Improving Awareness, Knowledge, Screening and Diagnostic Practices of Sexually Transmitted Diseases in Non-Genital Sites Among Oregon Primary Care Providers: A Quality Improvement Project

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Abstract

Based upon the perceived lack of awareness among primary care providers regarding STD evidenced based care, this quality improvement project was completed in the effort of improving STD healthcare to individuals who are often marginalized. This quality improvement project aimed to assess and improve the awareness, knowledge, screening, and diagnostic practices of triple site STDs by primary care providers at Lancaster Family Health Center in Salem, Oregon. While it is not immediately known if this quality improvement project has increased the rate of triple site STD screening and testing within the practice, the results of the surveys indicate that the providers self-perceived knowledge and preparedness to screen, test and diagnose for triple site STDs have nearly tripled. Furthermore, among the respondents there was an average report of "increased, somewhat significantly" when asked if they predict that their rate of screening would increase or decrease following this quality improvement project. When considering current best practice barriers, the respondents reported a shared theme of "lack of time" as a challenge. They also reported that they would support a process to be facilitated for patients to self-collect specimens at home following the development of a health questionnaire to stratify their risk factors and offering screening based on that in efforts to improve quality of practice.

Introduction

Problem Description

Awareness, knowledge, screening, and diagnostic practices of sexually transmitted diseases (STDs) in all populations has chronically been inadequate, however when applied to STDs in non-genital sites such as the anus and mouth, the inadequacy becomes a failure. The consequences on an individual include increased risk of acquiring human immunodeficiency virus, time lost from work, increased overall morbidity and mortality, and increased mistrust of the healthcare system. While many providers have stepped forward and recognized the need to improve their practice in triple site STD testing (genital/urethral, anus, mouth/pharyngeal), primary care providers in Oregon have demonstrated a lack of standard practice in routinely screening for STDs in triple site locations.

STDs are diseases that can be passed from one person to another through intimate physical contact and sexual activity through vaginal, anal, and oral sites. According to the Center for Disease Control and Prevention (CDC), half of all sexually active people will acquire an STD by the age of twenty-five. In Oregon, since 2014, there has been a 24%, 164%, 67%, and 850% increase of cases of Chlamydia, Gonorrhea, Syphilis, and Syphilis among newborns respectively (CDC, 2019). Furthermore, if left untreated, an STD can cause an increased risk of transmitting or acquiring HIV (CDC, 2019). According to the CDC, 14% of the MSM (men who have sex with men) population who completed extragenital screening tested positive for an STD in these sites (CDC, 2019). Furthermore, within the same study, the CDC found that one-third of MSM who participated in the study (n=2,075) did not have extragenital STD testing within the past 12 months, mostly due to the lack of a screening offer (CDC, 2019). Nucleic acid amplification tests (NAATs) are being used in practice to screen MSM or women who have sex with women

(WSW) for pharyngeal and rectal C. *trachomatis*/N. *gonorrhoeae* infections, in addition to the use of urethral samples (Sultan et al., 2016). The use of NAATs to screen for STDs is now recommended by national organizations such as the CDC (Papp et al., 2014). It is essential that MSM be tested for chlamydia and gonorrhea at nongenital sites; one study found that screening the urethra alone would miss 82% of these infections (Ali et al., 2016).

In 2019 Menza et al. conducted a study to determine the frequency of self-reported screening for rectal sexually transmitted diseases among MSM in the Portland metropolitan area. Overall, 68.7% of their study participants reported screening for any STD in the past year. Interestingly, MSM without pre-exposure prophylaxis (PrEP) use reported screening for STDs in the past year 59% of the time, compared to 92% of MSM with PrEP use. Of the 403 participants, 162 (40.2%) reported being screened for rectal STDs. Sixty (25.7%) of 233 HIV-negative men who did not report PrEP use in the prior 12 months; 61 (69.3%) of the 88 HIV-negative men who reported PrEP use in the prior 12 months; 41 (59.4%) of 69 men living with HIV; and none of the 13 men who were unaware of their HIV status reported rectal STD screening, respectively. In contrast, among MSM living with HIV, surveys in the population-based Oregon Medical Monitoring Project revealed that only 11% were screened for rectal STDs. Furthermore, within this study, 93% of participants in this sample reported sharing their sexual orientation with their providers and 77% of participants were comfortable talking about sex with a provider, but only 42% reported that their providers-initiated conversations about sex. In order to improve these astonishingly low rates of rectal and presumptively pharyngeal STD testing, it is critical that healthcare providers become comfortable with talking about sexual health with their patients (Menza et al., 2019).

Implementation of appropriate triple site screening for STDs is dependent on the ability of the primary care provider and the conduciveness of the clinical atmosphere. Providers must conduct a comprehensive sexual history and assessment of risk factors for each patient, which unfortunately many providers find difficult due to appointment time constraints on already full schedules. Furthermore, lack of awareness of the prevalence of asymptomatic STD among patients, contributes to the lack of STD testing at non-genital sites (Lutz, 2015).

Available Knowledge

A literature review was performed during the month of April 2021 utilizing PubMed, Medline, Ovid, CINAHL, and Google Scholars; the search was conducted using the terms "Any field contains [triple site testing] AND any field contains [sexually transmitted diseases] AND [sexually transmitted infections] AND [pharyngeal and rectum]". The search was limited to articles published within the last ten years in the English language, and with full-text availability. This search yielded a total of 36 articles which were further filtered to exclude "pregnant," and "children" from the search field. After exclusions, a total of 17 peer-reviewed articles and e-book chapters remained. This literature review is aimed at assessing the current practice and trend in practice regarding triple site testing and the pertinent finds are below.

According to the CDC, approximately one in five people in the U.S. had an STD on any given day in 2018, accounting for an annual cost to the American healthcare system of 16 billion dollars (CDC, 2021). STDs disproportionately affect gay, bisexual, and other MSM in the United States. In a study conducted by the CDC, 13.3% of MSM participants were infected with chlamydia or gonorrhea in at least one of two extragenital anatomic sites. Approximately one-third of participating MSM had not been screened for STDs in the previous twelve months, mostly reported due to lack of offer from the primary care provider (CDC, 2019b). The current

recommendation for sexually active MSM is to screen for STDs at all exposed anatomic sites at least annually (CDC, 2015).

