.

There is a persistence of missed opportunities for HIV screening in the outpatient setting (Liggett et al., 2016; Levy et al., 2016, Downing & Garcia-Diaz, 2017; Jenness et al., 2009) and possible knowledge deficits at this clinic. Improving knowledge related to HIV screening and referral may lead to improved screening, detection, and connection to care and less missed opportunities for its population, which includes individuals at risk for HIV infection and many who are likely to be identified as high risk.

Epidemiology and Awareness

Some participants correctly estimated the number of persons infected with HIV in New Mexico and only two knew the number infected but unaware. Similarly, Sison et al. (2013) also found that a few providers were unaware of local infection rates in the Mississippi Delta region. A lack of awareness of the local epidemic may indicate a need for education and social marketing to increase demand for testing and services and decrease stigma (Sison et al., 2013).

Increased Risk and HIV Screening

Clinical staff education regarding risk assessment may be needed. Although no participants correctly answered the question regarding persons at increased risk for HIV infection due to inclusion of pregnant women and Whites/Caucasians or omission of Hispanics/Latinos and persons who exchange sex for money or drugs, most were able to identify persons at

increased risk for HIV infection including injection drug users, transgender women who have sex with men, African Americans/Blacks, Hispanics/Latinos, homosexual men, bisexual men, persons who exchange sex for money or drugs, and homeless persons. These results were reassuring because awareness of populations at increased risk may lead to such individuals being properly identified by clinical staff as needing to be screened more frequently and connected to risk reduction services. Education regarding at risk populations may be needed given the omission of Hispanics/Latinos and persons who exchange sex for money or drugs by some participants given the large numbers of Hispanics/Latinos and homeless persons, who are at increased risk for high risk behavior such as exchanging sex for money or drugs, seen at this clinic.

Despite recommendations for universal HIV screening, variations in practice exist related to offering testing based on risk rather than offering it routinely (Carter et al., 2017; Sison et al., 2013). Although HIV screening should not be dependent on behavioral risks, risk assessment for HIV and information about prevention should be provided as a part of routine primary care if doing so does not create a barrier to testing (Branson et al., 2006). Even if a patient is not being assessed for risk, notification that routine HIV screening will be conducted may lead to patient acknowledgement of risk behaviors and may provide an opportunity for dialogue about HIV infection and prevention and provision of or referral for risk reduction services for those at risk or requesting assistance with behaviors (Branson et al., 2006). Risk assessment is important because persons at high risk who test negative should be informed of the need to be retested, retested annually, and offered or connected to prevention services (Branson et al., 2006).

Knowledge deficit in this area could potentially cause those at increased risk for infection to go unscreened or to not be screened at recommended intervals and not be connected to care.

Interestingly while pregnant women were incorrectly identified by most participants as being at increased risk for infection, most subsequently correctly identified this population as needing to be screened for HIV. Education may be needed regarding pregnant women as this population is not identified as being at increased risk for HIV infection but should be screened with each pregnancy because of the significant implications associated with missed detection in pregnant women.

Clinical staff education about universal HIV screening may be needed. It was discouraging to see that despite recommendations for universal screening, only four pretest participants and one posttest participant correctly identified all persons who should be screened for HIV. There was, however, improved RN knowledge related to who should be screened for HIV. These results indicate that education may still be needed regarding recommendations for universal, routine screening not contingent on risk assessment.

Screening in the outpatient setting is associated with connection to HIV care (Aaron et al., 2015). Thus, improvement in clinical staff knowledge about HIV screening related to risk assessment and universal screening recommendations may lead to improvements in practice behavior related to HIV screening at this site which could potentially lead to improved screening, connection to care if positive or negative and high risk, and outcomes for its at risk population.

Clinic and Community Screening Options.

Although 89% of pretest participants and 50% of posttest participants correctly answered the question regarding clinic screening options, this question was missed by others due to incorrect inclusion of options not available at this site. However, all participants correctly selected blood draw indicating awareness of the option available at this site. Although external organizations come to the clinic and offer rapid testing from time to time, the only option at the clinic is blood draw. The manner in which this content was presented in the webinar may have been unclear for some participants.

Reassuringly, improvement in knowledge occurred with regard to awareness of free or low-cost HIV screening options within the community. These results have significant implications. Awareness enables clinical staff to inform patients of options for screening within our community, potentially improving access and screening rates for a population at increased risk for infection and for whom rapid testing is not available at this site.

Conducting screening at sites where homeless individuals receive care and support services may increase testing among this population (Ober et al., 2012; Wenzel et al., 2012) which is understood to be at risk for HIV infection. Thus, improvement in clinical staff knowledge regarding free or low-cost screening options within the community may lead to improvements in practice behavior related to referral which could potentially lead to improved screening and outcomes for its at risk population.

Missing Data

The lack of responses to three pretest and posttest knowledge questions appears to be due to issues with survey logic settings that did not make them visible to participants they were

intended for. Trialing and piloting this intervention for each role to ensure correct survey logic settings is recommended.

Practice

Responses provided insight into current and intended practice patterns related to HIV screening, handling of results, referral, clinic testing, and documentation.

Screening and Documentation

It was reassuring to see that all participants are determining and intend to determine if patients have been screened. This indicates that HIV screening is being addressed by clinical staff.

A change in intended practice was revealed with regard to familiarity with clinic testing, with the percentage of participants indicating familiarity increasing from 44% to 83%. Only one free text response indicated a need for education regarding clinic testing. Simmons et al. (2011) also discovered inadequate HIV education and training as a barrier to routine screening.

There was also a change in intended practice related to documentation shown by an increase in the percentage of responses indicating intent to document HIV testing in the EHR using orders, where documentation of HIV testing is to be performed per the clinical director and staff. However, responses to the question, “where is documentation of HIV testing performed in the EHR? (select all that apply)” indicate that there may be variation in practice patterns; standardization of HIV testing documentation at this clinic may help address the identified barrier of difficulty with finding documentation of HIV status and previous test results.

Documentation of positive or negative test results should be present in the confidential medical

record and should be easily accessible to all providers clinically managing the patient (Branson et al., 2016).

Follow Up

Although no posttest responses were available for analysis or comparison, pretest responses provided valuable information regarding current practice related to follow up for patients who test negative for HIV. All participants indicated they inform patients who tested negative for HIV and most indicated they performed risk-reduction counseling and connected to HIV care if high risk. Procedures should be in place to inform patients of HIV test results (Branson et al., 2006). While negative results may be communicated without direct contact between provider and patient, persons at high risk for HIV infection should be informed of the need for retesting at certain intervals and offered or referred for prevention counseling (Branson et al., 2006).

Referral

A change in intended practice was revealed with regard to community referral options with an increase to 100% of participants indicating intent to refer to the department of health, an infectious disease specialist, or HIV specialist, and most (67%) indicating intent to refer to Alianza or Community Collaborative Care.

There are significant implications for the clinical staff and patient population with regard to change in intent to refer to available community resources. This indicates that information from the webinar was received and clinical staff intend to appropriately refer patients to organizations within the community that are able to provide them with a variety of critical services including rapid HIV testing, risk reduction, and connection to HIV care. Persons should

promptly receive or be referred to another provider, health department, or community-based organization for care, including clinical care, counseling, support, and prevention services depending on test results and risk (Branson et al., 2006).

