Optimizing STIs Screening Implementation in the Primary Care: A Quality Improvement Project

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Table of Contents

Patients with symptoms of STI have the immediate need to be screened to identify and treat before they develop complications. In addition, there is a need to identify, test, and treat their sex partners to prevent transmission and reinfections. Primary care providers have a critical role in assessing STI risks and providing timely management of infections.

Purpose: The overall purpose of this evidence-based DNP quality improvement (QI) project is to implement the 2017 CDC guidelines (STIGI) for STI screening and treatment in primary care for early detection and timely treatment. In addition, this project attempts to discern if the protocols could improve the provider's behavior when faced with patients with STI symptoms.

Methods: A Quality Improvement project of the national guideline protocol was implemented at a primary care clinic located in Miami's suburb over six weeks. Analysis of pre-and post-behavior of medical providers' behavior, when faced with patients with STI symptoms, were obtained and compared for adherence to the protocol.

Results: The provider's knowledge and behavior were not changed, and post-implementation protocol analysis did not increase the screening and early treatment rates. The result analyzed showed no statistically significant association on providers' adherence to STIGI protocol (p = 0.6831) within five weeks of implementation. The quality improvement results are discussed, and indications for future programs are explored.

***Keywords*:** Sexually transmitted disease, providers' behavior, STGI national guideline, early detection, early treatment, primary care, gonorrhea, chlamydia, syphilis

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Sexually transmitted infections (STIs) are a serious health concern and monetary burden for the United States. Recently, their prevalence has risen significantly (CDC, 2019). STIs are generally asymptomatic and can lead to substantial morbidity and health problems if left untreated (AAFP, 2019). The Center for Disease Control and Prevention (CDC) found that there were nearly 2.5 million cases of gonorrhea, syphilis, and chlamydia in 2019 which represents a sustained increase for six years in a row (Sexually Transmitted Disease Surveillance, 2019, 2021). When comparing the last report in 2019 to the report from 2015, there was an increase of up to 19% in the number of new cases of chlamydia, 1.8 million new cases, as well as 616,392 new cases of gonorrhea (a 56% increase). At an increase of 79%, syphilis had the most significant increase with 129,813 new cases (STI Prevalence, Incidence, and Cost Estimates, 2021).

The CDC provides the most accurate analysis of STI prevalence in the United States. According to the CDC (2010), approximately one in five people in the United States had an STI in 2018. STIs in 2018 cost the American healthcare industry nearly $16 billion in healthcare costs alone (CDC, 2021). The CDC analyzed eight prevailing STIs: chlamydia, gonorrhea, hepatitis B virus (HBV), herpes simplex virus type 2 (HSV-2), human papillomavirus (HPV), human immunodeficiency virus (HIV), syphilis, and trichomoniasis. Trichomoniasis, chlamydia, genital herpes, and HPV accounted for 98% of all frequent STIs, and 93% of all new STIs in 2018 (CDC, 2018).

To address this increase in STIs, the American Academy of Family Physicians (AAFP) argues that the United States must address the low STI screening rate by optimizing STI screening in primary care (2019) since primary care is the main gateway into healthcare.

The AAFP's Screening from Sexual Transmitted Infections Manual stresses the stigma associated with these diseases and the lack of physician familiarity or confidence in providing screening and counseling (2017). Also, the lack of time for this service and the unwillingness of some insurance companies to cover STI screening are all factors contributing to the slow increase in STI screening (AAFP, 2019).

Problem Identification

Historically, due to the need for confidentiality, stigma, avoidance of attention, or other personal reasons, STIs were primarily diagnosed in public health settings (Barrows et al., 2020). Barrow et al. (2020) notes that today, non-STI clinics such as community health centers and private physicians' offices now diagnose most STI cases. Although primary care providers have a critical role in assessing STI risks and providing timely management of infections, some practices still defer STI screening to STI clinics, community health centers, or health department clinics (Scheim & Travers, 2016). In 2017, the CDC created guidelines for STI screening, treatment, and recommendations that private practices could use to identify and treat persons with STIs to inhibit transmission, complications, and reinfections (St. Cyr et al., 2020).

According to Pleuhs et al. (2020), one significant barrier for STI screening in primary care is the provider's lack of time to address high-risk sexual behaviors, making STI screening a low priority in such settings. Taylor et al. (2016) argue that clinics can effectively adopt strategies to improve screening to minimize STI prevalence and improve health outcomes. In the

primary care setting, sexual health assessment performed through a conventional sexual questionnaire is critical to identify those in need of STI screening and education about its prevention (El-Amin et al., 2016). Specific populations are disproportionately vulnerable for acquiring STIs, including persons with new sexual partners or with multiple sexual partners, partners who have current STIs, and partners with inconsistent or no condom use. Moreover, Rahmani et al. (2020) argue that persons with multiple sex partners and those that have sex for money or drugs, in addition to those who have direct contact with sex workers, have a higher incidence of STI acquisitions. Vulnerable populations such as adolescents, pregnant women, people with HIV, men who have sex with men (MSM), and transgender individuals require special attention for screening and counseling because of the high rate of STIs among these population segments (Rietmeijer, 2020). Another critical factor in the lack of STI screening in primary care is the stigma related to sexual orientation, in addition to its acquisition (Matsick et al., 2020).

This Quality Improvement (QI) DNP project proposes implementing the 2017 CDC guidelines (STIGI) for STI screening and treatment in primary care for early detection and timely treatment. This QI project has the potential of preventing transmission health complications, and decreasing the economic burden related to complications.

This QI project will take place at a primary care clinic located in Miami's suburbs. Its clientele is primarily underprivileged minorities, including the Latino, black, gay, and transgender communities. This facility displays an urgent need for the implementation of STIGI. This will increase the detection of infections and increase early treatment, improving healthcare outcomes, such as infertility, pelvic inflammatory diseases, and rectal and cervical cancers.

Project Question

In a Primary care setting (P), does the implementation of routine STI screening (I), when compared to the absence of routine screening (C), increase screening behaviors of providers (O) over six weeks (T)?

Research Methods

A literature review was conducted on multiple databases to ensure that all relevant publications were assessed. The search utilized scholarly databases, including the databases of the National Library of Medicine, Pubmed, as well as Elsevier's Embase database and EBSCO's Cumulative Index to Nursing and Allied Health Literature (CINAHL). Other research databases included Cochrane library, SAGE Research Methods, and Google Scholar. A carefully selected terminology is the key to effective searches (Gerberi & Marienau, 2017). The search keywords and subject heading included “sexually transmitted infections (STIs)”, “Optimizing STI screening”, “STI implementation in primary care”, “CDC”, “STI clinics”, and “providers’ behavior”. The search was limited to studies implemented in the United States within the last five years, from 2016 to 2021. The eligibility and inclusion criteria for the research articles was based on dates, study design outcomes, and population. In this case, the selection criteria included scholarly and peer-reviewed articles with a clinical focus and excluded those with less than 10 participants. Out of 23 studies, 14 articles met all the eligibility criteria for inclusion in the literature review and the outcomes were clearly represented. Studies were considered ineligible for review if they were past 5 years. Included articles must have been published within the last 5 years. Further studies were disqualified from inclusion if they used an observational design, but experimental design studies were included in the review.

Upon reviewing the methodology used in the researched literature, the methods and results are relevant to this QI project. The literature presented utilized observational, cross-sectional, and qualitative research, as well as case studies, and retrospective cohort. These methodologies are relevant to my QI project because they were repeatable and implemented scientifically. The PICOT question in this QI project helped to generate search terms in the literature search.

Review of Literature

The incidence of STIs in the United States remains unacceptable high when compared to the advances in screening interventions, diagnosis, and treatment (El-Amin et al., 2016). According to Taylor et al. (2016), past studies on STI reveal that for STI testing to be effective, it is essential to perform screening tests in the absence of overt symptoms in the high-risk population. The standard treatment guidelines international (STIGI) is the recommended CDC screening protocol. The screening and treatment may help reduce the HIV transmission risk, especially in a high-risk population presenting STI prevalence. Hence, it is important to implement STGI at the primary care site where the high-risk population is treated.

Outreach and education are vital to optimizing the delivery of STI screening. Researches have explored numerous options to improve the STI screening rate, including risk-based, which is the current practice standard that entails examining sexual history to identify those at high risk. Patient outreach and STI education can eliminate common misconceptions regarding STIs amongst young adults and increase understanding of asymptomatic screening (Pleuhs et al., 2020).

Patient awareness of STIs risks and the need for consistent screening is a critical element in effective screening campaigns (Hull et al., 2017). While physician education can inform the

benefits of STI screening and clarify clinical practice guidelines, education that focuses on physician outreach can provide reminder tools for routine screening in primary care. Hence, both physician-patient education and outreach are critical to implementing STIGI in primary care.