A study conducted based on data from the STD Surveillance Network, in 2014, found that the majority of chlamydial (85%) and gonococcal (70%) infections would be missed if MSM were screened only for urethral infections (Patton et al., 2014). Due to these findings, the San Francisco Department of Public Health recommends that sexually active MSM be screened for chlamydia and gonorrhea every three months at the rectum and pharynx (San Francisco Department of Public Health, 2021). In another study conducted with a similar population sample in San Francisco during the years 2008-2009, it was found that screening only for urethral infections would miss 83.8% of either chlamydial or gonorrheal infections. In contrast, only screening rectum and pharynx would only miss 9.8% of infections missed by not screening for urethral infectious sources. These findings suggest that over a period of years, rectal and pharyngeal infections combined are more prevalent than urethral infections alone among MSM, and failure to test for STDs in the rectum or pharynx correlates to a high miss rate for these infections (Marcus et al., 2011). Additionally, rectal chlamydial and gonococcal infections were five times more common than urethral infection alone among MSM (Mimiaga et al., 2009).

In Multnomah County, Oregon, among MSM tested for STDs, 15.2% tested positive for rectal gonorrhea and 17.1% tested positive for rectal chlamydia, whereas 6.4% of MSM tested positive for urethral gonorrhea and urethral chlamydia, pointing towards a trend of increasing prevalence of rectal STDs compared to urethral infections (Menza et al., 2019). Menza et al. (2019) conducted a study that included 448 MSM within the Portland metropolitan area to determine the prevalence of triple site STDs and frequency of triple site STD testing. Their study found that 20.3% of the participants reported a bacterial STD in the prior twelve months in any

of the three testing sites. Another finding of this study that warrants serious concern for high risk of transmitting STDs is that 54.1% of participants reported condomless anal sex with casual partners in the prior year. Furthermore, 52.4% of the study participants reported participating in receptive anal sex in the prior three months, highlighting the importance of primary care providers need to consider testing for rectal sources of STDs. Of importance, Menza et al. (2019) found that within their study, sixty percent of the Portland based study participants reported not being screened for rectal STDs in the past year and one-third had no screening of STDs in any of the three sites.

Among WSM, a study found that screening for urethral infections could miss 20% of chlamydia/gonorrheal infections that are in the anus only (Van Liere et al., 2017). Meanwhile, not testing a urine sample for these STDs would only miss 8% of chlamydial infections among women who have sex with men (Van Liere et al., 2017). Among females who have sex with men, a study that included 4402 participants accessing care who reported extragenital exposures, thirty percent of gonorrhea cases and nearly fourteen percent of chlamydia cases would have been missed with a genital-only testing approach (Trebach et al., 2015).

Barriers to extragenital screening include a lack of time in short appointment time slots, patient reluctance to complete testing, provider discomfort with sexual history and or examination, uncertainty about how to perform sample collection, and lack of staff support for sample collection (Barbee et al., 2015). Most patients, including those who do not identify as sexual or gender minorities, are comfortable with questions regarding sexual orientation and gender identity (Rullo et al., 2018). Even though the Multnomah County study mentioned above found that 93% of participants were out to their provider and 77% of participants were

comfortable talking about sex with a provider, only 42% reported that their providers-initiated conversations about sex (Menza et al., 2019).

Rationale

The Critical learning theory developed by Freire, Apple and Giroux is based upon learning as a moral and ethical process, learning is about focusing on critiquing and changing society to be more just and equal, and the content of learning should therefore be about how to change society to be more just and equal by having a critical look at issues of power; who has power; who does not; and which communities or voices are marginalized (Brown, 2020). In the context of this theory within this project, the learning content within the intervention focused on empowering primary care providers to screen for sexually transmitted diseases in triple site locations which is lacking in marginalized populations such as LGBTQ+ individuals.

The model for improvement developed by the Associated in Process Improvement organization, was used in designing this project. The model for improvement brings forward three key components: 1). What are we trying to accomplish? 2) How will we know that a change is an improvement? 3) What change can we make that will result in improvement? This is carried out by the Plan-Do-Study-Act (PDSA) cycle. The use of short PDSA cycles has been demonstrated to result in accelerated improvement.

Specific Aims

By January 31, 2022, 75% of primary care providers within Lancaster Family Health Center who participate in the triple site STD testing educational intervention, will report that their overall self-perceived knowledge, preparedness, and drive to improve practice in assessing individuals who report multiple site sexual activity, screening these individuals, and treating for triple site STDs.

Methods

Context

This project was conducted at Lancaster Family Health Center at Beverly (LFHC-B) and Lancaster Family Health Center at Lancaster (LFHC-L), two clinics within a two-mile distance apart from each other in Salem, Oregon. Both locations offer comprehensive family practice, primary care mental health, nutrition counseling, pre-natal and post-natal care and was conducted between June 2021 to January 2022. Both clinics are affiliated with Yakima Valley Farm Worker's Clinic (YVFWC) health system. According to the most recent community report released by YVFWC, 42% of their patients have a primary language other than English, 65% of patients report being Hispanic, 58% of patients have Medicaid, nearly 20% are uninsured, nearly half are greater than 100% of the federal poverty level, 36% of the patients are seasonal workers, migrant workers or homeless (Yakima Valley Farm Worker's Clinic, 2020). Specifically, LFHC-L has eight providers providing family medicine services, four are medical doctor physicians, and four are certified physician assistant providers; LFHC-B has five providers providing family medicine services, one is a medical doctor physician, two are family nurse practitioners (one with a doctoral degree), and two certified physician assistants providers. There are 50 support staff (nurses, medical assistants, front desk associates) and about 20,000 patients. The electronic health record used at these clinics is *EPIC* and the laboratory services at these locations is through *LabCorp*. Both clinics have laboratory services within the clinic that are staffed by laboratory technicians. This clinical setting was chosen to achieve diversity in the patient population within multiple different social factors in order to provide a generalizability of findings for future practice. It is currently not known, due to the lack of measurement, the rate that healthcare providers screen for triple site sexually transmitted diseases at both of these locations. Furthermore, there has been no

current or past educational interventions that address triple site STD testing within this organization.

Interventions

During the fall of 2021, a standardized education module including e-mailed handouts and in-person PowerPoint presentation was provided to health care providers who were interested. The educational material was created in collaboration with the site project point of contact, Capella Crowfoot Lapham DNP-FNP. The educational material included epidemiology regarding STDs in Oregon, prevalence of asymptomatic triple site STD infections, health consequences due to missing or misdiagnosing triple site infections, evidenced based treatment options for triple site STDs, how to appropriately conduct a sexual health assessment, and exploration of current barriers to facilitate triple site testing at LFHC. Prior to the implementation of the educational material, a pre-intervention survey was distributed to evaluate specific components including, the perceived need to assess and screen for triple site STDs in practice, the amount of times a provider considers and tests for triple site STDs in a course of a month and year, what a provider considers to be appropriate for an STD laboratory panel, what a provider considers to be appropriate for testing frequency among different populations both at increased and at baseline risk, what diseases does the provider consider to screen in their differential for triple site testing, a provider's self-reported 1-5 rank of self-perceived knowledge and preparedness in triple site STD assessment, screening, diagnosing and treatment.