Missing Data

The question, “What do you do for a patient who tests negative for HIV? (select all that apply)” was intended for providers/RN only but was visible to MAs as well. Additionally, there was a lack of responses to seven pretest and six posttest practice questions. This appears to be due to issues with survey logic settings that did or did not make them visible to participants they were intended for. Trialing and piloting this intervention for each role to ensure correct survey logic settings is recommended.

Facilitators and Barriers

Discovery of facilitators and barriers to HIV screening and appropriate referral within the community provides a foundation for improving clinic practice. It was reassuring to find that all participants feel comfortable talking with patients about HIV screening. “Primary care provider discomfort in initiating conversations with patients about HIV counseling and testing” (Simmons et al., 2011) has been found to be a perceived barrier preventing HIV testing from becoming a standard of care. Willingness to communicate openly with patients about HIV screening may address stigma, perception of which was found to be a barrier by Sison et al. (2013) and reduction of which a facilitator (Simmons et al., 2011).

Discovering that some find it difficult to locate documentation of HIV status, including previous test results, in the chart indicates that perhaps standardization of where this is performed would be helpful. All participants indicated that an alert notifying that a patient

should be screened for HIV would be helpful so incorporating this into the EHR could potentially improve HIV screening at this clinic.

Some confusion regarding the referral process does appear to exist within the clinic. Education regarding the referral process, how to encourage follow up for the clinic's population, and what referral options exist may be helpful. The information obtained by this Investigator regarding community resources and how to refer patients to them will be compiled and shared with this clinic to potentially address these barriers. Additionally, webinar content provided information about how to support HIV-positive patients and potentially encourage follow up.

The identification of patient follow-up as a perceived problem related to the referral process at this clinic supports incorporating rapid testing into the HIV screening options available at this site as this method can reduce the number of persons who are unaware of their infection status and the resources that are used to locate persons to inform them (Branson et al., 2006).

Satisfaction and Feasibility

Overall, participant responses indicated that the activity was well received. Participants indicated satisfaction with the activity. All (100%) participants indicated that the activity was informative, they enjoyed the format (educational webinar) of the activity, and the activity length was appropriate. Suggestions for information that participants would have liked to be included were for items that were included in the content, most of which in the voiceover, but may not have been heard due to difficulties with audio. The difficulties with hearing the voiceover encountered by some participants ultimately affected this Investigator's ability to assess change in knowledge and intended behavior. This Investigator was unable to determine if participants

who had experienced difficulty with audio function were able to access and hear the audio using the emailed attachment or Panopto link as no additional posttest responses were recorded. This issue indicates that webinar format may affect feasibility.

An online asynchronous format, designed for the entire clinic staff with direct patient care responsibilities, as requested by the site, is advantageous in that it supports participant confidentiality and accessibility. This format also further improved accessibility as staff were able to access the activity at multiple timepoints, as communicated by the clinic director. This format posed significant feasibility challenges as noted above, however. User technology must be considered as it may affect accessibility, as experienced by participants with this project. Piloting on multiple systems is recommended to help ensure accessibility regardless of system or version used by participant. A web-based format, such as a Panopto recording, is recommended to potentially avoid these accessibility issues in the future.

Strengths

Clinic Collaboration

This project was developed in close collaboration with and tailored to the site and resources within the community. This Investigator was able to incorporate real time changes to the format and distribution of the webinar to make it more accessible to participants.

During each step of project development, this Investigator worked closely with the clinic director and CEO. This was done to help ensure that this quality improvement project's content and delivery was in line with clinic need and provisions of overview/disclosure review and implementation occurred at requested times. Considerations were made with respect to participant eligibility such that all clinical staff were included at the request of the clinical

director. The clinical director, staff, and CEO were able to provide input and approve of content and implementation timing. At the request of the clinical director, this Investigator provided additional project overview/disclosure review according to varying staff schedules and availability. This project was tailored to the site and community with a goal of improving patient care and outcomes through improved knowledge and intended practice behavior related to HIV screening and appropriate referral within the community.

Community Engagement

During the development of the educational webinar, this Investigator obtained detailed information regarding services and referral information for various community organizations and health care providers that can provide HIV testing and care for this clinic's population. These organizations and providers include the Community Collaborative Care program, the Department of Health, Alianza of New Mexico, Southwest Care Center, Families and Youth, Inc., an infectious disease specialist, and providers who specialize in HIV care at Rio Grande Medical Group, Memorial Medical Center Family Medicine Center, and La Clinica de Familia. One organization, Southwest Care Center in Santa Fe, New Mexico, offered to assist this clinic with becoming capable of performing rapid HIV/Hepatitis C testing. Families and Youth, Inc. offered to conduct onsite rapid HIV testing and needle exchange services as well as participate in health fairs for this clinic. Both Alianza and Families and Youth, Inc. encouraged referrals for their high impact prevention programs. Webinar development culminated in an abundance of valuable information regarding multiple resources that provide HIV testing and care services for this clinic's population.

Limitations

Limitations of this project relate to challenges posed by community resource inquiries, inclusion of a range of clinic staff, and use of an asynchronous online voice-over PowerPoint format.

A significant amount of effort and time went into identifying and contacting community resources and trying to make this activity appropriate for a variety of clinic roles. Designing an educational intervention and assessment/survey tool for a range of clinic staff, as requested by the site, posed a significant challenge. It was important to present information in the educational webinar that was appropriate and relevant to the role of provider, RN, and MA, all of whom have different levels of education, certification, licensure, experience, and responsibility within the clinic. Considerations were made with regard to webinar content details, such as whether or not to include definitions for terms such as CD4 count, for example, and which test questions should be made available to whom, given the wide range of potential participants. Moreover, missing data that appeared to be related to issues with survey logic settings based on clinic role precluded this Investigator from fully assessing knowledge and practice behavior and determining if change had occurred. Trialing and piloting of each logic option to ensure survey logic is functional for each role is recommended to prevent this issue in the future.

This investigator was unable to fully evaluate and determine effectiveness of the educational webinar due to the technical barrier of some participants not initially being able to hear the audio portion of the webinar and those participants not completing another survey after alternative webinar access and format was distributed to potential participants.

Conclusions

Overall this educational intervention improved knowledge and intended practice for HIV screening and appropriate referrals for a Southwest New Mexico FQHC that cares for homeless and underserved patients. Though evaluation of all measures of effectiveness was limited due to technical issues with audio and survey logic settings, improvement in knowledge related to awareness of free or low-cost HIV screening options within the community and who should be screened and intended practice related to familiarity with clinic testing, documentation of testing, and referral within the community was demonstrated. This may translate into improved practice behavior related to HIV screening and appropriate referral for HIV screening and care within the community. Furthermore, implementation of this project permitted community engagement and opportunities for future collaboration. Finally, this educational tool can be used for staff development and as an orientation tool for the numerous volunteers who work with patients at this clinic. A link to the webinar in Panopto format will be sent to the CEO and clinical director to facilitate its use as an orientation tool. An executive summary and PowerPoint summarizing aggregate data, including key findings and recommendations, as well as all community referral information obtained by this Investigator will be shared with the clinic.