Based on such findings, the QI project of implementing STIGI will be beneficial in this primary care clinic to improve providers' behavior in utilizing routine screening.

Literature Theme Development

Rationale for screening

Underutilization of STI screening is among the reasons for the continued rise of STIs in the United States (CDC, 2018). STI infection rates differ by age, gender, and risk behavior (Dionne-Odom et al., 2018). The current guidelines require routine screening for syphilis, gonorrhea, trichomoniasis, and chlamydia on all sexually active women who are HIV positive (2018). STI diagnosis and early treatment can prevent patients' health complications in the future, and it can also lessen the burden of such infections in the overall population. The key obstacle to the overall attainment of this objective is that a significant proportion of STI patients do not present with any obvious symptom. Detecting asymptomatic STIs in a patient depends primarily on the provider to routinely order screening (Taylor et al., 2016). Thus, diagnostic tests may never be performed if not requested by this category of patients.

Risk assessment

Risk assessment can enable clinicians to make more accurate diagnosis and can also guide them in selective screening of asymptomatic individuals. The assessment process should be part of routine screening in the primary care setting. Kirubarajan et al. (2021) argue that primary care settings need to provide STI screening and risk assessment to sexually active women, particularly those under 25 years old at all suitable encounters. Ideal opportunities to

conduct STI screening and risk assessment for this target population is when they seek health care consultations on sexual health, contraceptive advice, family planning, reproductive health, and HPV vaccinations (2021). Although the STI prevalence rate is rising, the screening rates remain lower than anticipated due to multiple barriers to screening tests in primary care, such as providers' behavior in ordering the screening (Hull et al., 2017). Some primary care providers are hesitant to order STI screening because they underestimate the patients' risk of having asymptomatic infection or contracting from someone who does not present any symptoms or does not appear to practice high-risk behavior (Taylor et al., 2016).

Ramchandani & Golden (2019) performed a cohort study from 2012 to 2016 undertaken in San Francisco, Washington, D.C., and Miami and found that the implementation of PrEP (Pre-exposure Prophylaxis) has decreased HIV transmission, but it has increased the prevalence of STIs. Due to the use of PrEP, patients have decreased the use of condoms. This behavior is due to the perceived ability of these drugs to promote a sense of decreased mortality. Therefore, there is an increase in STI spreading. There is a clear need to combine PrEP with other strategies to prevent the spread of STIs (2019). Otherwise, the STI pandemic will continue. The article demonstrates the importance of employing strict measures to screen based on risk assessment and reducing the spread of STIs in primary care during PrEP administration in this high-risk segment of the population (2019).

Screening recommendations

Screening programs, recommendations, and national guidelines have been created to identify and treat persons with STIs to limit complications, re-infections, and transmissions. Irrespective of the uncertainty of the current STI screening practice in primary care settings, the concern is if the current screening recommendations are adequate to reduce infections and reduce

its rate below the persistent threshold or if there is a need to emphasize additional screening efforts. According to Weiss et al. (2019), the CDC recommends screening in 3 to 6 months for MSM with multiple sex partners or those at increased risk (CDC, 2018). Further, CDC recommends that adolescents and adults aged 13- to 64-year-old need to be tested at least once, annually, for gonorrhea, syphilis, and chlamydia. The CDC also recommends screening for STIs, including HIV, HBV, and syphilis, of all pregnant women at the beginning of pregnancy.

Additionally, at-risk pregnant women need to be tested for gonorrhea and chlamydia. Retesting should be done as needed to protect infants and their mothers (CDC, 2018). However, all sexually active women below 25-year-old should be tested each year for chlamydia and gonorrhea. Similar testing is also recommended for persons sharing drug injection needles or engaging in unsafe sex practices (2018).

Screening methods

Dionne-Odom et al. (2018) conducted a retrospective cohort study of women in care at an urban clinic in Birmingham, Alabama, 2013-2015. This study demonstrated that routine screening could detect trichomoniasis widespread, although the detection of chlamydia, gonorrhea, and syphilis remained unchanged. Moreover, this study demonstrated that cost-effective screening is a strong foundation for detecting asymptomatic infections in order to decrease STI prevalence. In addition, this study utilized nucleic acid amplification test (NAAT) on urine (preferred for men) or vaginal swabs (preferred for women), urethral swabs, endocervical swabs, rectal and oropharyngeal for detection of gonorrhea and chlamydia.

According to the CDC (2018), patients are more receptive to the use of self-collected swabs, and its increased use direct correlates with a slight increase in early STI detection. Its use is also easily adapted by providers because it eliminates pelvic examination and urethral swab.

Screening for HIV, Hepatitis B and C, and syphilis requires a blood sample. Screening for HIV can also be done at point-of-care with a finger stick or oral secretion sample (2018).

Management of positive screening results

The positive test results require to be treated as per current STGI protocol (Chohonis et al., 2020). When an individual presents with positive STI screening, the provider must provide referral to the patient for treatment. The patient should get diagnosis through appropriate STI testing methods. Moreover, the provider should discuss risk reduction, which implies that positive test results should be given direct to the patient (2020). In addition, all patients with positive STI should avoid sexual activity for seven days after initiation of treatment (CDC, 2018). According to the National Institute of Allergies and Infectious Diseases (2020), patient education is crucial to reduce transmission. Therefore, individuals presenting for screening should be educated, tested for STIs and informed of prompt available treatment (Basoulis et al., 2021).

The CDC also requires notification Health Department notification of Chlamydia, gonorrhea, acute HBV, acute HCV, HIV, and syphilis (CDC, 2018). In addition, the sexual partner must also be notified for exams and needed treatment to reduce the spread of STIs. In the United States, a widely used method for positive gonorrhea and Chlamydia is the expedited partner therapy (EPT). With EPT, the patient notifies the partner and provides them with prescriptions to be filled. One downfall with this practice is that it does not provides the partner the chance to ask questions, but it does prevent recurrent Chlamydia and gonococcal infections (2018).

Review of Study

The peer-reviewed literature detailed the implementation of effective interventions to enhance screening behaviors of providers in ordering routine STI screening in primary care. Taylor et al. (2016) concluded that provider and patient education had limited benefit toward improving STI screening. In addition, (2016) argued that a provider or clinic level-based advocacy, feedback on performance, and protocol development are essential in implementing screening more efficiently. A collaborative partnership between primary care and STI programs or agencies can influence the successful implementation of screening protocol (2016). The interventions apply to a clinic-based setting and this QI project will be conducted in a primary care setting, therefore there is a higher chance for a successful implementation. Clinics can effectively adopt strategies to improve screening and minimize STI prevalence.

Studies have demonstrated that primary care providers are hesitant in obtaining a complete medical history and an in-depth assessment of patients' sexual behavior due to lack of time (Silapaswan et al., 2016). A study conducted in New York City in 2015, during four weeks, compared the screening ratio between infectious disease specialists and primary care providers. In conclusion, it demonstrated a need for educational intervention and its dissemination for primary care clinicians to be more inclined to do routine STI screening (2016). Moreover, it concluded that the current 6200 infectious disease physicians alone in the U.S are not enough to provide the needed STI screening and PrEP initiation, therefore the need to emphasize this QI project of STIGI implementation in this primary care clinic.

Project Rationale

This QI project is an evidence-based STI screening protocol with a goal of promoting diagnosis and standardizing treatment within the primary care clinic. In the timeframe of this QI DNP project, the host site will:

1. Implement STIGI protocol
2. Administer an education seminar for the multi-disciplinary team to train on the STIGI protocol.
3. Improve provider compliance with national standards of care pertaining to STIGI in the primary care.
4. Increase STI screening rate by 10% for patients who come into the clinic with concerning abnormal symptoms.

Theoretical Framework

A Formal theoretical and conceptual framework is utilized to explain the need for STI screening in the primary care and justify the needed interventions. Lewin's Change Model (LCM) will construct this QI project. STIGI implementation at the host site will provide is an evidence-based protocol that requires change. Such change will be achieved through the three stages of Lewin's theory: unfreezing, change, and refreezing (Burnes, 2020). See Appendix A.

LCM can play an integral role in changing the population's knowledge on STIs, therefore impacting the screening rates by unfreezing the misconception linked to the lack of STI education. Change is the second phase in the Lewin's model, and it encompasses actively changing a person's behaviors through change implementation (Elliott, 2020). During this phase, problems linked to the implementation of change are determined and evaluated to successfully implement the needed change. Flexibility, communication, follow-up, and assessment are

essential during the implementation phase so people can learn new ways of problem solving. In the third phase, refreezing, change becomes a habit and it is the new standard. A new strategy of change is recognized and implemented during this phase. To increase the individual's performance and confidence, reinforcement such as rewards, praise, and support are crucial (Malik et al., 2015).