Study of the Interventions

The educational material was introduced to all providers interested during one provider lunch meeting. Implementing the PDSA model, this quality improvement project was reviewed after the first education session over a period of one month. During the rollout of the educational

intervention, a pre-intervention survey as detailed above was distributed to assess the various measures prior to the educational intervention and a post-intervention survey was distributed to the providers one week after the presentation to evaluate the effectiveness of the educational intervention and material in the various related practice factors through data analysis. Adaptions that were needed/allowed were documented and ongoing field notes were kept for daily work to document moments of insight, problems and how they were dealt with, reactions of the people involved, and patterns related to success and failure. Furthermore, interviews with involved personnel such as the site point of contact and medical director regarding the performance of the educational intervention were completed. We can determine if the intervention benefitted the providers if the outcome measures demonstrate improvement from the pre to the post intervention surveys. We can also determine the reason(s) it worked or did not work based on the field notes collected, through the provider survey suggestions and interviews with the individual clinical site point of contact and medical director on the overall project performance. The impact of this project on STD triple site testing within this organization is not immediately known as practice change processes take time after an intervention, however this is an outcome that can be further investigated by a future project to evaluate improvement in triple site STD care as a result of this project within LFHC.

Measures

The main outcome measure for this project was to assess the percentage of providers who were proactively assessing, screening, and diagnosing for STDs in triple site locations prior to the educational intervention. Processes that were measured prior to and after the educational intervention for this project include provider perceived barriers to provide triple site STD care, provider perceived need to proactively integrate triple site STD assessment and screening in

practice, provider perceived frequency of triple site STD testing in practice, the differentials that a provider considers in STD testing, provider perceived appropriateness of what is included in an STD panel, and provider perceived knowledge and preparedness in triple site STD testing. Data collection occurred over one month using the developed surveys. The data was analyzed using a run chart after the first educational session and after the second educational session. The main outcome measure and process measures is of significance to providers in addressing current deficits in knowledge and practices in triple site STD assessment, screening, and treatment, to healthcare leaders in recognizing barriers in system processes that hinder the ability to readily provide triple site STD testing and to patients who will be more prone to receive standard of care. Data was assessed for completeness and accuracy by the project principal investigator and the clinical point of contact individual.

Analysis

The provider pre and post educational intervention surveys allowed for the collection of qualitative data through statements and self-evaluating in numerical terms about their self-perceived knowledgeable and proactive in assessing, screening, and testing for triple site STDs, which are then ranked on a quantitative Likert Scale allowing the data to be analyzed through SPSS. Raw data from the provider surveys were compiled on two Excel spreadsheets, one for pre-intervention surveys and one for post-intervention surveys and categorized according to the respondent. Questionaries with more than two missing data points were excluded from the analysis.

Ethical Considerations

In the process of planning and implementing this study, it was imperative to consider ethical components of the study. Most important, provider consent to participate in the study was

obtained and was reasonably obtained through a written agreement on the top of the provider questionnaire. With equal effort, provider privacy is an essential ethical consideration, providers were asked to not provide their name, age or gender. The participating clinical sites gave consent to the project by signing a letter of support.

Competing interests

The author was a Family Nurse Practitioner student at Lancaster Family Health Center at Beverly between January 2021 through May 2021. No conflict of interests exists.

Results

Results: Based on the survey in Appendix E: "Post-Intervention Survey"

Clinic of Practice: 2 Lancaster, 2 Beverly
Provider by Licensure: 2 MD, 2 NP's
Duration of Practice: Average = 4

Comparing the post intervention questions to the prior intervention questions:
Using a 0-5 point scale, 0 point = "not at all" and 5 points = "very important"

- There was an average increase of 1.25 points for the question:
  - "How important is it currently for you to proactively integrate triple site STD assessment, screening and testing into your practice?"

- There was an average increase of 2.5 points for the question:
  - "What is your current self-perceived knowledge and preparedness in triple site STD assessment, screening, diagnosis and treatment?

- There was an average report of "0" for the following question:
  - PRIOR to the presentation: How often were you assessing and screening for STDs in the triple site locations (rectal, pharyngeal/mouth, genital)?

- There was an average report of "increased, somewhat significantly" for the following question:
  - Following the presentation: Within your practice, do you predict that your frequency for assessing and screening/testing of STDs in all three sites will change (increased/decreased) following this presentation? If so, will this change be significant or not significant?

Using a 0-5 point scale, 0 point = "minimal knowledge" and 5 points = "very knowledgeable"

- There was a double in point value improvement from two to four for the following question:
  - How would you describe your knowledge of the prevalence of asymptomatic STDs in the rectum/pharynx among both LGBTQ+ and heterosexual individuals?

Using a 0-5 scale, 0 point = "minimally important" and 5 points = "very important (at annual visits and PRN)"

- There was a 1.75-point increase for the following question:
  - How important is it to you to complete a thorough sexual health assessment?

Using a 0-5 scale, 0 point = "not effective at all" and 5 points = "very effective"

- There was an average rating of 4.5 points for the following question:
  - How effective was this presentation in increasing your knowledge and preparedness to assess, screen, test and treat asymptomatic triple site STDs?

Using a 0-5 scale, 0 = "very unlikely" and 5 = "very likely"

- There was an average rating of 4 points for the following question:
    - How likely is it that you will share this new awareness with your provider colleagues and future students?

a) All of the respondents stated that "high-risk" asymptomatic LGBTQ patients should be screened and tested in triple site locations by the provider every 3 months.

b) All of the respondents stated that "average risk" 18-25 year old patients should be screened and tested in triple site locations by the provider every year.

c) All of the respondents stated that heterosexual individuals >25 years of age should be screened and tested in triple site locations based on risk factors.

d) The respondents did not provide any further questions when asked.

e) Three respondents stated that lack of time is a barrier that exists in practice that makes providing triple site STD care challenging. One respondent stated that a current barrier is the lack of knowledge by MA's of self-swabbing and lack of knowledge of lab supplies.

f) Three respondents indicated that they would support the following quality improvement interventions:
    a. Patients filling out a health questionnaire to stratify their risk factors, and offering screening based on that.

g) Three respondents indicated that they would support the following quality improvement intervention:
    a. A process in place for patients to self-collect a specimen at home, and mail into lab (similar to colorectal screening)

Discussion

Summary

Despite an eighty percent response rate on the post-intervention survey, the respondents provided answers that can be used to interpret the outcome measures. Regarding the main outcome measure (to assess the percentage of providers who are proactively assessing, screening and diagnosing for STDs in triple site locations prior to the educational intervention) the average of the respondents indicated "not at all" when asked how often they were assessing and screening for STDs in the tiple site locations prior to the presentation. In contrast, all of the

respondents stated that following the presentation, they predict that their frequency for assessing and screening/testing for STDs in triple sites will increase somewhat significantly.

