Increasing Extra-genital Gonorrhea and Chlamydia Screening in the College Health Setting

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Abstract

Extra-genital gonorrhea and chlamydia infections affecting the throat and rectum continue to increase among young adults. People aged 24 years and younger are the most at-risk. Low rates of extra-genital screening present the problem of a missed diagnosis of gonorrhea and chlamydia. Any missed diagnosis delays evidenced-based treatment and contributes to the spread of sexually transmitted infections (STIs) and avoidable complications. This project aimed to implement a standardized process for screening patients and increase extra-genital testing. The Theoretical Domains Framework and a multidisciplinary team approach were adopted as the operational framework to guide the project. The project was conducted in a college health setting at a university student health center. Established goals were to modify and implement a sexual history-taking tool, educate nursing staff and providers on use of the tool, introduce the Five Ps of sexual history-taking: Partners, Practices, Protection, Past-History, and Prevention of Pregnancy, track compliance with use of the tool, and evaluate for an increase in extra-genital screening rates. Quantitative results revealed a 93% overall use rate of the sexual history-taking tool. There was a 38% increase in extra-genital testing during the project implementation compared to the pre-data timeframe. Findings support the importance of the project as nurses and providers increased their knowledge of the Five Ps of sexual history-taking and confidence when discussing sexual health. An important finding was that the efficient use of extra-genital testing far outweighs the cost of a missed diagnosis of gonorrhea and chlamydia and untreated infection complications.

Keywords: extra-genital screening, college health setting, sexually transmitted infections, gonorrhea and chlamydia

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Section I. Introduction

Background

Extra-genital gonorrhea and chlamydia infections affecting the throat and rectum continue to increase among young adults (Middlebrook & Ruud, 2020). According to Workowsi et al. (2021), from a self-reported survey on extra-genital intercourse, people aged 24 years and younger are most at-risk. Because the college health setting serves this age group, decreasing sexually transmitted infections (STIs) in the college community will improve healthcare outcomes.

Organizational Needs Statement

The organization where this quality improvement project took place is a large university health center in eastern North Carolina. It serves as a primary care clinic for the university population. The organization's mission is to provide safe, cost-effective, accessible, and quality care for the campus community ([redacted], 2022). In addition, with over 28,000 students attending the university, the student health center plays an integral part in the health care of the student population.

The student health service (SHS) center identified the need to increase extra-genital screening rates for gonorrhea and chlamydia due to increased cases seen on campus. Based on a chart review from 2013 to 2017, rates of genital gonorrhea increased by 67%, and chlamydia increased by 22% at this student health center ([redacted], personal communication, June 8, 2022). With such a significant increase in genital cases alone, one can extrapolate that there may be an increase in extra-genital cases. In addition, extra-genital infections in the throat and rectum can be asymptomatic, contributing to a missed diagnosis. Therefore, without extra-genital

testing, providers may miss gonorrhea and chlamydia diagnoses. A missed diagnosis contributes to the spread of gonorrhea and chlamydia, putting the student health population at risk.

The current recommendation from the Centers for Disease Control (CDC) is that males who engage in sex with males receive screening for gonorrhea and chlamydia, both urogenital and extra-genital, once a year (Workowski et al., 2021). In addition, the CDC suggests that women receive extra-genital testing determined by the patient's risk and exposure (Workowski et al., 2021). For women, it is a suggestion and not a standardized recommendation. Because extra-genital infections can be asymptomatic, an individual may not know their infection status. Without extra-genital gonorrhea and chlamydia testing, the spread of these infections will continue to go unnoticed.

The need to increase extra-genital screening aligns with the Triple Aim for populations outlined by the Institute for Healthcare Improvement. The Triple Aim focuses on improving health care by reducing patient costs, enhancing the patient care experience, and improving the population's health (The Institute for Healthcare Improvement, 2022). Increasing extra-genital screening rates will increase the treatment of gonorrhea and chlamydia, thereby decreasing the spread of these infections and improving the health of the university population. In addition, increased extra-genital screening aligns with the Healthy People 2030 sexually transmitted infection objective. The objective is to reduce the barriers to STI care, improve patient treatment of STIs, and decrease the number of sexually transmitted infections (Office of Disease Prevention and Health Promotion, 2022).

The Centers for Disease Control and Prevention (2020) reported that the incidence of gonorrhea reached 1.6 million, and chlamydia infected four million people in the United States (US). The CDC reports that STIs cost the US several billion dollars in medical care costs.

Gonorrhea and chlamydia accounted for $962 million of that cost alone. Those younger than 24 years of age accounted for 26% of the total cost (Centers for Disease Control and Prevention, 2020). The CDC data reflects the extent of the problem and the costs associated with treatment.

Implementing this project can help develop screening guidelines to improve healthcare outcomes essential for achieving the Triple Aim and Healthy People 2030 objectives. In addition, the project aligns with the organizational need to increase its gonorrhea and chlamydia screening rates, protect the at-risk university community, and provide cost-effective, accessible care. The collaborative efforts of the student health center providers and nursing staff are the sustainable asset that makes this possible.