Historical Development of the Theory

Kurt Lewin was a groundbreaker at his time in the field of Psychology. His work has influenced generations to come, from the theories he developed, the methods of research he used, and the people he positively changed, all profoundly impacted psychology and, even more specifically, Social Psychology (Marrow, 2021). Lewin was born in 1890 in what is now Poland. When Lewin was fifteen, his family moved away from their small village to Berlin (Marrow, 2021).

After the war in 1921, Lewin began work at the Psychological Institute at the University of Berlin, where he had the opportunity to work with Wolfgang Kohler and Wertheimer, the developers of Gestalt Psychology (Marrow, 2021). The research accomplished while working in Berlin with those two researchers had a tangible impact on Lewin's work and lasted until his death in 1946 (Burnes & Bargal, 2017). The authors state that in 1932, Lewin was invited to be a visiting professor at Stanford University. After staying in the United States for six months, Lewin returned to Germany. Just as Hitler came into power, Lewin moved back to the United States and started a job at Cornell, where he stayed for two years. During his employment, Lewin published eight books, one of them was "A Dynamic Theory of Personality" (2017). After the exhaustion of funding at Cornell, Lewin took a position at the University of Iowa at their Child Welfare Research Station, where he stayed for ten years (Marrow, 2021). In 1945, he moved

back to the east coast and established two new research centers of his own; one at Massachusetts Institute of Technology (M.I.T.), The Research Center for Group Dynamics, and one in New York, the Commission for Community for Community Interrelations (2021). Lewin worked long hours and travelled between his two research centers raising funds for his researchers. Many attribute his workaholic lifestyle to his early death at the age of 56 to a heart attack (2021).

Lewin's most notable contribution to the world of psychology was his field change theory. Such theory proposes that "behavior is a function of the person interacting with the environment" (Hutchinson, 2018). The model's simplicity is an exquisite and unbelievable practical guide to the host of complicated and sometimes confusing issues essential to the change process. However obvious or simple this idea may seem to us now, almost seventy years later, this was indeed a revolutionary idea for its time.

Even though Lewin's field theory was a crucial step forward for Psychology and himself, it was not by any means his only significant contribution to the psychological field. First, he chose to establish the Research Center for Group Dynamics at M.I.T., where the institution is known for its hands-off policy regarding its limitation on research and research methods. The M.I.T. stand on the professor-administration relation was, "We hired you because you are an expert in the field, and if that is what you want to do, go ahead (Patnoe, pg.14)." This approach gave Lewin and his group an amplitude of freedom to create and try methods of research and experimentation never tried before, allowing for a uniquely productive environment (Patnoe, 2013). However, Lewin did not only broaden his research techniques at M.I.T. He was known in his field for consistently raising the bar in whatever he participated. Lewin always made people around him believe their work was essential. Students and colleagues working at different times and institutions have said they felt "doing important work" (Patnoe, 2017, pg. 15).

Kurt Lewin's work in Child Psychology, Group Psychology, Social Psychology, the psychology of prejudice, and his new methods of testing and retesting theories through Action Research were all groundbreaking at the time and continue to have their impact on the psychology field today (Murraw, 2021). The authors proceede to state that Lewin was not only a genius in terms of his work in Psychology, he also had a remarkable ability to make the people that he was working with better at their work. The group that Lewin worked with at M.I.T. at the end of his life was incredibly influential to today's psychology. A study in 1984 showed that eight of the ten most-cited social psychologists are direct descendants of this line of researchers (Murraw, 2021). Therefore, it is fair to say that Kurt Lewin was the father of modern Social Psychology (Billig, 2017).

Application of Major Tenets of Theory /Framework to DNP project

LCM has three major concepts: Unfreeze, change, and refreeze.

Unfreeze

The unfreezing phase of this model can play an integral role in changing the population's knowledge on STIs and impact the screening rates by unfreezing the misconception linked to the lack of STI education. According to Lewin, during the unfreezing phase, the stability of human behavior is based on a quasi-stationary equilibrium supported by a complex filed of driving and restraining forces (Burnes, 2004).

In order to have all stakeholders on board with the unfreezing phase of the QI project, it will be essential to provide statistical data on current STI rates, patients complications, at-risk populations, and reinfection rates of the clinic to the healthcare providers. This information will be provided via PowerPoint Presentations during informal morning meetings. In addition, the current practice settings will be compared to the CDC guidelines. While educational sessions

should be interdisciplinary, some groups, such as physicians, are likely more receptive to information when it is provided by other physicians (Elliot, 2020). The Project Mentor (P.M.) of the QI project will lead breakout provider education efforts. Several education strategies described in the literature focus on changing (unfreezing) physician behavior (2020):

- Provide physicians with educational information flyers consisting of research literature, evidence-based reviews, specific clinic data, and national STI guidelines.
- Conduct round table discussions with the clinic staff with the purpose of identifying barriers that need to be overcome.
- Utilize informal educational talks during morning huddles to disseminate information. During such meetings, staff can speak up about obstacles, errors, and opportunities for improvement.
- Conduct educational teaching, such as virtually bringing a skilled field expert, such as infection disease doctor as a guest speaker during a zoom meeting with the staff.

This unfreezing phase will reduce resistance and will help readiness for change.

Change

Change is the second phase in Lewin's model, and it encompasses actively changing a person's behaviors through change implementation (Elliott, 2020). During this phase, problems linked to the implementation of change are determined and evaluated so the change can be implemented successfully. Flexibility, communication, follow-up, and assessment are essential for people to learn new problem-solving methods. During the change phase, selected staff members will be educated on:

- Monitoring providers' adherence to the STIGI implementation protocol via Electronic Health Records reports.

- Actively involving the nursing staff, especially triage personnel, to create a feeling of ownership of the success of this project.
- Use daily multidisciplinary rounds and creation of independent checks to incorporate standardized change. Daily routine tasks should follow a structured format: discuss the clinic goals for that day, determine each staff member role, give them available resources, giving them the freedom of necessary actions to achieve the daily goals, and close any communication gaps regarding providers-patients.
- Any potential barriers and/or any safety issues should be identified.

Refreezing

In the third phase, refreezing, change becomes a habit, and it is the new standard. Strategy of change is recognized and implemented during this phase. To increase the individual's performance and confidence, reinforcement such as rewards, praise, and support are crucial (Elliot, 2020). During the refreezing, the employee is involved in the change, and is motivated by it (Hussain et al., 2018). The clinic should share the staff knowledge and provide praise in order for the change to be maintained.

Settings

The DNP project will be conducted at a primary care clinic. This facility is an internal medicine clinic, and a teaching medical facility since medical students from Ross University are doing clinical rotations on ongoing business. It is located in the Miami suburbs, and it is privately owned by two Medical Doctors who work full time at the clinic. This clinic has 12 examining rooms. There are also four mid-level providers whom the clinic directly employs.

The EHR used is NextGen.

Population of Interest

Direct Population of Interest: All sample health care providers at primary clinic who agreed to participate in this QI project.

Indirect Population of Interest: Patients presenting with symptoms of STIs.

Inclusion Criteria

a. Primary care healthcare providers who work full time at the clinic during this QI Project.

Exclusion Criteria:

a. Primary care providers who were not available during the data collection period.
b. These who were on vacation on any kind of absence after the project was implemented but was not completed yet.

Stakeholders

There is no need of a clinical agreement between the parties to this QI project to be conducted. The implementation of STIGI DNP QI project is to be conducted by the project lead.

Health professionals cannot dismiss their duties successfully without understanding their roles and responsibilities concerning patient care delivery. In contrast, it is essential to realize their roles; it's equally vital to recognize those of other professionals and establish an alignment between their roles and their peers. Afterall, effective coordination and collaboration cannot be achieved without defining the specific roles and responsibilities of each person. The complex nature of delivery systems and unpredictable economic factors have prompted the need to use shared expertise and abilities which are patient-oriented (O'Rourke et al., 2018)

In this QI project the stakeholders include the medical providers, registered nurses, clinical educator, clerical staff, front desk staff, and patient care assistants.

Medical providers will be committed to applying STIGI and, therefore, will increase patients' experiences and outcomes and, at the same time, will improve their expertise by knowing they are directly contributing to the better health of the population of interest. Registered nurses and the clinical educator will carry out interdisciplinary process to meet organizational QI goals and will measure and control nursing-sensitive indicators affecting, such as collection of STI specimens, that can affect patient outcomes specific to the outcome of STIGI. The clerical staff and front desk personnel will work well and closely with the other team members, especially registered nurses. In particular, they will be taught to understand the full impact of their tasks and activities, such as data collection, on the project's outcome.