Recommendations

Recommendations for improving HIV screening and appropriate referrals within the community have been developed after analyzing participant responses to pretest and posttest evaluations of knowledge, practice, facilitators and barriers, and satisfaction and feasibility with this project's activities. The following recommendations are being provided to this clinic:

Clinic Staff Education

It is recommended that clinical staff be educated regarding populations at increased risk for HIV infection, universal screening recommendations, clinic testing options, and documentation of testing. Finally, education regarding the referral process, strategies to support and encourage follow up for the clinic's population, and existing community referral options for patients who test negative and positive may be helpful. Education may improve HIV screening practices among those who do not screen using the recommended routine approach (Sutherland & Spencer, 2016).

Improve Access to HIV Testing

The clinic should consider becoming certified to perform rapid HIV testing. The clinic is situated on a campus that includes various outreach services and rapid testing is recommended in such settings, including shelters, and for unstably housed and runaway youth (Audain et al., 2013). Both oral swab and finger-stick rapid testing have been associated with improved willingness to be tested (Audain et al., 2013). Rapid HIV testing can decrease the number of persons who are never informed of their test results (Branson et al., 2006). Rapid testing can also decrease the resources used to locate an individual to inform them of test results (Branson et al., 2006). Thus, incorporating rapid testing into the HIV screening options at this clinic may not only improve HIV screening and awareness of infection, but also potentially improve clinic processes by decreasing resource expenditure.

Enhancing Clinic Operations

The clinic does not have a policy and procedure in place for HIV screening. The development of one could potentially provide a point of reference with regard to HIV screening

recommendations, clinic testing options and how testing is performed, and documentation of testing, including results to help promote consistent practice patterns and care delivery.

It is recommended that the clinic create an alert in the EHR to notify clinical staff that a patient should be screened for HIV.

It is also recommended that the clinic designate an individual to be responsible for ensuring that the webinar is updated to reflect changes to clinic policy and procedure, screening recommendations, or community resources.

Enhancing and Evaluating Effectiveness

Conducting this activity during a staff meeting rather than using an asynchronous online format may help increase participation and improve accessibility and effectiveness.

The clinic should consider expanding webinar viewing audience to include other clinic staff. For example, the webinar could be included in case manager training to provide education regarding HIV screening and appropriate referral and help promote consistent care delivery.

Conducting a retrospective chart review to determine if a change in HIV screening and referral practices has occurred could provide valuable information regarding change in knowledge and practice behavior and overall, this activity's effectiveness.

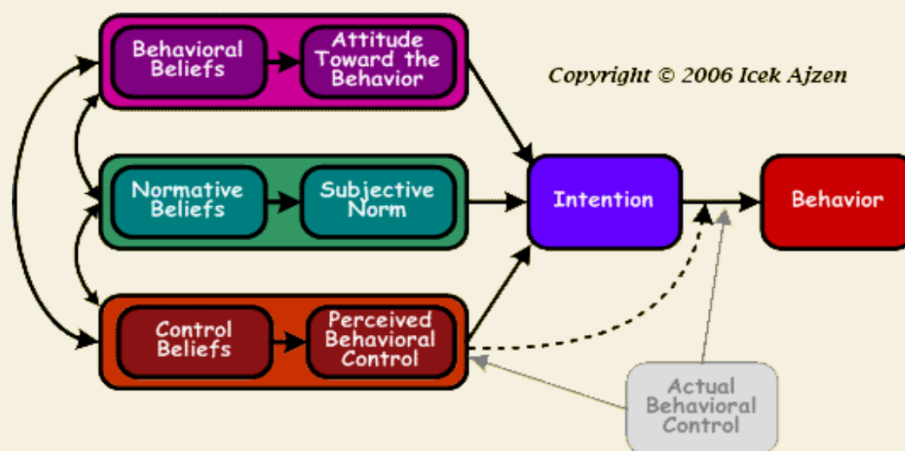
APPENDIX A:
SCREENSHOT OF PERMISSION TO COPY AND USE DIAGRAM



Icek Ajzen

Theory of Planned Behavior Diagram*

Click on a construct to obtain more information.



*You may copy and use this diagram for non-commercial purposes, including publication in a journal article, so long as you retain the copyright notice. Other uses require permission and payment of a fee.

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APPENDIX B:
SYNTHESIS OF EVIDENCE TABLE

Synthesis of Evidence Table

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
Liggett, Futterma, Umanski, and Selwyn (2016)	<p>Aim: Describe missed opportunities for HIV diagnosis</p> <p>Hypothesis: Despite universal screening recommendations and frequent encounters with healthcare, patients experience ongoing missed opportunities for earlier diagnosis of HIV</p> <p>Variables: Missed opportunities defined as >1 prior healthcare encounter within three calendar years of diagnosis in which HIV testing was not offered to patients with prior negative test or no prior test</p>		Nonexperimental; retrospective chart review	<p>Sample: 218 newly diagnosed HIV-positive patients; 64% male, 82% Black or Latino; 60% diagnosed in outpatient departments, 12% diagnosed in emergency departments</p> <p>Setting: Various clinical sites at Montefiore Medical Center (MMC), Bronx, New York</p>	<p>Retrospective chart review using electronic medical record of patients newly diagnosed with HIV from 2012 to 2013</p> <p>Data checked for outliers/inconsistencies; bivariate and multivariate analysis conducted using SAS Version 9.3</p>	<p>31% of newly diagnosed HIV-positive patients had CD4 count <200 cells/mm³, 22% were asymptomatic at diagnosis, 56% without prior HIV test had 4.72 encounters with MMC on average within the 3 years before diagnosis; 95% of encounters with MMC were in emergency department or primary care outpatient department-these encounters accounted for majority of missed opportunities</p>

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
Downing and Garcia-Diaz (2017)	Purpose: To determine the number of traditional and nontraditional healthcare visits during which HIV diagnosis could have possibly been made		Nonexperimental: retrospective cohort study	Setting: Ochsner Health System facilities in New Orleans, Louisiana Sample: 125 newly diagnosed HIV-positive patients with positive HIV enzyme-linked immunosorbent assay (ELISA) tests confirmed by Western blot between January 1, 2011 and December 31, 2012; age 17 to 79; patients who received repeat ELISA testing excluded	Data obtained from Ochsner Medical Center blood bank; electronic health record of each eligible patient was reviewed to examine data from the 2-year period prior to positive ELISA test; age at diagnosis, race, initial CD4 count, opportunistic infections, risk factors, and numbers and types of health care visits recorded; Cochran-Mantel-Haenszel test used to compare demographic information from each patient to Louisiana and national data	There were 649 healthcare visits at which an HIV test was not performed; the majority of missed opportunities occurred in primary care (218, 33.6%); 45% received AIDS diagnosis at the time of initial HIV diagnosis, 50 of which had CD4 <200 cells/mm ³ , 6 had opportunistic infections Limitations: 26 newly diagnosed patients did not have CD4 count recorded limiting determination of disease progression at time of diagnosis