Problem Statement

Student Health Services identified the need to streamline screening patients for extra-genital STIs and increase testing rates. Low rates of extra-genital screening present the problem of a missed diagnosis of gonorrhea and chlamydia. Any missed diagnosis delays evidence-based treatment and contributes to the spread of STIs and avoidable complications.

Purpose Statement

The project aimed to increase extra-genital STI testing at the student health center by implementing a standardized process for screening patients. The process included guidelines and input from providers and nurses in the clinic. A standardized method in screening for gonorrhea and chlamydia helps reduce undiagnosed and untreated infections, facilitate treatment, and reduce the spread of STIs among the student health population.

Section II. Evidence

Literature Review

The literature search for this project was conducted using the university Health Science Library. The database used was PubMed with the MeSH search terms “extra-genital screening,” “extra-genital STI screening,” “extra-genital screening for gonorrhea and chlamydia,” “extra-genital screening college health setting,” “extra-genital gonorrhea and chlamydia men and women,” “sexually transmitted infections extra-genital screening,” and “CDC sexually transmitted infections treatment guidelines.” The PubMed search yielded 122 results. The inclusion criteria for article selection were based on full-text journal articles dated within the past five years, with the words “extra-genital screening,” "gonorrhea and chlamydia screening," or “chlamydia and gonorrhea” contained in the title of the article.

The exclusion criteria consisted of articles not in English, greater than five years old, related to pediatrics or pregnancy, and articles that were not full text. Another exclusion rationale was articles about STIs other than gonorrhea and chlamydia, such as syphilis, genital herpes, and human immunodeficiency virus (HIV). After applying the inclusion and exclusion criteria, seven articles were retained. The articles were evaluated based on Melnyk & Fineout-Overholt’s level of evidence (2011) model. The articles were read in their entirety and determined to be appropriate and applicable to the project.

Current State of Knowledge

The current recommendation from the Centers for Disease Control and Prevention (CDC) is for men who have sex with men (MSM) to be screened at extra-genital sites once yearly (Centers for Disease Control and Prevention, 2021). For all other populations (i.e., transgender men and women and heterosexual men and women), the CDC states that extra-genital screening

can be considered based on the patient's risks of exposure (Centers for Disease Control and Prevention, 2021). However, the literature review found no standardized clinical practice guidelines for extra-genital screening for gonorrhea and chlamydia in heterosexual individuals. Pitasi et al., (2019) reported that transgender people are an underserved population affected by extra-genital gonorrhea and chlamydia infections and for whom no clinical practice guidelines exist. Pitasi et al., (2019) conducted a 3.5-year observation study of transgender men and women in six US cities to investigate the percentage of study participants who were positive for both urogenital and extra-genital infections during that timeframe. It was concluded that more research is needed to develop standardized testing strategies and create clinical practice guidelines for treating extra-genital infections in transgender individuals.

Current Approaches to Solving Population Problem

One approach is to screen all men and women according to the exposure site, meaning pharyngeal, rectal, or urogenital. For example, a study conducted by Bamberger et al., (2019) on all men and women at a sexually transmitted disease clinic over two and half years included performing extra-genital screenings at the site of extra-genital exposure. The study aimed to determine the number of clinic patients who had an extra-genital infection out of those who reported having extra-genital sex. One major finding from the study was that an increase in sexual partners was a key predictor of having a positive test result. Likewise, a study by Huxta et al. (2021) focused on women in the college health setting. They evaluated chart data over three years to see if extra-genital gonorrhea and chlamydia screenings were effective. They concluded that one out of 22 chlamydia infections and one out of three gonorrhea infections would result in a missed diagnosis with only urogenital screening (Huxta et al., 2021).

The study performed by Pitasi et al., (2019) analyzed chart data of 1,045 transgender men and women over 3.5 years and found that 86% of women and 28.6% of men who were transgender had a positive extra-genital infection while also having a negative urogenital test. Middlebrook & Ruud (2020) gathered a team of clinic staff that included the director of clinic services, a nurse practitioner, staff nurses, and the project lead to create intervention materials and provide an education meeting to discuss and review evidence-based literature. They concluded it takes a collaborative team approach and evidence-based knowledge to assess and diagnose extra-genital infections. This quality improvement project's approach was based on findings from these studies.

Evidence to Support the Intervention

The intervention included a sexual history-taking tool based on the Centers for Disease Control and Prevention's Five Ps of Sexual Health. The Five Ps are Partners, Practices, Protection from STIs, Past history of STIs, and Prevention of pregnancy (Centers for Disease Control and Prevention, 2022). The Five Ps is a foundation to help guide the conversation about the patient's sexual health and offers a practical method for sexual history-taking. Middlebrook & Ruud (2020) found that increasing staff knowledge of the Five Ps helped the multidisciplinary team evaluate a patient's risk, establish eligibility criteria, and define the process of extra-genital swabbing. According to Barrow et al., (2020), a sexual history would be incomplete without the Five Ps and should be part of a patient visit for any STI-related symptom or concern.