Interventions

The success of this project depends directly on the practical implementation of interventions needed. Six medical providers, including two medical doctors and four advanced practice providers, participated in this project. The immediate intervention is to supply providers with a copy of CDC STIGI (Appendix B).

The clinic holds mandatory staff huddles on Wednesdays at 0800 before the initiation of clinical operations. Lazarus et al. (2014) argue that round table discussions create an atmosphere of cooperation and search for collaboration to be effective and collective. During this collaborative discussion where all providers are required to attend, education training can be disseminated, such as STI PowerPoint presentation. In addition, the staff can speak up about obstacles, errors, and opportunities for improvement.

The Electronic Medical Record (EHR) summary will help to guide the STI screening rate of each provider. EHR summary report will be conducted four weeks pre- and four weeks post-project implementation. During this data collection, a chart audit of each provider will be conducted using the following ICD10 billing code: Z20.2 Contact with and (suspected) exposure to infections with a predominantly sexual transmission mode. Patients diagnosed under ICD10 Z20.6 billing code "Contact with and (suspected) exposure to human immunodeficiency virus (HIV) will be excluded from data collection unless also billed with the Z20.2 code.

The time frame for this QI project is six weeks and will start at the end of DNP763. During the last two weeks of DNP763, medical providers will be recruited. Week 1 of DNP767, during fall 2021, will present staff with education and obtaining the initial EHR summary reports of each medical provider. Week 2 will provide support to the medical providers and staff, and during week 3, the project's implementation will continue. In weeks 4 and 5, data analysis utilizing will be performed. Completion of analysis will be performed at week six after implementation.

Week 1	EHR summary reports four weeks before implementation. PowerPoint presentation to providers and clinical staff
Week 2	CDC STIGI protocol supplied to medical providers; questions related to its implementation answered
Week 3	CDC STIGI implementation continues.
Week 4	Analysis of EHR summary reports four weeks after CDC STIGI Implementation.
Week 5	Continuation of data analysis.
Week 6	Chart audit completion six weeks after implementation.

Tools

Tools utilized for this QI project are: CDC STIGI protocol, chart auditing tool, EHR summary reports, and educational materials.

CDC STIGI Protocol

The medical providers were supplied with the CDC STIGI, which includes pharmacological treatment recommendations of STIs (Appendix B). A large print of the protocol was placed on the bulletin board at the medical lounge as well. In addition, a flyer to recruit participants for this QI project was placed at the elevator and at the medical lounge (Appendix C). The STIGI information was derived from the CDC website, which is a reliable, evidence-based source of up-to-date information.

The CDC created the STIGI with the goal of timely detection and treat STIs in clinical settings (CDC, 2017). There is no permission needed for the use of CDC STI treatment protocol.

Chart Auditing Tool

An Excel file was developed by the DNP student in collaboration with the Project Mentor at the host site as a necessary tool for measuring objectives and carry out interventions of the QI project (Appendix D). This chart review tool will summarize the number of patients seen by each provider with ICD10 Z20.2 pre- and post-implementation of STIGI. In addition, this chart will synthesize if the protocol was followed for EBD, with an addition of a compliance column with code 1 for Yes and 2 for No, allowing two separate data points can be obtained. Content experts evaluated this Excel file at the host site and the review of the project team members.

EHR Summary Reports

The compliance by providers with the STIGI implementation will be determined solely upon the comparison between the EHR summary report of each provider four weeks pre-intervention and four weeks post-intervention (Appendix E). This tool was evaluated for validity through a review of content experts at the project site and the project team members.

Education Materials

Training of medical providers and clinical staff was done through PowerPoint presentation (Appendix F). Permission to use CDC PowerPoint STI is located in Appendix G. The presentation has data obtained directly from the CDC on prevention and treatment recommendations. The Project Mentor reviewed the presentation at the host site, the Project Team, and a few critical stakeholders before its use as an educational tool.

Study of Interventions/Data Collection

Quantitative data will be collected via charts electronically obtained via EHR report. There will be six providers participating in the QI, and the data of each one will be analyzed individually. From the EHR report, a total of 75 charts from all six providers with the ICD10 code Z20.2 will be audited four weeks pre-implementation of STIGI. The data collected will be manually added to a chart auditing tool (Appendix D). An independent variable (STIGI protocol) will then be implemented. Four weeks post-implementation, an EHR report will again be run, and collectively 92 charts with the same ICD10 code Z20.2 will be obtained. The data collected of each provider from both EHR reports will be manually entered into the chart auditing tool (Appendix D), placed into six individual provider slots in the chart auditing tool. A comparison analysis will be made between the pre-and post-implementation to determine if there was an increase in the dependent variable – provider's behavior – when they were faced with a patient complaining of STI symptoms. To ensure the maintenance of patients' confidentiality, a mandatory training session will be done during the weekly huddle providing education about the protocol, and the maintenance of patients' confidentiality will be stressed during the huddle. Attendance will be taken during the training session.

The data collection will align with the project aim to optimize STI screening in primary care utilizing Lewin's change theory to improve early detection and treatment. The result will be evidence-based knowledge related to the treatment of STI.

Ethics/Human Subjects Protection

The DNP student completed the Collaboration Institutional Training Initiative (CITI) Social & Behavioral Research – Basic/Refresher course in August 2021. The course was targeted towards training investigators and staff involved primarily in Social/Behavioral Research with human subjects. This project is conducted as a Quality Improvement Program. Therefore, there is no risk to the human subjects and is not formally supervised by the Institutional Review Board (IRB) per their policies. Therefore, there is no need to seek approval from the IRB, and Touro University Nevada does not require IRB for QI projects. To ensure ethical implementation of the project, the confidentiality, and protection of human subjects were maintained, no patient names or identifying data were utilized. All participants followed the Health Insurance Portability and Accountability Act (HIPPA), and there was no direct contact with any patients. Recruitment of providers to participate in this QI project was done with a flyer (Appendix C). There was no monetary compensation for participation in the project other than the incentive of a free lunch to the clinical staff provided by the DNP student.

Measures/Plan for Analysis

Fisher’s exact test statistical test will be used to determine whether or not there is a significant increase in STI screening rate increase by each of the six medical providers, analyzed individually after the implementation of STIGI. It will be utilized for comparison four weeks pre- and four weeks post-implementation of STIGI by each provider. Fisher's exact test was chosen because it can be utilized to analyze contingency tables. According to Kim (2017), even

though Fisher's exact test is employed when the sample is negligible in practice, it is valid for all sample sizes. In addition, it is one of the exact tests, so-called because the significance of the deviation from a null hypothesis can be calculated precisely, rather than relying on an approximation (Kim, 2017). The goal is to test whether or not the categorical variables (ICD10 code Z20.2) are associated with one another. The null hypothesis(H1) is that there is no significant difference between the two categorical variables, and the alternative hypothesis (H2) is a difference between these two variable categoricals.

Data analysis to evaluate an increase in evidence-based practice (EBP) regarding STI screening and management by each provider will be done by chart review. The chart review tool will have two compliance columns saying “protocol-followed for EBP” with 1) Yes and 2) No. The EBP compliance analysis will be evaluated by comparing the utilization of the protocol by each provider four weeks pre- and four weeks post- STIGI implementation. Such comparison will be done utilizing McNemar’s test. This particular test was chosen due to its ability to identify each provider's compliance with STIGI protocol correctly (Kim & Lee, 2016). Analysis of compliance behavior of each provider four weeks pre- STIGI protocol implementation (reference test) and the compliance four weeks post- STIGI protocol implementation will be done. The comparison will be made to find out if these two tests' results disagree with each other. The McNemar's test will be able to analyze with a particular degree of reliability whether the STIGI protocol implementation will be able to cause a change in the providers' behavior by its statistical result of significance. In the analysis of its results, the higher the level of significance, the higher the level of certainty that indeed the implementation will cause a positive change.

Electronic Health Records summary reports four weeks pre and four weeks post-implementation will be obtained via NextGen Software. All the data collection and analysis

along with all available information will be submitted to a statistician, and feedback will be followed.

Analysis

This QI project aimed to implement the STIGI protocol as a standard for STI screening and treatment in primary care for early detection and treatment of STIs. Pre-implementation chart audits of all six providers totaling 75 charts were performed to determine medical provider compliance with STIGI when presented with patients complaining of STI symptoms (Table 1). To increase the effectiveness of STIGI implementation, education was provided to the entire team during the first day of its implementation. Once the education and training were completed, STIGI protocol was supplied to all providers. In addition, support to providers was provided throughout the implementation period, and all of the providers' questions were answered by the end of each day. Post-implementation chart audits of 79 charts were collected on the last day of week four of project implementation (Table 1).