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
Jenness et al. (2009)	<p>Variables: HIV testing; high-risk heterosexuals (defined by geographical and social network terms; high risk area index calculated for zip codes using standardized rates of HIV and poverty)</p> <p>Examined factors related to HIV testing among a high-risk groups of heterosexuals; examined 4 institutional settings (homeless shelter, jail/prison, drug treatment program, health care provider) where Centers for Disease Control and Prevention recommends routine, annual HIV testing for high-risk heterosexuals; self-reported testing rates and association of recent testing with encounters with those settings</p>		Qualitative cross-sectional descriptive; data collected as part of National HIV Behavioral Surveillance study, a cross-sectional study	<p>Setting: New York City 2006-2007</p> <p>Sample: Respondent-driven sampling: 846 high-risk heterosexuals; age 40 to 50, equally male and female, mainly Black or Hispanic, most earned less than \$10,000 annually, 55.3% of men and 60.7% of women reported past year risky sexual behavior</p>	<p>HIV test; structured survey administered privately by trained interviewer; blood sample obtained by trained phlebotomist with traditional venipuncture that was tested using HIV 1/2 enzyme-linked immunosorbent assay and HIV1 Western blot by NYC health department laboratory; questions about beliefs about routine testing through Kaiser Family Foundation survey</p> <p>Weighted analysis conducted using RDS analysis tool 5.6 and SAS 9.1; gender-stratified Rao-Scott chi squared tests; multiple logistic regression</p> <p>Main outcome: Self-report of having HIV test within 12 months before interview</p>	<p>23 did not test, 756 tested HIV-negative, 67 tested HIV-positive; 31% of men had past year HIV testing; 35% of women had past year HIV testing; over 90% encountered at least one test setting; HIV seroprevalence was 8%; recent HIV testing was significantly associated with recent encounter with homeless shelter, jails/prison for men, health care provider for men and women</p> <p>Limitation: Self-reporting used</p>

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
Levy et al. (2016)	<p>Aim: Objectify and characterize missed opportunities for earlier HIV diagnosis for patients diagnosed with advanced HIV</p> <p>Variables: Late presentation, missed opportunity, advanced HIV disease, clinical indicator disease</p>		Nonexperimental; retrospective observational cohort study	<p>Setting: 1400 bed tertiary medical center, Israel</p> <p>Sample: 356 patients diagnosed with HIV between 2010 and 2015</p>	Data extracted from chart in tabular manner; Excel datasheet used; SPSS statistical analysis; Student's t-test, Pearson chi squared test, Fisher exact test; level of significance $p < 0.05$; univariate analysis; multiple regression model; likelihood ratio test	356 patients were diagnosed with HIV—118 (33.4%) were diagnosed late, 57 (16%) with advanced HIV disease; old age (OR=1.45, 95% CI 1.16 to 1.74) and being heterosexual (OR=2.65, 95% CI 1.21 to 5.78) were significant risk factors for being diagnosed late; among 47 of 57 patients with complete data, there were 65 missed opportunities to diagnose HIV in the 5 years before diagnosis; median time between missed opportunity and AIDS diagnosis was 24 months (interquartile range 10-30) with a range of 1 to 60 months; all patients with advanced disease had at least one clinical indicator disease that did not lead to an HIV test in the 5 years before AIDS diagnosis; median time between

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
						<p>clinical indicator diagnosis and AIDS diagnosis was 24 months (interquartile range 10–30); 60% of clinical indicator diseases were missed by a general practitioner and 40% by a specialist</p> <p>Limitations: Conducted at one center, may not represent entire country of Israel; small sample size</p>
Ober, Matino, Ewing, & Tucker (2012)	<p>Variables: demographic, psychological, behavioral, and structural factors</p> <p>Aim to increase knowledge of factors related to HIV/STI testing in homeless youth and to determine if the association between factors is mediated by homeless drop-in center use.</p>		Qualitative descriptive; interview	<p>Sample: 305 sexually active homeless youth between the ages of 13-24; recruited between October 2008 and August 2009; average age 20, 24% Black, 36% White, 19% Hispanic, 21% other race/ethnicity</p> <p>Setting: Shelters, drop-in centers, and street venues in Los</p>	<p>Computer-assisted face-to-face structured interviews, 60 minutes in length, \$25 incentive.</p> <p>Binary dependent variable= whether participant had an HIV or STI test within the last three months; four categories of predictors= demographic factors, psychological factors, behavioral factors, structural factors.</p> <p>Logical regression to estimate bivariate association between testing and each</p>	<p>Having been to a drop-in center in the past month was significantly ($p < .05$) associated with increased odds of testing for HIV/STI in the past three months (odds ratio (OR) = 1.40, 95% confidence interval (CI) = 1.13-1.75).</p> <p>Drop-in center use mediated the marginally direct association between</p>

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
	Hypothesis: Youth would be more likely to obtain HIV testing if they engaged in HIV risk behaviors, self-identified as gay, perceived that they were more susceptible to HIV, experienced more depressive symptoms, and accessed services at a youth homeless shelter or drop-in center.			Angeles County	factor; multivariate logistic regression model of HIV/STI testing, only factors that were bivariately associated with HIV/STI testing at $p < .10$ included, drop-in center use excluded; direct paths from each factor to HIV/STI testing estimated; indirect paths that went through drop-in center estimated	injection drug use and HIV/STI testing (OR = 1.69, CI = 0.98-2.90)
Wenzel et al. (2013)	Association between individual HIV risk and structural service access factors and past year HIV testing		Qualitative descriptive; interview	Sample: 305 heterosexually active homeless men from meal programs Setting: Skid Row region of Los Angeles	Logistic regression used to examine association between past year HIV testing and demographic characteristics, HIV risk behavior, and access to other services in the Skid Row area in the past 30 days	Recent Skid Row area medical/dental services (OR = 1.91, CI = 1.09-3.35) use and being a military veteran (OR = 2.10, CI = 1.01-4.37) were significantly associated with HIV testing service utilization
Aaron, Alvare, Gracely, Riviello, and Althoff (2015)	Variables: Homelessness, substance use, mental illness, Centers for Disease Control AIDS category, failure to link to care		Nonexperimental; retrospective cohort study	Sample: 87 patients with new HIV diagnosis; 53 (61%) unemployed, 21 (24%) homeless, 26 (30%) using drugs or alcohol, 17	Chi-square testing to determine whether outpatient versus inpatient testing sites served the same populations; logistic regression to determine the relationship between socioeconomic,	Out of 87 newly diagnosed HIV-positive patients, 63 (72%) were linked to care; 23 (96%) were from the outpatient setting, 40 (63%) were from the