Time limitations in short twenty-minute schedules was the predominant barrier that the providers indicated that currently inhibits practice. To help with this barrier, most of the respondents indicated that they support patients filling out a questionnaire to stratify their risk factors offering screening based on those responses, and implementing a process in place for patients to self-collect a specimen at home, and mail to the lab (similar to colorectal screening).

Another outcome measure identified is the providers' perceived need to proactively integrate triple site STD assessment and screening in practice. The post-intervention survey demonstrates a moderate increase in provider importance to proactively integrate STD assessment and screening in their practice following the intervention.

Provider self-perceived knowledge and preparedness in triple site STD assessment, screening, diagnosis, and treatment was another outcome measure. The pre- and post- questions demonstrate an improvement of this outcome measure with a 2.5-point difference between the pre and post intervention questions.

A two-point increase in the providers self-perceived knowledge of the prevalence of asymptomatic STDs in the triple site locations among both LGBTQ+ and heterosexual individuals was observed. There was a 1.75-point average increase in the provider's self-report of how important it is for them to complete a thorough sexual health assessment. The average provider was close to "very likely" when asked how likely they were to share this new awareness with their provider colleagues and future students.

Interpretation

The results demonstrate that prior to this intervention, all of the respondents were not assessing for STDs in the triple site locations. However, the results demonstrate that this intervention was successful at improving the main outcome which was to assess and improve the percentage of providers who are proactively assessing, screening, and diagnosing for STDs in triple site locations prior to the educational intervention. After the intervention the clinicians reported that they predict that their frequency for assessing and screening for STDs in the triple site locations will increase somewhat significantly.

The providers identified lack of time as a barrier to practice. Despite this, they identified two practical solutions to this including patient's self-filling a risk-based questionnaire and offering screening based on that and a process to be placed for self-collection at home and mail into the lab.

The intervention was successful to a moderate extent at improving the providers' proactivity to integrate triple site STD assessment and screening in practice following the intervention. It was also moderately effective at increasing the providers' self-perceived knowledge of triple site STDs in both LGBTQ+ and heterosexual populations.

This intervention was highly effective at increasing the providers' self-perceived knowledge and preparedness in triple site STD assessment, screening, diagnosis, and treatment. The intervention was moderately effective at improving the providers' self-perceived level of importance to complete a thorough sexual health assessment.

Despite having only four providers attend the educational intervention, it is likely that the knowledge and new awareness learned from this presentation will be shared by the providers to

their colleagues and future students. This is a positive finding that assures that the practice may see improvements across the clinic's providers.

Limitations

A total of five clinicians attended the training, despite an allotted month for collection of survey responses and two reminders, only four responses were received. Due to the interest of delivering an educational presentation within the time frame allotted by the clinic and provider interest, the following were not included in the final product that was presented to the clinicians: cost effectiveness to screen and treat for asymptomatic triple site infections and evidenced-based physical examination technique and findings. The post-intervention survey did not include a question to address the outcome measure "the differentials a provider considers in STD testing and provider perceived appropriateness of what's is included in an STD panel". The post-intervention survey was not analyzed using a run chart since there was only one education session following the recommendation of the clinic mentor. There was no need to identify providers with a given number 0-100 since there was only one survey that was used for analysis.

An attempt was made to distribute surveys as illustrated in appendix D prior to the scheduled presentation date, despite great efforts, there was minimal participation in the pre-survey sent to providers. This author decided to disregard the surveys contained in appendix D and implement one survey, as demonstrated in appendix E. This survey was post-intervention and included reflective questions regarding practice prior and post intervention The survey contained in appendix E incorporates with minimal modifications a combination of the initially intended two separate surveys shown in appendix D.

Conclusions

Recommendations

To assess if the results above are reflected in practice, it is recommended that the Yakima Valley Farm Workers Clinic at Lancaster and Beverly conduct a chart review to analyze if the results above are holding true at scheduled intervals. With that information, this project can be taken on by another DNP student to further develop and implement this educational intervention.

It is recommended that this practice identify an existing questionnaire or formulate one for patients to fill to stratify risk for STDs in the triple site locations for providers to use to recommend triple site testing; this could possibly be a project for a future DNP student.

It is recommended that this practice consider implementing a process to be implemented for patients to self-collect a specimen at home and for them to either drop it off in person or mail it to the clinic like that of colorectal screening, this project can be taken on by another DNP student.

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References

Ali, F., Kaushik, G., Carr, N., Hayes, E., & Plax, K. (2016). Screening for urethral, rectal and pharyngeal gonorrhea & chlamydia among asymptomatic male adolescents and young men who have sex with men. *Journal of Family Medicine and Disease Prevention, 2*(4). doi:10.23937/2469-5793/1510046

Barbee, L., Dhanireddy, S., Tat, S., & Marrazzo, J. (2015). Barriers to bacterial sexually transmitted infection testing of HIV-Infected men who have sex with men engaged in HIV primary care. In (Vol. 42, pp. 590-594).

Brown, J. (2020). Using learning theory to shape learning experiences in health care education: not scary at all! *New Direction for Teaching and Learning, 2020*(162). doi:10.1002/tl.20393

Lutz, A. R. (2015). Screening for Asymptomatic Extragenital Gonorrhea and Chlamydia in Men Who Have Sex with Men: Significance, Recommendations, and Options for Overcoming Barriers to Testing. LGBT health, 2(1), 27-34. https://doi.org/10.1089/lgbt.2014.0056

Marcus, J. L., Bernstein, K. T., Kohn, R. P., Liska, S., & Philip, S. S. (2011). Infections Missed by Urethral-Only Screening for Chlamydia or Gonorrhea Detection Among Men Who Have Sex With Men. Sexually transmitted diseases, 38(10), 922-924. https://doi.org/10.1097/OLQ.0b013e31822a2b2e

Menza, T. W., Lipira, L., Bhattarai, A., Ramirez, F. J., & Orellana, E. R. (2019). Self-reported screening for rectal sexually transmitted infections among men who have sex with men. Sexually transmitted diseases, Publish Ahead of Print, 1(10), 683-688. https://doi.org/10.1097/OLQ.0000000000001046

Mimiaga, M. J., Helms, D. J., Reisner, S. L., Grasso, C., Bertrand, T., Mosure, D. J., Weinstock, H., … Mayer, K. H. (2009). Gonococcal, chlamydia, and syphilis infection positivity among MSM attending a large primary care clinic, Boston, 2003 to 2004. *Journal of Sexually Transmitted Diseases, 36*(8). doi:10.1097/OLQ.0b013e3181a2d98

Papp, J., Schachter, J., Gaydos, C., & Van Der Pol, B. (2014). Recommendations for the Laboratory-Based Detection of Chlamydia trachoma's and Neisseria gonorrhea - 2014. Center for Disease Control and Prevention. https://www.cdc.gov/mmwr

Patton, M., Kidd, S., Llata, E., Stenger, M., Braxton, J., Asbel, L., … Weinsstock, H. (2014). Extragenital gonorrhea and chlamydia testing and infection among men who have sex with men - - STD Surveillance Network, United States, 2010-2012. *Clinical Infectious Disease Journal, 58*(11). doi:10.1093/cid/ciu184

Prevention, C. f. D. C. a. (2015). 2015 Sexually Transmitted Diseases Treatment Guidelines: Special Populations. In.