Table 1. Chart Auditing tool – Pre- and Post- Implementation and compliance column with 1 for Yes and 2 for No

Providers	Z20.2-Pre	Z20.2Post	Compliance
Prov1	19	24	1
Prov2	9	7	1
Prov3	23	12	2
Prov4	10	18	2
Prov5	10	15	1
Prov6	4	3	2
TOTAL	75	79	3/3

Fisher's exact test was used to determine whether there was a significant increase in the STI screening rate at the end of week four of each medical provider by analyzing each of the 79 charts for compliance of STIGI by determining if STI screening was appropriate and completed. The alternative hypothesis prior to STIGI implementation was that with consistent use of STIGI, the STI screening rate would increase by 10% for patients who come into the clinic with concerning abnormal symptoms. The null hypothesis(H1) was that there would be no significant difference between the two categorical variables. The *p*-value represents the significance of STIGI implementation. If the result of the *p*-value was more than 0.05, it signifies that implementation of STIGI positively increased the STI screening rate (Di Leo & Sardanelli, 2020).

The *p*-value was below 0.05 ($p = 0.8220$), with the confidence interval +/- -0.67. Fisher's paired t-test shows a 95% confidence interval of the difference from -7.90 to 6.56 and a standard error of the difference of 2.813. By conventional criteria, the implementation of STIGI did not have a statistically significant effect on the STI screening rate. Therefore, the alternative hypothesis was rejected (Tables 2 and 3).

Table 2. STIGI Effects on Providers' Behavior with compliance column with 1 for Yes and 2 for No

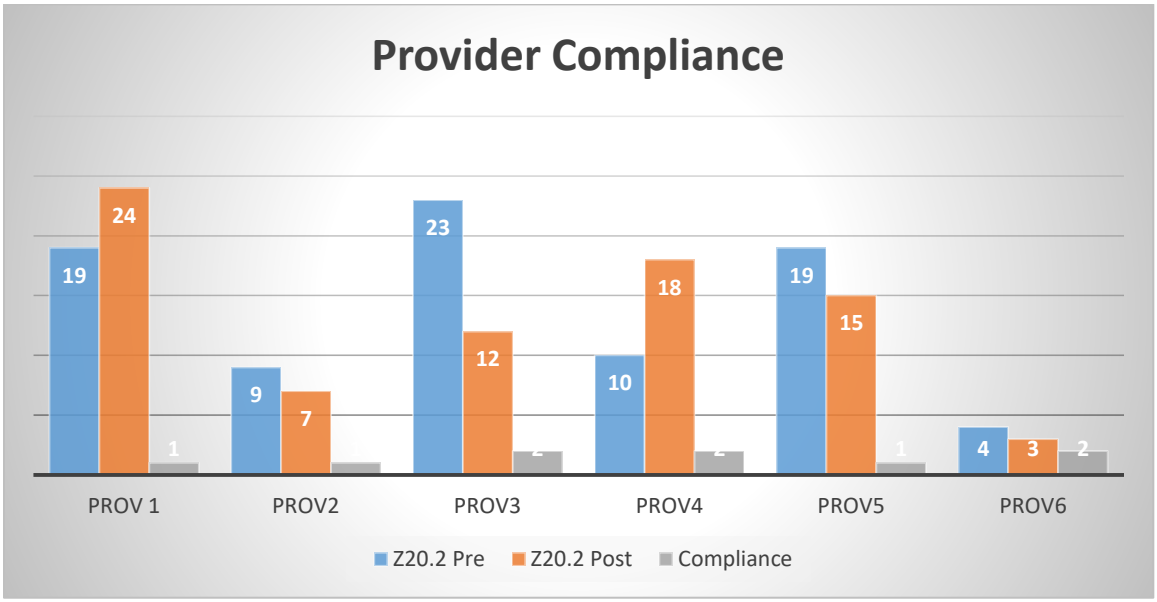


Table 3. Fisher's exact test:

p- value after four weeks of STIGI protocol ……0.8220 Confidence interval: The mean of Z20.2 Pre minus Z20.2 Post equals -0.67 95% confidence interval of this difference: From -7.90 to 6.56 Intermediate values used in calculations: t = 0.2370 df = 5 standard error of difference = 2.813		
Group	Z20.2 Pre (N = 6)	Z20.2 Post (N = 6)
Mean	12.50	13.17
SD	7.06	7.57
SEM	2.88	3.09

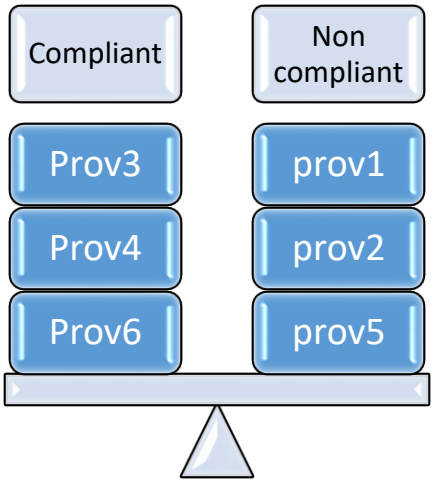
McNemar's test was utilized in the EBP compliance analysis evaluation by comparing the protocol utilization by each provider four weeks pre and four weeks post STIGI implementation. Each provider was analyzed individually. Post implementation, collectively out

of six providers, only three were compliant with STIGI. If there were no association between STIGI and improvement in providers' behavior adhering to the protocol, it would be expected that when providers were faced with patients complaining of STI symptoms, the providers would show no adherence to STIGI implementation. In this QI project, six providers represented six discordant pairs. There were three (50.00%) pairs exposed to STIGI, but their adherence to it was unchanged, and three pairs, the other 50.00%, demonstrated adherence to the STIGI protocol (Table 4). The two-tailed *p*-value was equal to 0.6831, demonstrating that continuity correction was low. The result analyzed showed no statistically significant association on provider's adherence to STIGI protocol ($p = 0.6831$). (Table 5).

Table 5. McNemar's Test

P Value: The two-tailed *p*- value equals 0.6831 The *p*-value was calculated with McNemar's test with the continuity correction. Chi squared equals 0.167 with 1 degrees of freedom. Odds ratio: The odds ratio is 1.000, with a 95% confidence interval extending from 0.134 to 7.466				
Conclusion of Analysis		STIGI +	STIGI -	Total
Compliance	+	0	3	3
	-	3	0	3
Total		3	3	6

Table 4. Post- Implementation: 50% (3 providers) were compliant and 50% (3providers) were non-compliant with STIGI.



Discussion and Significance

The United States must address the low STI screening rate by optimizing STI screening in primary care since primary care is the main gateway into healthcare (Moore et al., 2021). Therefore, the purpose of the DNP QI project was to Implement STIGI into a private primary care clinic located in the Miami suburbs to increase early diagnosis and standardize the timely treatment of STIs. This QI project had four objectives to be achieved within six weeks' project time frame. The first objective of the project was to administer an education seminar for the multi-disciplinary team to train on the STIGI protocol. This objective was implemented successfully during the clinic's mandatory staff huddle on the first Wednesdays of project implementation, and all participants were receptive to the QI project. In addition, the training session increased awareness about the importance of accurate screening, early detection, and treatment of STIs. The second and third objectives were to implement STIGI and to improve provider compliance with EBP national standards of screening and treatment of STIs in primary care, respectively. STIGI was implemented successfully and to measure providers compliance

with protocol, a comparison analysis of pre- and post-implementation charts was obtained. Pre-implementation audit of 75 charts demonstrated medical providers' adherence to STIGI to be 82%. A post-implementation audit of 79 charts showed medical provider adherence to the protocol at 78%. In addition, post-implementation, three medical providers increased their screening rate by adhering to STIGI, while the other three providers decreased their screening rate of STIs. Hence, the third objective did not achieve the desired goal of improving provider compliance with national standards of care with STIGI implementation.

The fourth objective was to increase STI screening rate by 10% for patients who come into the clinic with abnormal symptoms. Per analysis, the implementation of a national evidence-based guideline compared with the absence of routine screening did not increase providers' behavior over six weeks. The project outcome showed that adherence to STIGI by all six providers did not have a significant improvement in the STI screening rate. Therefore, the medical providers' behavior was not positively changed, and screening did not achieve a 10% increase rate.