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
				<p>(20%) history of mental illness, 28 (32%) uninsured.</p> <p>Setting: large urban healthcare center hospital-affiliated outpatient clinics, emergency departments, and inpatient units in Philadelphia</p>	<p>demographic, and biomedical factors and linkage to care; simple logistic regression to determine association between any single variable and the primary outcome variable, failure to link to care; significant variables ($p < 0.05$) included in subsequent multivariate models; Pearson's goodness-of-fit tests used</p>	<p>hospital setting, either emergency department of inpatient unit; patients tested in the emergency department or inpatient unit had a 10.9 fold ($p = 0.03$) higher odds of failure to link compared to those tested in the outpatient clinic; those tested in the hospital-based setting were more likely to be Black ($p = 0.01$), homeless ($p = 0.03$), and use alcohol and drugs ($p = 0.03$)</p>
Sison et al. (2013)	<p>Aim: Understand attitudes and practices regarding HIV testing and care, perceived barriers, opportunities for enhancing HIV testing and treatment, and linkage to care</p>		<p>Qualitative descriptive; interview</p>	<p>25 primary care providers and infectious disease specialists; 4 Ryan White Care providers, 5 FQHC providers, 16 private practice primary care providers</p> <p>Setting: 18 different organizations in the Mississippi Delta</p>	<p>1-2 hour long loosely structured Interviews with as many open ended questions as possible; interviews conducted until saturation; interviews recorded, professionally transcribed, identifying information removed, coded using contextualizing strategy by more than one analyst and checked for concordance</p>	<p>Themes: Provider and patient knowledge about HIV/AIDS in the Delta region, current HIV testing practices, barriers to routine HIV testing, opportunities for enhancing routine HIV testing, barriers to linkage to treatment and care, opportunities for enhancing HIV treatment and care</p>

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
				region		Major findings: Most providers understood gravity of local epidemic and racial disparities in HIV infection; some unaware of local infection rates, providers perceived that patients may underestimate their risk, most providers do not routinely offer testing, all Ryan White providers did offer routine testing; lack of knowledge of reimbursement procedures and informed consent laws inhibits routine testing offer, providers believe most patients had low self-perceived risk that may inhibit testing; providers mostly receptive to routine testing; requested training on appropriate billing in context of Affordable Care Act and United States Preventive Services

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
						Task Force recommendations, social marketing could increase demand and decrease stigma for testing and treatment; stigma inhibits use of care services, the Mississippi Delta is medically underserved and has few HIV care providers; travel required for care, telemedicine infectious disease specialist care available from Jackson, MS, there should be more HIV/AIDS care at the region's public clinics and FQHCs
Simmons, Brown, Ma, Sutton, and McLellan-Lemal (2011)	Explored provider perceptions of HIV testing and facilitators and barriers to implementing routine HIV testing in the clinic setting		Qualitative descriptive; interview	Sample: 24 health care personnel employed for at least 1 year; 75% female, 21% direct patient care, 17% case managers, 25% supervisory role, 25% administrative role, 100% full time employee	Semi-structured open-ended, face-to-face interviews Audiotapes transcribed verbatim, reviewed for accuracy, AnSWR coding analysis; all transcripts independently coded by 2 analysts; intercoder agreement conducted every fourth transcript; axial coding to examine themes	Although most providers were supportive of routine HIV testing, their perception of routine was variable; barriers cited by the providers included time to conduct HIV counseling and testing, financial constraints, and inadequate HIV

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
				Setting: 7 nonacademic primary care clinics in 6 cities based on convenience In Jackson, MS, Central Falls/Pawtucket, RI, Clarksdale, Greenwood, and Yazoo, MS; all but one had capacity for free or low-cost care to indigent populations	and patterns	education and training; facilitators cited included empowering their patients and reduced stigma
Carter, Owens, and Lin (2017)	Aim: Examine physician and primary care provider decision making about provision of HIV screening Study question: What are the estimated effects of the Affordable Care Act (ACA) on provider initiated HIV screening? Objective 1: Examine if implementation of the ACA has an impact on provider-initiated HIV	Eisenberg model of physician decision-making to guide variable selection	Quasi-experimental; pre-test-post-test no-treatment control group	Setting: National Ambulatory Medicare Care Survey (NAMCS) 2009 to 2012 data Sample: men age 15-25; 79% non-Hispanic White men, 9.4% non-Hispanic Black, Hispanic, and other; 66% privately insured; majority 31% seen in Southern United States	NAMCS examined HIV screening characteristics twice between 2009 and 2012; chi-square tests; logical regression to determine if patient and provider characteristics were associated with likelihood of HIV screening	Non-Hispanic Black men more likely to be prescribed HIV screening than non-Hispanic White men (OR = 12.33, 95% CI 4.42 to 34.36); men who see a primary care provider more likely to be prescribed HIV screening than those who do not (OR= 5.94, 95% CI 2.15 to 16.39); Men age 19 to 22 and 23 to 25 more likely to be prescribed HIV screening than men age

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
	<p>screening among men age 15 to 25 Hypothesis 1: Provider-initiated HIV screening will increase among men age 15 o 25 after implementation of the ACA</p> <p>Objective 2: Examine if patient characteristics influence the use of provider-initiated HIV screening Hypothesis 2: Provider-initiated HIV screening will occur more frequently in Black men compared to Caucasian and Latino/Hispanic men</p>					<p>15 to 18 (OR = 6.59, 95% CI 2.16 to 20.14; OR = 10.13, CI 3.34 to 30.69)</p> <p>Limitations: Only four years of data used due to NAMCS data availability only up until 2012, ACA became effective 2010; NAMCS based on physician and staff self-report; NAMCS data based on office-based physicians mainly involved in direct care; NAMCS does not include state-level identifiers, variation in Medicaid expansion states within regions for which data does exist; NAMCS data limiting in regard to sexual orientation and gender identity questions</p>
Kinsler, Sayles, Cunningham, and Mahajan	Variables: Sociodemographic characteristics, HIV test acceptance, who		Retrospective cohort	Setting: Two publicly funded safety net outpatient clinics in Los	Independent and dependent variable distribution examined; logistic regression used to assess unadjusted	77% of patients agreed to HIV test with opt-out screening; HIV test acceptance was higher

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
(2013)	offered test Compares patient acceptability of provider- versus nurse-initiated opt-out HIV screening			Angeles County Sample: 220 underserved minority patients age 18-64 screened for HIV testing	and adjusted odds ratios (AOR) for association between HIV test acceptance and who offered test; analysis conducted using STATA Version 11.0	with physician initiated opt-out versus nurse initiated opt-out model (AOR = 2.92; 95% CI = 1.37 – 6.22); patients born outside of U.S. more likely to accept HIV test using opt-out screening; those with insurance more likely to accept HIV test Limitations: Measures based on self-report (possible report or recall bias); study limited to underserved minority population in Los Angeles County
Sutherland and Spencer (2016)	Examine routine HIV screening intentions, behaviors, and practices		Cross-sectional; quantitative data collected using anonymous paper and pencil questionnaire	Setting: American Association of Nurse Practitioners (AANP) database Sample: Random sample- 141 nurse practitioners	AANP and SPSS version 21 used to select random sample of 600 actively practicing nurse practitioners; initial introduction postcard, 98 item questionnaire, and follow-up reminder/thank you postcard Sociodemographic data, intentions to increase routine HIV screening in the next year, and HIV screening practices analyzed;	25% (35) reported routine HIV screening (community clinic practice setting, urban area, prior HIV education, HIV testing availability statistically significant variables related to HIV screening behaviors); 48% (67) reported intentions to increase routine HIV screening in the next year

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
					descriptive statistical analysis of data conducted after data entered and systematically checked for error; a priori power analysis was conducted with statistical significance defined at 0.05; data reported using standard descriptive statistics, categorical variables reported using frequencies and proportions; associations reported using chi-square test for independence; SPSS 22.0 used for analysis	(primary care practice location and HIV testing availability statistically significant variables related to HIV screening intention); HIV screening reported as risk-based and patient-initiated

APPENDIX C:
DISCLOSURE FORM

Disclosure Form

Introduction

My name is Chelsea Lopez. I am a Family Nurse Practitioner student from the Doctor of Nursing Practice program at the University of Arizona College of Nursing.