Prevention, C. f. D. C. a. (2019a). Extragenital Chlamydia and Gonorrhea Among Community Venue - Attending Men Who Have Sex with Men - Five Cities, United States, 2017. In (Vol. 68).

Prevention, C. f. D. C. a. (2019b). The state of STDs in Oregon. STDs continued to surge in Oregon in 2019. Retrieved from https://www.oregon.gov/oha

Prevention, C. f. D. C. a. (2021). Sexually transmitted infections (STIs) are very common and costly to the nation's health and economy. In: Centers for Disease Control and Prevention.

Rullo, J. E., Foxen, J. L., Griffin, J. M., Geske, J. R., Gonzalez, C. A., Faubion, S. S., & Ryn, M. (2018). Patient Acceptance of Sexual Orientation and Gender Identity Questions on

Intake Forms in Outpatient Clinics: A Pragmatic Randomized Multisite Trial. Health services research, 53(5), 3790-3808. https://doi.org/10.1111/1475-6773.12843

San Francisco Department of Public Health. (2021). STD and HIV Screening Guidelines. Retrieved from: https://www.sfcityclinic.org

Sultan, B., White, J. A., Fish, R., Carrick, G., Brima, N., Copas, A., Robinson, A., Gilson, R., Mercey, D., & Benn, P. (2016). The "3 in 1" Study: Pooling Self-Taken Pharyngeal, Urethral, and Rectal Samples into a Single Sample for Analysis for Detection of Neisseria gonorrhoeae and Chlamydia trachomatis in Men Who Have Sex with Men. Journal of clinical microbiology, 54(3), 650-656. https://doi.org/10.1128/JCM.02460-15

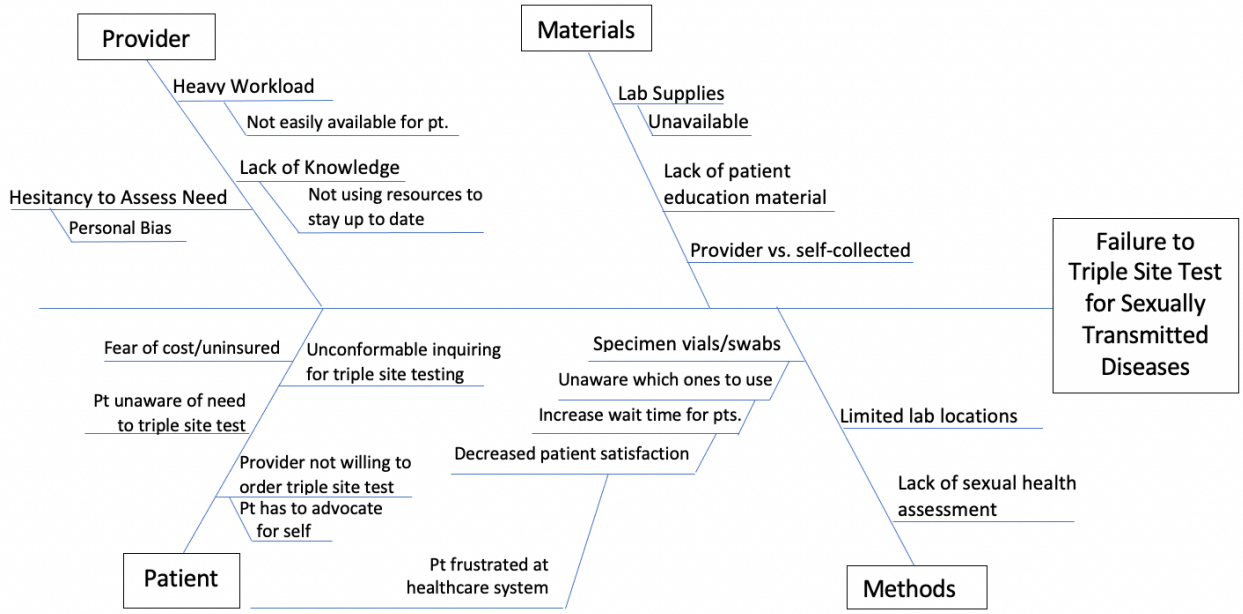
Trebach, J. D., Chaulk, C. P., Page, K. R., Tuddenham, S., & Ghanem, K. G. (2015). Neisseria gonorrhoeae and Chlamydia trachomatis among women reporting extragenital exposures. *Journal of Sexually Transmitted Diseases, 42*(5). doi:10.1097/OLQ.0000000000000248

Van Liere, G., Dukers-Muijrers, N., Levels, L., Hoebe, C. (2017). High proportion of anorectal chlamydia trachomatis and Neisseria gonorrhoeae after routine universal urogenital and anorectal screening in women visiting the sexually transmitted infection clinic. *Clinical Infectious Diseases, 64*(12). doi:10.1093/cid/cix243

Yakima Valley Farm Worker's Clinic. (2020). YVFWC Report to our Communities 2019. Retrieved from: https://www.yvfwc.com/wp-content/uploads/2020/09/YVFWC-Report-to-our-Communities-2019.pdf

Appendices

Appendix A: Cause and Effect Diagram



Appendix B: Project Timeline

	June	July	Aug	Sep	Oct	Nov	Dec	Jan-March
Finalize project design and approach (703A)	X							
Submit Project Proposal	X							
Complete IRB determination or approval (703A)			X					
Distribute pre-intervention baseline questionnaire to providers.						X		
Provide two educational interventions to providers.							X	
Provide post educational intervention questionaries.							X	
Final data analysis							X	X
Write sections 13-17 of final paper (703B)							X	X
Prepare for project dissemination (703B)								X

Appendix C: Consent of Participation

You are being invited to participate in a quality improvement project titled "*Improving Awareness, Knowledge, Screening and Diagnostic Practices of Sexually Transmitted Diseases in Non-Genital Sites Among Oregon Primary Care Providers: A Quality Improvement Project".* This study is being done by Cristian Mendoza Ruvalcaba, BSN, BA, RN from the Oregon Health and Science University Doctor of Nursing Practice-Family Nurse Practitioner program.
The purpose of this quality improvement project is to improve primary care provider awareness, knowledge, screening and diagnostic practices of triple site sexually transmitted diseases. If you agree to take part of this quality improvement project, you will be asked to complete the survey/questionnaire on the next page. The survey/questionnaire will ask you a series of questions, and it will take you approximately five minutes to complete. You may or may not directly benefit from this quality improvement intervention; however, we hope that your voluntary participation in this study may inform and substantially improve this clinical practice and you as individual family medicine providers about the current practice on triple site sexually transmitted diseases among your patients. Your answers in this study will remain confidential, and you will be identified based on a random given number. We will minimize any risks to breach of confidentiality by storing the surveys in a location separate from patient files, without your name, identified by a number, and only accessible by the primary investigator (Cristian).