Significance

The project question sough to answer the following PICOT question: In a Primary care setting (P), does the implementation of routine STI screening (I), when compared to the absence of routine screening (C), increase screening behaviors of providers (O) over six weeks? The national CDC screening guidelines are regarded as clinical guide rather than mandatory standards. Healthcare providers must consider all clinical circumstances of each person when making a final diagnosis and implementing treatments. Guidelines apply to any patient care setting that serves persons at risk for STIs, including family planning clinics, HIV care clinics, correctional health care settings, private physicians' offices, Federally Qualified Health Centers,

clinics for adolescent care, and other primary care facilities (STI Prevalence, Incidence, and Cost Estimates, 2021). These guidelines focus on treatment and counseling and do not address other community services and interventions essential to STI and HIV prevention efforts. Implementation of the national guideline protocol at this clinical site aimed to increase effective diagnosis, treatment, counseling, and follow-up of infected persons with an STI. Providers' screening behavior was not improved after implementing the national guideline. Even though all participants demonstrated positive reception of this QI project, a QI process was followed, and EBP was implemented successfully, the final results did not indicate a positive effect on the medical providers' behavior. Thus, it did not fulfill its primary objective, which was to increase the screening behaviors of providers over six weeks. The implementation of STIGI provided a supportive framework for STI testing and treatment at the host site. Despite the result of this QI project, the continuation of adherence to EBP can improve the delivery of quality of care at the host site due to its clientele of low-income, minority communities, which is particularly vulnerable to STI transmission.

Implications to nursing

This QI project was developed to improve STI screening and early treatment by implementing STIGI protocol, educating staff of the importance of its application in the primary care setting. Nonadherence to STIGI and the unchanged medical providers' behavior can lead to poor patient outcomes and have the potential to impact not only the individual's health, but that of their partners' ("Call for Screening After Surge in Sexually Transmitted Infections," 2015). The QI project is very significant to nursing because primary care is the gateway and initial point of care for many STI patients (Rietmeijer, C. A., 2019). In addition, this QI project applies to the particular clinical site due to its location in Miami's suburbs, and its clientele is primarily

underprivileged minorities, including the Latino, black, gay, and transgender communities. Therefore, this facility displays an urgent need for the implementation of STIGI in order to assure appropriate screening, timely diagnosis, and early treatment of STIs. The education and EBP had a positive impact, but the QI project had limitations. The hope is that the QI process will continue moving forward and early diagnosis and treatment of STIs will be standardized in this primary care practice. Providers will continue to improve screening and STI treatment across this very diverse clinical setting and improvement of delivery of care will persist.

Limitations

Three essential limitations were identified during the implementation of this QI project: sample size, length of implementation, and collection method.

The first and foremost limitation was the minimal sample size (N=6), which consisted of six providers. However, it was noted, all clinical staff attended the education seminar, and all providers received a pocket copy of the CDC national STIs screening and treatment guidelines at the first week of project implementation to enhance adherence to STIGI. Sample size affects the precision and replicability of results, thus negatively affecting the likelihood of statistical power to detect existing effects and reflect the actual effect of the study (Varoquax, 2018). In addition, it is vital to add that bias can be introduced when a small sample size is selected from a narrow population, which was the case of this QI project. Their adherence to STIGI could have been due to their strong feeling about the project topic or the possible empowerment and ethical obligations towards patient care (Berberoglu, 2018).

The second limitation was the short-term project implementation. The time frame of the entire project was six weeks. Short-term projects typically have a limited impact on the immediate environment because they are usually initiated to analyze and possibly solve a

specific problem or situation, and once the issue is resolved, the team is dissolved (Youker, 2017). In contrast, longer-term projects considerably impact the organization (Youker, 2017). For example, a long-term QI project could analyze the screening and early treatment of STIs at the clinical site while committing the providers to implement the protocol for the entire duration of the long-term project. In addition, a long-term project can make positive changes while maintaining consistency and continuity of STIGI utilization.

The third significant limitation was in regards to data collection. The data focused on 75 and 79 patients' charts, pre- and post- implementation, respectively. The number of charts analyzed may have led to the lack of statistically significant results. In addition, the data collection was not from the same group of participants pre- and post-intervention. By having the same group with outcomes measured at two-time points may have achieved a statistically significant result. Often, test re-test reliability analyzes conducted with the same group over two time-points (T1, T2) over a relatively short period of time, may signify a internal validity of a test and ensure that the measurements obtained in one sitting are both representative and stable over time (Williams & Smith, 2018). Without a good reliability it is difficulty to trust the data provided by the analytical test results as an accurate representation of the participants' performance.

Dissemination

The dissemination of this QI project's findings plays a significant role in communicating to healthcare providers and stakeholders at the site of the project's outcome. In addition, such dissemination might empower the staff to improve the process of STIs screening and treatment since they play a vital role in improving health care services at the clinic. A PPT will display the results, and it will be shared to entire staff during their mandatory meeting on Wednesday,

March 22nd, 2022, at 0800. The PPT will include the advantage of STIGI implementation and the data obtained from this QI project. Such dissemination will aim to create professional resources vital to improving STI screening and early treatment in a primary care setting.

This QI project and results of evidence will be shared on the Doctoral Project Repository at https://www.doctorsofnursingpractice.org. Although this archive is not peer-reviewed and does not qualify for publication, DNP graduates can disseminate their work and share their scholarly products with their communities and peers.

The caveat will be sharing the QI project entirely with students and instructors of the Doctor of Nursing Practice program at Touro University, Nevada, via Zoom on February, 15th 2022.

In addition, the results of QI project should be considered for publication in a peer reviewed journal. An abstract will be submitted to the *Journal of the Association of Nurses in AIDS Care (JANAC)* which is the official journal of the Association of Nurses in AIDS Care (ANAC). *JANAC* is a bi-monthly peer reviewed nursing journal publishing original articles that focus on a broad spectrum of issues related to HIV, from the perspectives of nursing, public health, behavioral health, and medicine. An abstract will be submitted by the project lead to tentatively present a poster at the ANAC Annual Conference in Tampa, Florida in November 17-19, 2022.

Sustainability

STIs are a serious health concern and monetary burden for the United States. Recently, their prevalence has risen significantly (CDC, 2019). In addition, STIs are generally asymptomatic and can lead to substantial morbidity and health problems if left untreated.

Therefore, it is crucial to establish and maintain an evidence-based tool (STIGI) in primary care to improve STIs' early detection and treatment. Although the comparison of pre- and post-STIGI implementation was not statistically significant, when considering the limitations, Lewin’s Change Model was appropriate to create significant change and increase awareness on using the standardized tool. Thus, the utilization of evidence-based practice in primary care creates positive changes in patients' outcomes.

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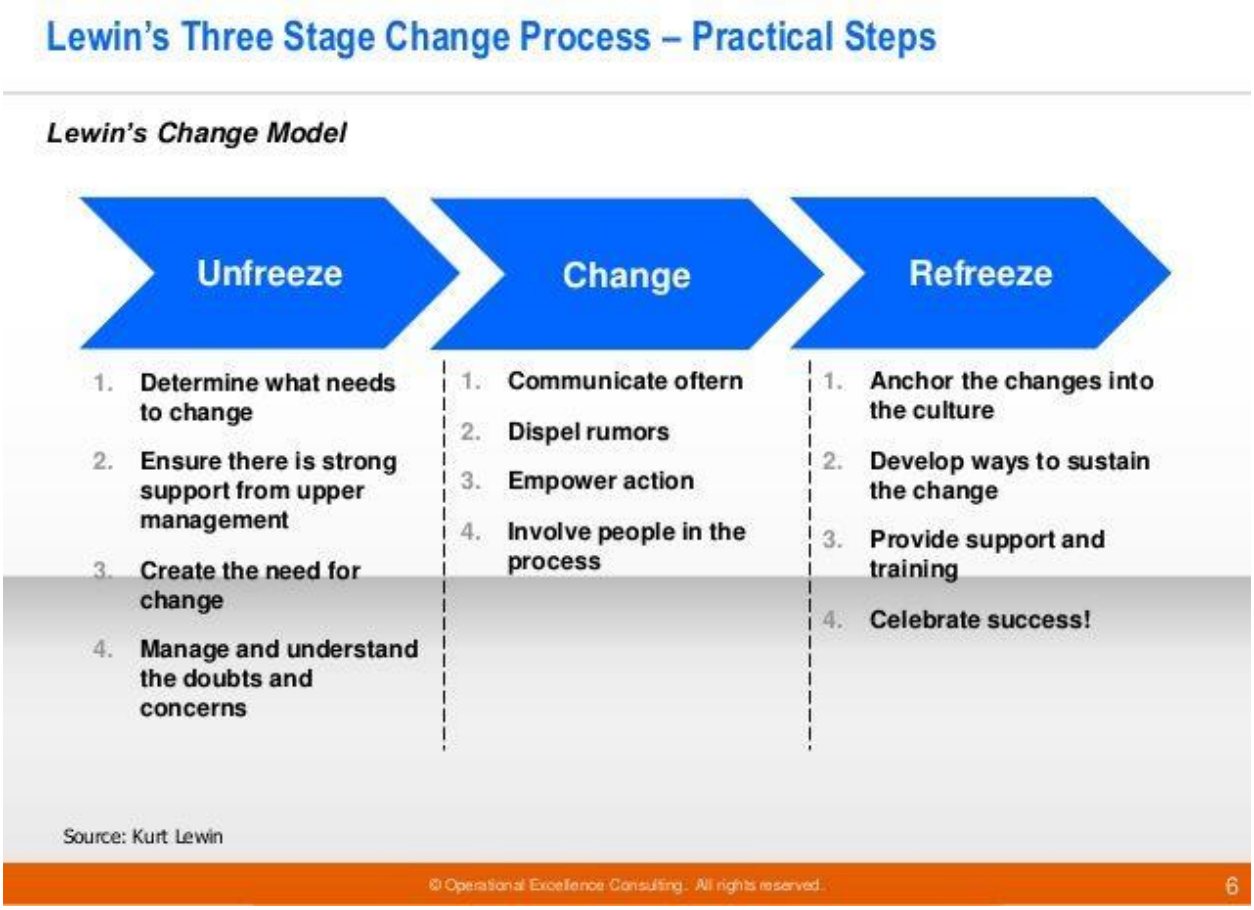
Appendix A