Purpose of Project

I am conducting a quality improvement project at St. Luke's Health Care Clinic, a Federally Qualified Health Center that serves homeless and underserved patients, to improve HIV screening practices and appropriate referrals for HIV care within the community. Objectives of this project are to determine knowledge and practice related to HIV screening, facilitators and barriers to HIV screening and referral, and satisfaction with the educational intervention as well as to increase knowledge and influence intended practice related to HIV screening and referral.

Why are you being asked to participate?

You are being invited to participate because you are a provider, registered nurse, or medical assistant involved in HIV screening and referral practices at St. Luke's Health Care Clinic who can provide valuable information regarding current screening and referral practices and barriers and facilitators to these practices.

Description of the project:

You will also be asked to view an online educational webinar that is approximately fifteen to twenty minutes in length. The main focus for the webinar is to present information specifically for this clinic about HIV, screening recommendations, and community referrals for care. You will be asked to complete an anonymous, online pretest and posttest, each taking approximately five to ten minutes to complete. Responses will be summarized and aggregate data will be shared with clinic administration. An executive summary and PowerPoint presentation presenting aggregate data, including key findings and evidence-based recommendations, will be provided to the clinic upon completion of the project. Additionally, a link to the webinar will be provided to the chief executive officer and clinical director so that the webinar can be accessed for future orientation purposes.

Are there any risks?

Risks are minimal. The survey is anonymous and no individual responses, only summary findings, will be shared with clinic administration.

This project is being reviewed by the University of Arizona Institutional Review Board and St. Luke's Health Care Clinic to be sure participants are protected.

What are the benefits?

The benefits of the project will be to improve HIV screening practices and appropriate referrals for HIV care within the community and to improve patient outcomes.

The study is voluntary

You may decide not to participate or to stop participating at any time. By clicking on the link to the online pretest, you are consenting (agreeing) to participate.

For any questions, please contact Chelsea Lopez at chelsealopez@email.arizona.edu or my doctoral chair, Dr. Christy Pacheco at christyp@email.arizona.edu.

Thank you.

APPENDIX D:
INVITATION EMAIL

Invitation Email

Dear Potential Participant,

You are invited to participate in this project entitled, “Improving HIV Screening Practices at a Community Health Care Clinic for the Underserved In Southwest New Mexico”. The project’s activities open today and will be accessible for three weeks.

Introduction

My name is Chelsea Lopez. I am a Family Nurse Practitioner student from the Doctor of Nursing Practice program at the University of Arizona College of Nursing.

Purpose of Project

I am conducting a quality improvement project at St. Luke’s Health Care Clinic, a Federally Qualified Health Center that serves homeless and underserved patients, to improve HIV screening practices and appropriate referrals for HIV care within the community. Objectives of this project are to determine knowledge and practice related to HIV screening, facilitators and barriers to HIV screening and referral, and satisfaction with the educational intervention as well as to increase knowledge and influence intended practice related to HIV screening and referral.

Why are you being asked to participate?

You are being invited to participate because you are a provider, registered nurse, or medical assistant involved in HIV screening and referral practices at St. Luke’s Health Care Clinic who can provide valuable information regarding current screening and referral practices and barriers and facilitators to these practices.

Description of the project

You will also be asked to view an online educational webinar that is approximately fifteen to twenty minutes in length. The main focus for the webinar is to present information specifically for this clinic about HIV, screening recommendations, and community referrals for care. You will be asked to complete an anonymous, online pretest and posttest, each taking approximately five to ten minutes to complete. Responses will be summarized, and aggregate data will be shared with clinic administration. An executive summary and PowerPoint presentation presenting aggregate data, including key findings and evidence-based recommendations, will be provided to the clinic upon completion of the project. Additionally, a link to the webinar will be provided to the chief executive officer and clinical director so that the webinar can be accessed for future orientation purposes.

Are there any risks?

Risks are minimal. The survey is anonymous and no individual responses, only summary findings, will be shared with clinic administration.

This project is being reviewed by the University of Arizona Institutional Review Board and St. Luke's Health Care Clinic to be sure participants are protected.

What are the benefits?

The benefits of the project will be to improve HIV screening practices and appropriate referrals for HIV care within the community and to improve patient outcomes.

The study is voluntary

You may decide not to participate or to stop participating at any time. By clicking on the link to the online pretest, you are consenting (agreeing) to participate.

For any questions, please contact Chelsea Lopez at chelsealopez@email.arizona.edu or my doctoral chair, Dr. Christy Pacheco at christyp@email.arizona.edu.

Thank you.

Please use the following links to access the pretest, webinar, and posttest:

Link to pretest:

Link to webinar:

Link to posttest:

APPENDIX E:
REMINDER EMAIL

Reminder Email

Dear Potential Participant,

This message is a reminder that you are invited to participate in this project entitled, “Improving HIV Screening Practices at a Community Health Care Clinic for the Underserved In Southwest New Mexico”. For those who have already completed this project’s activities, thank you. If you have not yet completed this project’s activities, there is still an opportunity to participate. The project’s activities will be accessible for two (one) more weeks (week).

Introduction

My name is Chelsea Lopez. I am a Family Nurse Practitioner student from the Doctor of Nursing Practice program at the University of Arizona College of Nursing.

Purpose of Project

I am conducting a quality improvement project at St. Luke’s Health Care Clinic, a Federally Qualified Health Center that serves homeless and underserved patients, to improve HIV screening practices and appropriate referrals for HIV care within the community. Objectives of this project are to determine knowledge and practice related to HIV screening, facilitators and barriers to HIV screening and referral, and satisfaction with the educational intervention as well as to increase knowledge and influence intended practice related to HIV screening and referral.

Why are you being asked to participate?

You are being invited to participate because you are a provider, registered nurse, or medical assistant involved in HIV screening and referral practices at St. Luke’s Health Care Clinic who can provide valuable information regarding current screening and referral practices and barriers and facilitators to these practices.

Description of the project

You will also be asked to view an online educational webinar that is approximately fifteen to twenty minutes in length. The main focus for the webinar is to present information specifically for this clinic about HIV, screening recommendations, and community referrals for care. You will be asked to complete an anonymous, online pretest and posttest, each taking approximately five to ten minutes to complete. Responses will be summarized, and aggregate data will be shared with clinic administration. An executive summary and PowerPoint presentation presenting aggregate data, including key findings and evidence-based recommendations, will be provided to the clinic upon completion of the project. Additionally, a link to the webinar will be provided to the chief executive officer and clinical director so that the webinar can be accessed for future orientation purposes.

Are there any risks?