Your participation in this quality improvement study is completely voluntary and you can withdraw at any time.

If you have questions about this project or if you have a research-related problem, you may contact the primary investigator, Cristian Mendoza-Ruvalcaba, at mendozcr@ohsu.edu. If you have any questions concerning your rights as a research subject, you may contact the Human Subjects Research manager Kathryn Schuff at irb@ohsu.edu.

By proceeding to the survey/questionnaire on the next page you are indicating that you are at least 18 years old, have read and understood this consent form and agree to participate in this research study. Please keep this page for your records and return the survey/questionnaire to the researchers. Please DO NOT write your name on the survey/questionnaire.

Appendix D: Provider Pre/Post questionnaire forms

Provider Questionnaire: Pre-Intervention
Triple Site Testing Practices Among Primary Care Providers

Today's Date _____ Provider #: _____ Clinic Location: _____

How long have you been in practice? _____

What is your highest obtained degree? _____

What are you interested in learning about triple site STD testing?

_____

_____

What are barriers that exist in your practice that make providing triple site STD care challenging?

_____

_____

What are appropriate differentials to keep in mind while screening for triple site STDs in asymptomatic individuals?

_____

_____

What do you consider should be included in an STD lab testing panel?

_____

How important is it to you to proactively integrate triple site STD assessment, screening and testing in your practice?

Not at all 0 | 1 | 2 | 3 | 4 | 5 Very important

How often should providers assess, screen and test for triple site STDs in practice for: LGBTQ patients

_____

How often should providers assess, screen and test for triple site STDs in practice for: 18-25 year old patients?

_____

How often should providers assess, screen and test for triple site STDs in practice for: others:

_____

How often do you consider testing for STDs in all three sites in a course of a week and month?

Weekly:_____

Month:_____

What is your self-perceived knowledge and preparedness in triple site STD assessment?

Poor, I need education 0 | 1 | 2 | 3 | 4 | 5 Excellent, I can teach this

Provider Questionnaire: Post-Intervention
Triple Site Testing Practices Among Primary Care Providers

Today's Date _____ Provider #: _____ Clinic Location: _____

What other questions do you have about triple site STD testing?

_____

_____

What are barriers that exist in your practice that make providing triple site STD care challenging?

_____

_____

What are appropriate differentials to keep in mind while screening for triple site STDs in asymptomatic individuals?

_____

_____

What do you consider should be included in an STD lab testing panel?

_____

In retrospect of the educational intervention:

What do you rank your knowledge on triple site (anal, pharyngeal, vaginal/penile) STD testing prior to the educational intervention?

Not at all 0 | 1 | 2 | 3 | 4 | 5 Very important

What do you rank your proactivity in assessing for STDs in practice prior to the educational intervention?

Not at all 0 | 1 | 2 | 3 | 4 | 5 Very important

What do you rank your screening practices for STDs prior to the educational intervention?

Not at all 0 | 1 | 2 | 3 | 4 | 5 Very important

What do you rank your testing and treatment practices for STDs prior to the educational intervention?

Not at all 0 | 1 | 2 | 3 | 4 | 5 Very important

How often do you consider testing for STDs in all three sites in a course of a month and a year?

Not at all 0 | 1 | 2 | 3 | 4 | 5 Very important

What was your self-perceived knowledge and preparedness in triple site STD assessment prior to the educational intervention?

Poor, I needed education 0 | 1 | 2 | 3 | 4 | 5 Excellent, I could teach the class

In light of the educational intervention:

How often should providers assess, screen and test for triple site STDs in practice for: LGBTQ patients

_____

_____

How often should providers assess, screen and test for triple site STDs in practice for: 18-25 year old patients

_____

_____

How often should providers assess, screen and test for triple site STDs in practice for: others:

_____

_____

What do you rank your current knowledge on triple site (anal, pharyngeal, vaginal/penile) STDs?

Not at all 0 | 1 | 2 | 3 | 4 | 5 Very important

What do you rank your current proactivity in assessing for STDs in practice?

Not at all 0 | 1 | 2 | 3 | 4 | 5 Very important

What do you rank your current screening practices for STDs?

Not at all 0 | 1 | 2 | 3 | 4 | 5 Very important

What do you rank your current testing and treatment practices for STDs?

Not at all 0 | 1 | 2 | 3 | 4 | 5 Very important

What is your self-perceived knowledge and preparedness in triple site STD assessment?

Poor 0 | 1 | 2 | 3 | 4 | 5 Excellent

How effective was this course in increasing your knowledge and preparedness to assess, screen, test and treat for asymptomatic triple site STDs?

Not effective at all 0 | 1 | 2 | 3 | 4 | 5 Very Effective

How important is it to you to proactively integrate triple site STD assessment, screening and testing in your practice?

Not at all 0 | 1 | 2 | 3 | 4 | 5 Very important

Appendix E: Post-Intervention Survey

Post-Intervention Survey for: Improving Triple Site STD Care Among Oregon PCP's.

Thank you for participating in the educational intervention.
Please answer the following questions.
This will take approximately five minutes to complete.

- ○ I wish to continue.
- ○ I do not wish to continue.

Enter Today's Date

_____

Clinic of Practice Where Do you Practice?

- ○ Lancaster Family Health Center at Beverly
- ○ Lancaster Family Health Center at Lancaster

ID# Write your graduation year and your practice degree (this will be used to track your responses).
Ex: 2022, DNP

_____

Practice Duration How long have you been in practice?

_____

PRIOR to the presentation: How important was it to you to proactively integrate triple site STD assessment, screening and testing into your practice?

	Not at all					Very Important
	0	1	2	3	4	5
Scale of Importance ()						

PRIOR to the presentation: What was your self-perceived knowledge and preparedness in triple site STD assessment, screening, diagnosis and treatment?

Not at all Very Important

0 1 2 3 4 5

Scale of Perception ()

Q26 PRIOR to the presentation: How often were you assessing and screening for STDs in the triple site locations (rectal, pharyngeal/mouth, genital)?