Lewin's Three Stage Change Process – Practical Steps
Lewin's Change Model
Unfreeze
1. Determine what needs to change
2. Ensure there is strong support from upper management
3. Create the need for change
4. Manage and understand the doubts and concerns
Change
1. Communicate oftern
2. Dispel rumors
3. Empower action
4. Involve people in the process
Refreeze
1. Anchor the changes into the culture
2. Develop ways to sustain the change
3. Provide support and training
4. Celebrate success!
Source: Kurt Lewin
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6

Appendix B

CDC STIGI Treatment Protocol

"This pocket reflects recommendations found in CDC's Sexually Transmitted Infections Treatment Guidelines, 2021. This summary is intended as a source of clinical guidance. When more than one therapeutic regimen is recommended, the sequence is in alphabetical order unless the choices for the therapy are prioritized based on efficacy, cost, or convenience. The recommended regimens should be used primarily; alternative regimens can be considered in instances of substantial drug allergy or other contraindications. An important component of STI treatment is partner management. Providers can arrange for the evaluation and treatment of sex partners either directly or with assistance from state and local health departments. Complete guidelines can be viewed online at https://www.cdc.gov/std/treatment/". This booklet has been reviewed by CDC in July 2021.

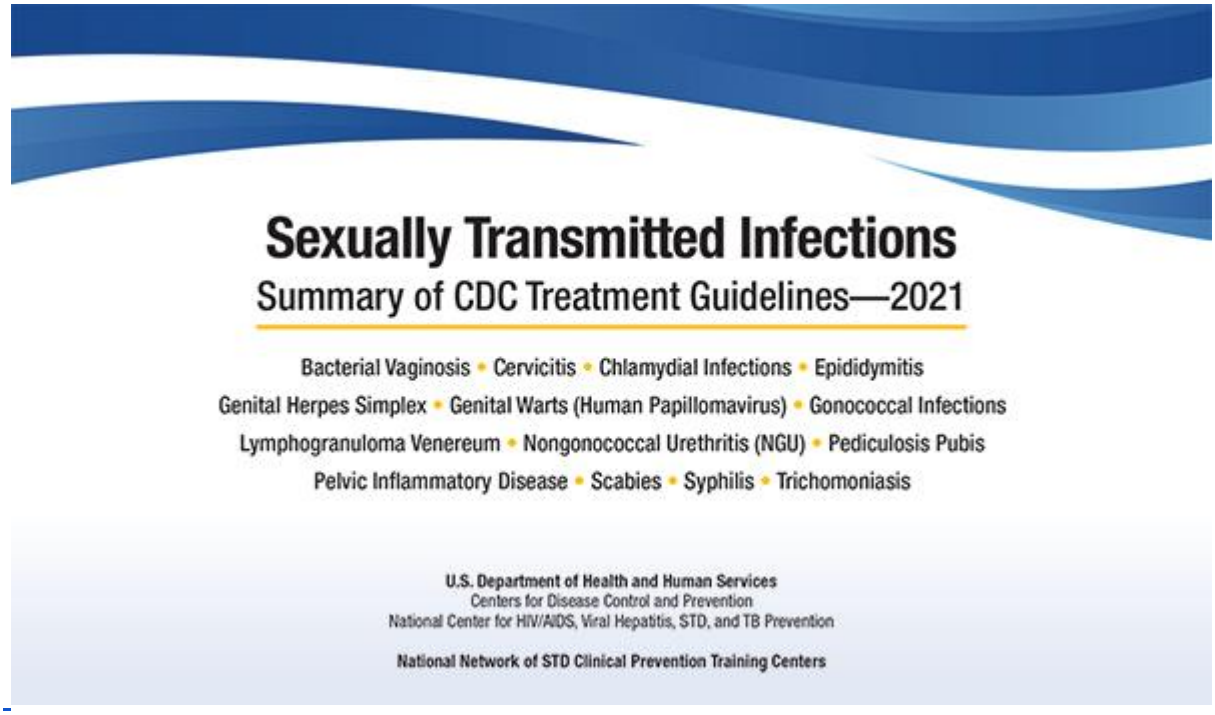
Accessible version: https://www.cdc.gov/std/treatment-guidelines/default.htm

CDC STI pocket guide treatment link:

CDC_STI_pocket-guide.pdf

Appendix B

CDC STIGI Treatment Protocol



Appendix C

Flyer for recruitment of participants for DNP QI project

Appendix D

Chart Auditing Tool

Providers	Z20.2-Pre	Z20.2Post	Compliance
Prov1	19		
Prov2	9		
Prov3	23		
Prov4	10		
Prov5	10		
Prov6	4		

Appendix E

EHR Summary Report

Provider	MRN	Date of Birth	Age	Sex	Billable Enc	Enc Number	Enc Date	Appt Kept	ICD_10
1	1021	12/19/1988	32	M	Y	1267013	08/18/2021	Y	Z20.2
1	1021	12/19/1988	32	M	Y	1261181	08/10/2021	Y	Z20.2
1	1021	12/19/1988	32	M	Y	1255592	08/02/2021	Y	Z20.2
1	1736	1/1/1982	39	M	Y	1258590	08/05/2021	Y	Z20.2
1	1845	10/21/1987	33	M	Y	1259448	08/06/2021	Y	Z20.2
1	1845	10/21/1987	33	M	Y	1240841	07/12/2021	Y	Z20.2
1	4428	11/7/1947	73	M	Y	1255910	08/03/2021	Y	Z20.2
1	4428	11/7/1947	73	M	Y	1252521	07/28/2021	Y	Z20.2
1	4428	11/7/1947	73	M	Y	1235581	07/01/2021	Y	Z20.2
1	5774	1/9/1995	26	M	Y	1261735	08/10/2021	Y	Z20.6
1	7454	2/27/1978	43	M	Y	1259339	08/06/2021	NULL	Z20.2, Z20.6
1	7454	2/27/1978	43	M	Y	1259573	08/06/2021	Y	Z20.2, Z20.6
1	7884	9/6/1983	37	M	Y	1270703	08/24/2021	Y	Z20.2
1	7884	9/6/1983	37	M	Y	1266907	08/18/2021	Y	Z20.2
1	8139	9/10/1978	42	M	Y	1239853	07/09/2021	Y	Z20.2, Z20.6
1	8399	2/8/1993	28	M	Y	1256363	08/03/2021	Y	Z20.2
1	9813	10/2/1994	26	F	Y	1263260	08/12/2021	Y	Z20.2
1	12678	6/16/1991	30	M	Y	1253622	07/29/2021	Y	Z20.2
1	13719	9/14/1990	30	F	Y	1263090	08/12/2021	Y	Z20.2
1	13723	8/6/1985	36	M	Y	1263279	08/12/2021	NULL	Z20.2
1	13723	8/6/1985	36	M	Y	1262196	08/11/2021	NULL	Z20.2
2	15169	2/5/1990	31	M	Y	1268209	08/19/2021	Y	Z20.2
2	15215	5/29/1967	54	M	Y	1270682	08/24/2021	Y	Z20.2
2	16296	3/28/1956	65	M	Y	1238273	07/07/2021	Y	Z20.6
2	16784	5/12/1956	65	M	Y	1269350	08/20/2021	Y	Z20.6
2	17421	5/10/1989	32	M	Y	1240456	07/09/2021	NULL	Z20.2
2	17716	8/25/1980	40	M	Y	1266820	08/18/2021	Y	Z20.2
2	17943	2/20/1981	40	F	Y	1252985	07/28/2021	Y	Z20.6
2	17943	2/20/1981	40	F	Y	1248426	07/21/2021	Y	Z20.6
2	18765	4/5/1997	24	M	Y	1243888	07/15/2021	Y	Z20.2
2	19357	12/27/1997	23	M	Y	1263433	08/12/2021	Y	Z20.2
2	21349	11/10/1976	44	M	Y	1242865	07/14/2021	Y	Z20.2
2	21349	11/10/1976	44	M	Y	1238741	07/07/2021	Y	Z20.2