Risks are minimal. The survey is anonymous and no individual responses, only summary findings, will be shared with clinic administration.

This project is being reviewed by the University of Arizona Institutional Review Board and St. Luke's Health Care Clinic to be sure participants are protected.

What are the benefits?

The benefits of the project will be to improve HIV screening practices and appropriate referrals for HIV care within the community and to improve patient outcomes.

The study is voluntary

You may decide not to participate or to stop participating at any time. By clicking on the link to the online pretest, you are consenting (agreeing) to participate.

For any questions, please contact Chelsea Lopez at chelsealopez@email.arizona.edu or my doctoral chair, Dr. Christy Pacheco at christyp@email.arizona.edu.

Thank you.

Please use the following links to access the pretest, webinar, and posttest:

Link to pretest:

Link to webinar:

Link to posttest:

APPENDIX F:
PRETEST EVALUATION QUESTIONS

Pretest Evaluation

This is an anonymous evaluation. The following questions address HIV screening knowledge, current practice patterns, and facilitators and barriers to HIV screening and referral to care.

Sociodemographic questions

What is your clinic role? (MD/DO, NP, RN, MA, Other (please specify); multiple choice)

How long have you been in practice in this role? (<1 year, 2-5 years, >5 years, >10 years)

How long have you been in practice at this clinic? (<1 year, 2-5 years, >5 years, >10 years)

Knowledge questions

How many people are infected with HIV in New Mexico? (ALL; <500, 500-2,000, >3,000, >5,000; multiple choice)

How many are people are unaware of their infection status? (ALL; 1 of 2, 1 of 7, 1 of 5, 1 of 10; multiple choice)

What are the potential complications of HIV infection? (Provider, RN; toxoplasmosis, lymphoma, candidiasis, neuropathy, tuberculosis, cardiovascular disease, Kaposi sarcoma, dementia; select all that apply)

Who is at increased risk for HIV infection? (ALL; Injection drug users, Transgender women who have sex with men, African Americans/Blacks, Hispanics/Latinos, Homosexual men, Pregnant women, Bisexual men, Caucasians/Whites, Persons who exchange sex for money or drugs, Homeless persons; select all that apply)

Who should be screened for HIV? (All; Pregnant women, 17-year-old White male with one sexual partner, 45-year-old Hispanic female diagnosed with chlamydia, 27-year-old African American homeless male, 58-year-old Asian female who uses injection drugs, 35-year-old Native American male who smokes; select all that apply)

How often should HIV screening be performed as routine screen if no additional risk factors? (Provider, RN; Annually, Every 3-6 months, Once, Every 5 years, Every 3 years; multiple choice)

What is the window period between infection and confirmed detection? (Provider, RN; 90 days, 1 year, 1 week, 1 day, 30 days; multiple choice)

What are options for HIV screening at this clinic? (ALL; saliva, finger stick, blood draw, genital swab; select all that apply)

What free or low-cost HIV screening options exist within the community? (ALL; There is no free or low-cost community testing, I am familiar, I am not familiar, Not sure; select all that apply)

Practice patterns questions

Who do you screen for HIV? (Provider; All patients between the age of 13 and 64, Men who have sex with men, Pregnant women, Injection drug users, Homeless patients, Not sure; select all that apply)

Do you obtain consent before screening for HIV? What type of consent? (Provider, RN; Yes, verbal, Yes, written, No, Not sure, Opt-out approach; select all that apply)

How often do you routinely screen patients for HIV? (Provider; Annually, Every 3-6 months, Only once, Not sure; multiple choice)

How often do you screen low risk patients for HIV? (Provider; Annually, Every 3-6 months, Only once, Not sure; multiple choice)

How often do you screen patients who engage in high-risk behaviors (sex or injection drug use) for HIV? (Provider; Annually, Every 3-6 months, Only once, Not sure; multiple choice)

How often do you screen patients who have engaged in new high-risk behavior (new high-risk partner, injection drug use since last HIV screen)? (Provider; Annually, Every 3-6 months, Only once, Not sure; multiple choice)

How do you determine if a patient has been screened for HIV? (ALL; Ask patient, Check EHR, I don't ask, RN/MA report, Not sure; select all that apply)

What do you do for a patient who tests positive for HIV? (Provider, RN; Confirmatory testing, Refer to HIV care, Check for other STDs, Inform the patient, CD4 count, Viral load, Drug-resistance testing, Not sure; select all that apply)

What do you do for a patient who tests negative for HIV? (Provider, RN; Inform the patient, Risk-reduction counseling, Connection to HIV care if high risk, Not sure; select all that apply)

If you refer, where do you refer to? (ALL; Department of Health, HIV specialist, Infectious disease specialist, Alianza, Community Collaborative Care, Other (please specify); select all that apply)

I am familiar with performing HIV testing in this clinic (ALL; Yes, No, Not Sure, Other (please specify); multiple choice)

Where is documentation of HIV testing performed in the EHR? (ALL; Progress Note, Labs, Orders, Other (please specify); select all that apply)

Facilitators and barriers to HIV screening questions

Do you feel comfortable talking with patients about HIV screening? (ALL; Yes, No; multiple choice)

What factors prevent you from screening for HIV? (Provider; Time, I am not familiar with recommendations, I am not comfortable, Cost, Inability to follow up with patient; select all that apply)

Obtaining consent for HIV testing is too complex or takes too much time (Provider, RN; Yes, No; multiple choice)

Documentation of HIV status, including previous test results, is easy to find in the chart (ALL; Yes, No; multiple choice)

An alert notifying you that your patient should be screened for HIV would be helpful? (ALL; Yes, No, Too many alerts; multiple choice)

The referral process, to refer our HIV positive patients for care is easy to use (ALL; Yes, No, Not sure of referral process, Lack of referral options is problem, Patient follow up is problem; multiple choice)

APPENDIX G:
POSTTEST EVALUATION QUESTIONS

Posttest Evaluation

This is an anonymous evaluation. The following questions address HIV screening knowledge, intended practice patterns, and satisfaction with this activity.

Knowledge questions

What is your clinic role? (MD/DO, NP, RN, MA, Other (please specify); multiple choice)

How many people are infected with HIV in New Mexico? (ALL; <500, 500-2,000, >3,000, >5,000; multiple choice)

How many are people are unaware of their infection status? (ALL; 1 of 2, 1 of 7, 1 of 5, 1 of 10; multiple choice)

What are the potential complications of HIV infection? (Provider, RN; toxoplasmosis, lymphoma, candidiasis, neuropathy, tuberculosis, cardiovascular disease, Kaposi sarcoma, dementia (select all that apply)

Who is at increased risk for HIV infection? (ALL; Injection drug users, Transgender women who have sex with men, African Americans/Blacks, Hispanics/Latinos, Homosexual men, Pregnant women, Bisexual men, Caucasians/Whites, Persons who exchange sex for money or drugs, Homeless persons; select all that apply)

Who should be screened for HIV? (All; Pregnant women, 17-year-old White male with one sexual partner, 45-year-old Hispanic female diagnosed with chlamydia, 27-year-old African American homeless male, 58-year-old Asian female who uses injection drugs, 35-year-old Native American male who smokes; select all that apply)