Not at all Very frequently

0 1 2 3 4 5

Scale of Frequency ()

PRIOR to the presentation: How would you describe your knowledge of the prevalence of asymptomatic STDs in the rectum/pharynx among both LGBTQ+ and heterosexual individuals?

Minimal knowledge Very knowledgeable

0 1 2 3 4 5

Scale of Perception. ()

Q29 PRIOR to the presentation: How important was it to you to complete a thorough sexual health assessment?

0= Minimally important 5= Very important (ex. at annual visits and PRN)

0 1 2 3 4 5

Scale of Perception. ()

Following the presentation: How important is it currently for you to proactively integrate triple site STD assessment, screening and testing into your practice?

Not at all Very Important

0 1 2 3 4 5

Scale of Importance ()

Following the presentation: Within your practice, do you predict that your frequency for assessing and screening/testing of STDs in all three sites will change (increased/decreased) following this presentation? If so, will this change be significant or not significant?

- ○ Increased, significantly
- ○ Decreased, significantly
- ○ Increased, not significantly
- ○ Decreased, not significantly

Following the presentation: What is your current self-perceived knowledge and preparedness in triple site STD assessment, screening, diagnosis and treatment?

0 = Poor (I need further education) 5= Excellent (I am ready to share my knowledge)

0 1 2 3 4 5

Scale of Perception ()

Following the presentation: How effective was this presentation in increasing your knowledge and preparedness to assess, screen, test and treat asymptomatic triple site STDs?

0: Not effective at all 5: Very Effective

0 1 2 3 4 5

Scale of Perception ()

Following the presentation: How would you describe your knowledge of the prevalence of asymptomatic STDs in the rectum/pharynx among both LGBTQ+ and heterosexual individuals?

Minimal knowledge — Very knowledgeable

0 1 2 3 4 5

Scale of Perception. ()

Following the presentation: How important is it to you to complete a thorough sexual health assessment?

0= Minimally important — 5= Very important (ex. at annual visits and PRN)

0 1 2 3 4 5

Scale of Perception. ()

How often should providers assess, screen and test for asymptomatic triple site STDs in practice for: "high-risk" LGBTQ patients?

- ○ Every 3 months
- ○ Every 1-2 years
- ○ Only when signs/symptoms are reported
- ○ Unkown

How often should providers assess, screen and test for asymptomatic triple site STDs in practice for: "average-risk" 18-25 year old patients?

- ○ Every 3 months
- ○ Every year.
- ○ Only when signs/symptoms are reported
- ○ Unknown

How often should providers assess, screen and test for asymptomatic triple site STDs in practice for: heterosexuals >25 years of age?

- ○ Based on risk factors
- ○ Every 1-2 years
- ○ Only when signs/symptoms are reported
- ○ Unkown

What other questions do you have about triple site STD testing?

_____

What are barriers that exist in your practice that make providing triple site STD care challenging?

_____

Would you support the following quality improvement interventions (click all that apply)?

- ☐ EPIC alerts/reminders.
- ☐ Additional presentations relevant to this topic.
- ☐ A process in place for patients to self-collect a specimen at home, and mail in to lab (similar to colorectal screening).
- ☐ Patients filling out a health questionnaire to stratify their risk factors, and offering screening based on that.

How likely is it that you will share this new awareness with your provider colleagues and future students?

	Very Unlikely				Very Likely
	0	1	2	3	4	5
Scale of Motivation ()						

Any further comments or suggestions? How could this quality improvement project be further developed in the future?

_____

Appendix F: Letter of Support from Clinical Agency

Letter of Support from Clinical Agency

Date: *05/31/2021*
Dear *Cristian Mendoza Ruvalcaba*,

This letter confirms that I, *Capella Crowfoot Lapham DNP-FNP*, allow *Cristian Mendoza Ruvalcaba BSN-RN* (OHSU Doctor of Nursing Practice Student) access to complete his DNP Final Project at our clinical site. The project will take place from approximately *June 28th 2021* to *January 31st 2022*.

This letter summarizes the core elements of the project proposal, already reviewed by the DNP Project Preceptor.

- **Project Site(s):**
  - Lancaster Family Health Center at Beverly: 3896 Beverly Avenue NE Building J, Ste 40 Salem, OR 97305
    Lancaster Family Health Center at Lancaster: 255 Lancaster Drive NE Salem, OR 97301

- **Project Plan:**
  - Identified Clinical Problem: Patients who participate in triple site sexual activity are not identified, screened and treated properly for sexually transmitted diseases within primary care practice in the United States. Failure to properly screen and treat for these infections leads to further spread of sexually transmitted diseases and increased risk for HIV transmission.
  - Rationale: Due to the lack of understanding of the importance and prevalence of triple site STD's, the proposed educational intervention to follow at this organization will lead to improvement in provider understanding and comfort in assessing, screening and treating for sexually transmitted diseases. The critical learning theory and well-established model for improvement by the Associated in Process Improvement organization carried out by the Plan-Do-Study-Act cycle will aid in developing the educational intervention.
  - Specific Aims: By January 31, 2022, 75% of primary care providers within Lancaster Family Health Center and the State of Oregon who participate in the triple site STD testing educational intervention, will state that they understand and are comfortable in assessing individuals who report multiple site sexual activity, screening these individuals, and treating for triple site STD's. Through this process, Cristian will be able to evaluate the number of providers at Lancaster Family Health Center who report that they are confident in identifying, screening and treating patients for triple site STD's before and after the educational intervention.
  - Methods/Interventions/Measures:
    - Measures: Percentage of providers who are confident in assessing/screening/treating for triple site sexually transmitted diseases. Percentage of providers who are aware of the prevalence of triple site sexually transmitted diseases. Percentage of providers who are aware of asymptomatic vs. symptomatic sexually transmitted diseases in triple site locations. Both before and after intervention.
    - Intervention: Lunch hour interactive presentation with Lancaster Family Health Center providers and presentation at Nurse Practitioners of Oregon conference.
    - Methods: Intervention will be implemented through power point presentation and providers will evaluate intervention with an anonymous survey one week after presentation.
  - Data Management: Data including number of providers within both clinics who see adolescent/adult patients within primary care, number of providers who self-identify as "confident" in assessing, screening and treating for STD's and number of providers who are knowledgeable of the prevalence of asymptomatic vs. symptomatic triple site STD's. The data will be de-identified based on name, will be identifiable based on clinic location and whether provider is an MD/DO/NP/PA. Data will be password protected within the student's laptop, without password access to another individual.
  - Site(s) Support: The site(s) will provide the student with space needed to conduct activities as far as advanced notice is given, authorize site employees to identify persons who might qualify for inclusion, and distribute questionaries to providers.
  - Other: *[Outline any other agreements you and the organization have made to further the project, if applicable.]*

During the project implementation and evaluation, *Cristian Mendoza Ruvalcaba* will provide regular updates and communicate any necessary changes to the DNP Project Preceptor.