	23332	2/16/1963	58	M	Y	1268788	08/20/2021	Y	Z20.6
3	26260	2/14/1991	30	M	Y	1267782	08/19/2021	Y	Z20.2
3	26637	2/8/1970	51	M	Y	1254345	07/30/2021	Y	Z20.2, Z20.6
3	26637	2/8/1970	51	M	Y	1243092	07/14/2021	Y	Z20.2, Z20.6
3	27958	1/18/1989	32	M	Y	1246464	07/19/2021	Y	Z20.2
3	28868	12/31/1965	55	M	Y	1244106	07/15/2021	Y	Z20.2
3	28944	3/20/1991	30	M	Y	1268063	08/19/2021	Y	Z20.2
3	32954	10/3/1970	50	M	Y	1263413	08/12/2021	Y	Z20.2, Z20.6
3	33007	8/13/1979	42	M	Y	1252489	07/28/2021	Y	Z20.2, Z20.6
3	33007	8/13/1979	42	M	Y	1244953	07/16/2021	Y	Z20.2, Z20.6
3	34040	10/23/1984	36	F	Y	1259188	08/06/2021	Y	Z20.6
3	37004	8/8/1994	27	M	Y	1268413	08/19/2021	Y	Z20.2
3	38697	1/23/1957	64	M	Y	1264449	08/13/2021	Y	Z20.2
3	38967	10/1/1982	38	M	Y	1242639	07/13/2021	Y	Z20.6
3	40646	9/8/1981	39	M	Y	1264143	08/13/2021	Y	Z20.6
3	40646	9/8/1981	39	M	Y	1257224	08/04/2021	Y	Z20.6
3	41126	9/10/1968	52	F	Y	1260770	08/10/2021	Y	Z20.6
3	41126	9/10/1968	52	F	Y	1254910	08/02/2021	Y	Z20.6
3	41165	6/20/1990	31	M	Y	1245204	07/16/2021	Y	Z20.2, Z20.6
3	41380	1/16/1981	40	M	Y	1242245	07/13/2021	Y	Z20.2
3	41380	1/16/1981	40	M	Y	1239884	07/09/2021	Y	Z20.2
3	41698	7/25/1964	57	M	Y	1263803	08/13/2021	Y	Z20.2
3	41698	7/25/1964	57	M	Y	1257822	08/05/2021	Y	Z20.2
3	42281	2/3/1972	49	M	Y	1264024	08/13/2021	Y	Z20.2, Z20.6
3	42281	2/3/1972	49	M	Y	1259133	08/06/2021	NULL	Z20.2, Z20.6
3	42687	5/12/1991	30	M	Y	1266263	08/17/2021	Y	Z20.2, Z20.6
3	43045	6/26/1988	33	M	Y	1263910	08/13/2021	Y	Z20.2, Z20.6
3	43045	6/26/1988	33	M	Y	1244330	07/15/2021	Y	Z20.2, Z20.6
3	43503	9/28/1987	33	M	Y	1266841	08/18/2021	Y	Z20.2
3	44280	7/20/1981	40	M	Y	1253496	07/29/2021	Y	Z20.2, Z20.6
	44685	8/27/1978	42	M	Y	1239181	07/08/2021	Y	Z20.2, Z20.6
4	44862	3/26/1985	36	M	Y	1257564	08/04/2021	Y	Z20.2

4	44862	3/26/1985	36	M	Y	1252892	07/28/2021	Y	Z20.2
4	44972	8/23/1976	45	M	Y	1253695	07/29/2021	Y	Z20.2
4	45591	9/12/1979	41	M	Y	1257354	08/04/2021	Y	Z20.2, Z20.6
4	45591	9/12/1979	41	M	Y	1252525	07/28/2021	Y	Z20.2, Z20.6
4	45591	9/12/1979	41	M	Y	1241359	07/12/2021	Y	Z20.2, Z20.6
4	45728	8/29/1999	21	F	Y	1254681	07/30/2021	Y	Z20.2
4	50925	2/27/1994	27	M	Y	1244261	07/15/2021	Y	Z20.2, Z20.6
4	50925	2/27/1994	27	M	Y	1244341	07/15/2021	NULL	Z20.2, Z20.6
5	51507	8/30/1978	42	M	Y	1253692	07/29/2021	Y	Z20.6
5	51746	1/15/1985	36	M	Y	1261902	08/11/2021	Y	Z20.6
5	51851	10/18/1970	50	M	Y	1266114	08/17/2021	Y	Z20.2
5	51851	10/18/1970	50	M	Y	1260477	08/09/2021	NULL	Z20.2
5	51994	10/26/1991	29	F	Y	1254573	07/30/2021	Y	Z20.6
5	52263	10/29/1991	29	M	Y	1242604	07/13/2021	Y	Z20.6
5	52338	7/27/1976	45	M	Y	1259459	08/06/2021	Y	Z20.2
5	52338	7/27/1976	45	M	Y	1252992	07/28/2021	Y	Z20.2
5	52338	7/27/1976	45	M	Y	1237862	07/06/2021	Y	Z20.2
5	52440	4/18/1987	34	M	Y	1261988	08/11/2021	Y	Z20.6
5	52954	10/28/1978	42	M	Y	1246854	07/20/2021	Y	Z20.2
5	59867	12/26/1987	33	M	Y	1259328	08/06/2021	Y	Z20.6
5	60800	8/21/1980	41	M	Y	1253561	07/29/2021	Y	Z20.6
5	61598	9/11/1982	38	M	Y	1256926	08/04/2021	Y	Z20.6
5	63466	11/23/1994	26	M	Y	1270707	08/24/2021	Y	Z20.6
5	63466	11/23/1994	26	M	Y	1260957	08/10/2021	Y	Z20.6
5	66639	2/15/1994	27	M	Y	1268019	08/19/2021	Y	Z20.2
5	67206	6/24/1988	33	M	Y	1266270	08/17/2021	Y	Z20.2
5	68215	6/17/1989	32	M	Y	1242486	07/13/2021	Y	Z20.2, Z20.6
5	71573	7/24/1994	27	M	Y	1252267	07/28/2021	Y	Z20.6
5	71573	7/24/1994	27	M	Y	1242668	07/13/2021	Y	Z20.6
5	72254	10/7/1996	24	M	Y	1261892	08/11/2021	Y	Z20.6
5	72551	9/7/1993	27	F	Y	1240028	07/09/2021	Y	Z20.2
6	72836	3/2/1965	56	M	Y	1263419	08/12/2021	Y	Z20.6
6	72836	3/2/1965	56	M	Y	1244479	07/15/2021	Y	Z20.6
6	73386	9/18/1980	40	M	Y	1253825	07/29/2021	Y	Z20.2
6	73427	3/22/1986	35	M	Y	1270892	08/24/2021	Y	Z20.2, Z20.6
6	73427	3/22/1986	35	M	Y	1270199	08/23/2021	Y	Z20.2, Z20.6

6	73427	3/22/1986	35	M	Y	1254560	07/30/2021	Y	Z20.2, Z20.6
6	73641	5/1/1975	46	F	Y	1267938	08/19/2021	Y	Z20.6
6	73641	5/1/1975	46	F	Y	1257855	08/05/2021	Y	Z20.6
6	73713	3/15/1984	37	M	Y	1258520	08/05/2021	Y	Z20.6
6	73860	1/3/1982	39	M	Y	1261074	08/10/2021	Y	Z20.6
6	73936	1/17/1989	32	M	Y	1262628	08/11/2021	Y	Z20.6

Appendix F

CDC STI PowerPoint

Appendix G

Permission for CDC STI PowerPoint

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Reference:

STD 101 in a box-ready to use presentations. (2014). CDC.gov. https://www.cdc.gov/std/training/std101/support/std-101-users-guide-2014