How often should HIV screening be performed as routine screen if no additional risk factors? (Provider, RN; Annually, Every 3-6 months, Once, Every 5 years, Every 3 years; select all that apply)

What is the window period between infection and confirmed detection? (Provider, RN; 90 days, 1 year, 1 week, 1 day, 30 days; multiple choice)

What are options for HIV screening at this clinic? (ALL; Saliva, Finger stick, Blood draw, Genital swab; select all that apply)

What free or low-cost HIV screening options exist within the community? (ALL; There is no free or low-cost community testing, I am familiar, I am not familiar, Not sure; multiple choice)

Intended practice behavior questions

Who will you screen for HIV? (Provider; All patients between the age of 13 and 64, Men who have sex with men, Pregnant women, Injection drug users, Homeless patients, Not sure; select all that apply)

Will you obtain consent before screening for HIV? (Provider, RN; Yes, verbal, Yes, written, No, Opt-out approach, Not sure; select all that apply)

How often will you screen for HIV? (Provider; Annually, Every 3-6 months, Once, Every 5 years, Every 3 years; select all that apply)

How will you determine if your patient has been screened for HIV? (ALL; Ask patient, Check EHR, I don't ask, RN/MA report, Not sure; select all that apply)

What do you do for a patient who tests positive for HIV? (Provider, RN; Confirmatory testing, Refer to HIV care, Check for other STDs, Inform the patient, CD4 count, Viral load, Drug-resistance testing, Not sure; select all that apply)

What will you do for a patient who tests negative for HIV? (Provider, RN; Inform the patient, Risk-reduction counseling, Connection to HIV care if high risk, Not sure; select all that apply)

If you refer, where will you refer to? (ALL; Department of Health, HIV specialist, Infectious disease specialist, Alianza, Community Collaborative Care, Other (please specify); select all that apply)

How is an HIV test performed at this clinic (RN/MA; I am familiar, I am not familiar; multiple choice)

I feel comfortable performing an HIV test at this clinic (ALL; Yes, No, Not Sure, Other (text box); select all that apply)

How will you document HIV testing in the EHR? (ALL; Progress Note, Labs, Orders, Other (please specify); select all that apply)

Satisfaction and feasibility questions (ALL)

Was this activity informative? (Yes, No; multiple choice)

Did you enjoy the format (educational webinar) of activity? (Yes, No; multiple choice)

Was the length of this activity too long, too short, or appropriate? (Too long, Too short, Appropriate; multiple choice)

Is there anything that you would have liked to have been included in this activity? (free text)

Is there anything that you feel should not have been included in this activity? (free text)

How likely will this activity improve your practice? (Likert; Extremely helpful, Very helpful, Somewhat helpful, Not so helpful, Not at all helpful)

Would you recommend this activity to others? (Yes, No; multiple choice)

Please use this free text box for any comments.
(free text box)

APPENDIX H:
LETTER OF SUPPORT



St. Luke's Health Care Clinic, Inc., 999 West Amador Ave • Las Cruces, NM 88005 • Ph: 575-527-5482

May 6, 2018

University of Arizona
Human Subjects Protection Program
1618 E. Helen St.
P.O. Box 210409
Tucson, AZ 85721

Dear Human Subjects Protection Program Members:

This is to certify that Chelsea López, BSN, RN has permission to conduct a quality improvement project involving providers, registered nurses, and medical assistants at St. Luke's Health Care Clinic at 999 West Amador Avenue in Las Cruces, New Mexico. The project will consist of an anonymous online quantitative pretest and posttest with a brief educational webinar about HIV screening practices including appropriate community referrals. This project, entitled *Improving HIV Screening Practices at a Community Health Care Clinic for the Underserved in Southwest New Mexico*, is for partial fulfillment of the requirements for the Doctor of Nursing Practice at the University of Arizona College of Nursing.

I understand that Ms. López will compose and send an email to me containing the disclosure with three links to the pretest, webinar, and posttest. I agree to forward the email with three links to potential participants at the beginning of week one of implementation. A reminder email will be forwarded to potential participants.

I understand that Ms. López will be conducting this quality improvement project with IRB review from the University of Arizona. IRB permission is expected Spring/Summer 2018. The project will be implemented following IRB review.

Sincerely,

A handwritten signature in blue ink that reads "Pamela Angell".

Pamela Angell, CEO
St. Luke's Health Care Clinic

APPENDIX I:
THE UNIVERSITY OF ARIZONA INSTITUTIONAL REVIEW BOARD (IRB)
DETERMINATION LETTER



THE UNIVERSITY OF ARIZONA

**Research, Discovery
& Innovation**

 Human Subjects
Protection Program

 1618 E. Helen St.
P.O. Box 245137
Tucson, AZ 85724-5137
Tel: (520) 626-6721
<http://rgw.arizona.edu/compliance/home>
Date: June 19, 2018

Principal Investigator: Chelsea Colin Lopez

Protocol Number: 1806687996

Protocol Title: IMPROVING HIV SCREENING PRACTICES AT A COMMUNITY HEALTH CARE CLINIC FOR THE UNDERSERVED IN SOUTHWEST NEW MEXICO

Determination: Human Subjects Review not Required

Documents Reviewed Concurrently:
Data Collection Tools: *Lopez,C_APPENDIXB-PrePosttest.docx*
HSPP Forms/Correspondence: *Advisor Confirmation email.pdf*
HSPP Forms/Correspondence: *Lopez,Chelsea_DeterminationofHumanResearch.pdf*
Informed Consent/PHI Forms: *Lopez,Chelsea_APPENDIXE-ReminderEmail.docx*
Informed Consent/PHI Forms: *Lopez,Chelsea_DisclosureFinal.docx*
Other: *Lopez,Chelsea_APPENDIXA-InterventionOutline.docx*
Other: *Lopez,Chelsea_APPENDIXC-ClinicMeeting.docx*
Other Approvals and Authorizations: *LetterofSupportsigned.pdf*
Recruitment Material: *Lopez,Chelsea_APPENDIXD-InvitationEmail.docx*
Regulatory Determinations/Comments:

- Not Research as defined by 45 CFR 46.102(d): As presented, the activities described above do not meet the definition of research cited in the regulations issued by U.S. Department of Health and Human Services which state that "research means a systematic investigation, including research development, testing and evaluation, designed to contribute to generalizable knowledge."

The project listed above does not require oversight by the University of Arizona.

If the nature of the project changes, submit a new determination form to the Human Subjects Protection Program (HSPP) for reassessment. Changes include addition of research with children, specimen collection, participant observation, prospective collection of data when the study was previously retrospective in nature, and broadening the scope or nature of the study activity. Please contact the HSPP to consult on whether the proposed changes need further review.

The University of Arizona maintains a Federalwide Assurance with the Office for Human Research Protections (FWA #00004218).

REFERENCES

- Aaron, E., Alvare, T., Gracely, E. J., Riviello, R., & Althoff, A. (2015). Predictors of linkage to care for newly diagnosed HIV-positive adults. *Western Journal of Emergency Medicine*, *16*(4), 535-542. doi:10.5811/westjem.2015.4.25345
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