Our organization looks forward to working with this student to complete his DNP project. If we have any concerns related to this project, we will contact *Cristian Mendoza Ruvalcaba* and *Mandy McKimmy* (student's DNP Project Chairperson).

Regards,

Capella Crowfoot Lapham — DNP Project Preceptor

FNP, DNP — Job Title

Signature

7/2/21 — Date Signed

Appendix G: IRB Letter of Determination

IRB MEMO

Research Integrity Office
3181 SW Sam Jackson Park Road - L106RI
Portland, OR 97239-3098
(503)494-7887 irb@ohsu.edu

NOT HUMAN RESEARCH

August 10, 2021

Dear Investigator:

On 8/10/2021, the IRB reviewed the following submission:

Title of Study:	Improving Awareness, Knowledge, Screening and Diagnostic Practices of Sexually Transmitted Diseases in Non-Genital Sites Among Oregon Primary Care Providers: A Quality Improvement Project
Investigator:	Mandy McKimmy
IRB ID:	STUDY00023331
Funding:	None

The IRB determined that the proposed activity is not research involving human subjects. IRB review and approval is not required.

Certain changes to the research plan may affect this determination. Contact the IRB Office if your project changes and you have questions regarding the need for IRB oversight.

If this project involves the collection, use, or disclosure of Protected Health Information (PHI), you must comply with all applicable requirements under HIPAA. See the HIPAA and Research website and the Information Privacy and Security website for more information.

Sincerely,

The OHSU IRB Office

Appendix H: Letter of Recommendations Given to YVFWC

Conclusions

Recommendations

To assess if the results below are reflected in practice, it is recommended that the Yakima Valley Farm Workers Clinic at Lancaster and Beverly conduct a chart review to analyze if the results below are holding true at scheduled intervals. With that information, this project can be taken on by another DNP student to further develop and implement this educational intervention.

It is recommended that this practice identify an existing questionnaire or formulate one for patients to fill to stratify risk for STDs in the triple site locations for providers to use to recommend triple site testing; this could possibly be a project for a future DNP student.

It is recommended that this practice consider implementing a process to be implemented for patients to self-collect a specimen at home and for them to either drop it off in person or mail it to the clinic like that of colorectal screening, this project can be taken on by another DNP student.

Acknowledgments

I would like to acknowledge the cooperation of the providers in participating and volunteering in this quality improvement doctoral project, to Dr. Lapham DNP, FNP-C, and Dr. McKimmy DNP, FNP-C, AAHIVS for their guidance and support.

Results and Discussion are contained in the following pages.

Results

Comparing the post intervention questions to the prior intervention questions:
Using a 0-5 point scale, 0 point = "not at all" and 5 points = "very important"

- There was an average increase of 1.25 points for the question:
  - "How important is it currently for you to proactively integrate triple site STD assessment, screening and testing into your practice?"

- There was an average increase of 2.5 points for the question:
  - "What is your current self-perceived knowledge and preparedness in triple site STD assessment, screening, diagnosis and treatment?

- There was an average report of "0" for the following question:
  - PRIOR to the presentation: How often were you assessing and screening for STDs in the triple site locations (rectal, pharyngeal/mouth, genital)?

- There was an average report of "increased, somewhat significantly" for the following question:
  - Following the presentation: Within your practice, do you predict that your frequency for assessing and screening/testing of STDs in all three sites will change (increased/decreased) following this presentation? If so, will this change be significant or not significant?

Using a 0-5 point scale, 0 point = "minimal knowledge" and 5 points = "very knowledgeable"

- There was a double in point value improvement from two to four for the following question:
  - How would you describe your knowledge of the prevalence of asymptomatic STDs in the rectum/pharynx among both LGBTQ+ and heterosexual individuals?

Using a 0-5 scale, 0 point = "minimally important" and 5 points = "very important (at annual visits and PRN)"

- There was a 1.75-point increase for the following question:
  - How important is it to you to complete a thorough sexual health assessment?

Using a 0-5 scale, 0 point = "not effective at all" and 5 points = "very effective"

- There was an average rating of 4.5 points for the following question:
  - How effective was this presentation in increasing your knowledge and preparedness to assess, screen, test and treat asymptomatic triple site STDs?

Using a 0-5 scale, 0 = "very unlikely" and 5 = "very likely"

- There was an average rating of 4 points for the following question:

- How likely is it that you will share this new awareness with your provider colleagues and future students?

a) All of the respondents stated that "high-risk" asymptomatic LGBTQ patients should be screened and tested in triple site locations by the provider every 3 months.

b) All of the respondents stated that "average risk" 18-25 year old patients should be screened and tested in triple site locations by the provider every year.

c) All of the respondents stated that heterosexual individuals >25 years of age should be screened and tested in triple site locations based on risk factors.

d) The respondents did not provide any further questions when asked.

e) Three respondents stated that lack of time is a barrier that exists in practice that makes providing triple site STD care challenging. One respondent stated that a current barrier is the lack of knowledge by MA's of self-swabbing and lack of knowledge of lab supplies.

f) Three respondents indicated that they would support the following quality improvement interventions:
    a. Patients filling out a health questionnaire to stratify their risk factors, and offering screening based on that.

g) Three respondents indicated that they would support the following quality improvement intervention:
    a. A process in place for patients to self-collect a specimen at home, and mail into lab (similar to colorectal screening)

Discussion

Interpretation

The results demonstrate that prior to this intervention, the respondents were not consistently assessing for STDs in the triple site locations. However, the results demonstrate that this intervention was successful at improving the main outcome which was to assess and improve the percentage of providers who are proactively assessing, screening, and diagnosing for STDs in triple site locations prior to the educational intervention. After the intervention the clinicians reported that they predict that their frequency for assessing and screening for STDs in the triple site locations will increase somewhat significantly.

The providers identified lack of time as a barrier to practice. Despite this, they identified two practical solutions to this including patient's self-filling a risk-based questionnaire and offering screening based on that and a process to be placed for self-collection at home and mail into the lab.

The intervention was successful to a moderate extent at improving the providers' proactivity to integrate triple site STD assessment and screening in practice following the intervention. It was also moderately effective at increasing the providers' self-perceived knowledge of triple site STDs in both LGBTQ+ and heterosexual populations.

This intervention was highly effective at increasing the providers' self-perceived knowledge and preparedness in triple site STD assessment, screening, diagnosis, and treatment. The intervention was moderately effective at improving the providers' self-perceived level of importance to complete a thorough sexual health assessment.

Despite that only four providers attended the educational intervention, it is likely that the knowledge and new awareness learned from this presentation will be shared by the providers to their colleagues and future students. This is a positive finding that assures that the practice may