The questions on the sexual history-taking tool for this quality improvement project were designed by a multidisciplinary team consisting of the project champion, an office nurse practitioner, the office nurse manager, and the project lead. The questions align with the Five Ps to gather the most accurate information to determine the patient's risk and assess the need for

extra-genital screening. This intervention tool best suits the partnering organization and the target population because it allows for open dialogue between the patient and care providers.

Evidence-Based Practice Framework

This quality improvement project used the Theoretical Domains Framework (TDF). The core design of the framework is the use of psychological theories and constructs that play a critical role in the adaptation of change in behavior for healthcare professionals and consists of 12 domains (Michie et al., 2005). The 12 domains are 1) knowledge, 2) skills, 3) social/professional role and identity, 4) beliefs about capabilities, 5) beliefs about consequences, 6) motivation and goals, 7) memory, attention, and decision processes, 8) environmental context and resources, 9) social influences, 10) emotion, 11) behavioral regulation, and 12) nature of the behaviors. The TDF was used by Newlands et al., (2021) in a study to evaluate why clinical trials lose participants. The researchers identified two important domains to participant retention, domain 6) motivation and goals, and domain 7) memory, attention, and decision-making. It was concluded that the TDF was an applicable framework to guide clinical trials by identifying and understanding the problems of clinical trial retention.

The TDF and a multidisciplinary team approach were adopted as the operational framework to guide the project. The four domains and constructs that align with this project are 1) knowledge – knowledge about the condition and scientific rationale, 4) beliefs about capabilities – perceived competence, 9) social influences – organizational development, and 11) behavioral regulation – goal and target setting. The TDF was key in guiding this project with the implementation of a history-taking tool. Therefore, it was essential to establish a collaborative multidisciplinary team approach with the development of the tool. The teams' input on using the tool helped elicit current knowledge and perceived confidence for the organization to implement

the project. The framework guided the project using the team's knowledge and capability. The multidisciplinary team was used to obtain insight into extra-genital screening and develop the sexual history-taking tool.

Ethical Consideration & Protection of Human Subjects

The ethical considerations of the project were beneficence, justice, confidentiality, and protecting patient identity. The project lead considered the participants' welfare to provide respect, justice, and fair treatment while maintaining participant confidentiality. The intervention of using a sexual history-taking tool for this project was equal to everyone in the target population. The sexual history-taking tool did not discriminate or bias as it was based on the patient's self-report of their sexual practices. A self-report process eliminated the opportunity for anyone to be exploited during project implementation.

The project lead completed the Collaborative Institutional Training Initiative (CITI) modules to prepare for the formal approval process. These modules were educational resources for conducting research studies (Research, Ethics, and Compliance Training, 2022). In addition, as part of the university institutional review process, the project lead submitted the Self-Certification Quality/Institutional Review Board (IRB) worksheet. As a result, the project was deemed a quality improvement initiative, and no further IRB review was required. There are no conflicts of interest with the intent to publish this quality improvement project.

Section III. Project Design

Project Site and Population

The project site was a large university student health center in eastern North Carolina that provides episodic and primary care. University students are the population treated at the student health center. Facilitating factors include the convenience of the university population to conduct the project and support from the center's administration. One barrier considered was staff participation and compliance with the history-taking tool.

Description of the Setting

The student health center has a team of providers consisting of medical doctors, nurse practitioners, physician assistants, nurses, therapists, and clerical office staff. In addition, it has an on-site lab capable of doing most of the laboratory analysis necessary for patient care. The center's pharmacy provides prescriptions at a retail cost to clinic patients. The student health center can accept most commercial insurances and Medicaid to pay for services rendered. It is centrally located on the college campus, making it easily accessible to students.

Description of the Population

The university has a population of over 28,000 students. The majority of the on-campus students are within the age group of 24 years and under. The students consist of undergraduate and graduate students residing on and off campus. Students can seek episodic or primary care services.

There are six providers and seven nursing staff in the clinic Monday through Friday. The clinic nursing staff reviews the completed history-taking tools from each patient presenting with

a genitourinary, gynecologic, or male health complaint. The clinic providers order the screening tests, review the results, and treat them appropriately. Patients receive test results, further instructions, and written patient education via a secure online patient portal.

Project Team

The project team consisted of faculty advisors who provided recommendations on project direction. The project champion was the Director of Student Health Services, who oversaw and guided the project at the site. A clinic nurse practitioner was the project coordinator who oversaw data management. The project lead monitored compliance with the history-taking tool, assessed the need for potential changes, and recorded project data during weekly site visits. In addition, the project lead collected pre-data on the current number of screenings before implementation, coordinated a staff education meeting on extra-genital screening, presented a PowerPoint presentation update at the project's midpoint, and presented an evaluation of results after the project was completed.

Project Goals and Outcome Measures

The project aimed to increase the extra-genital screening rates of gonorrhea and chlamydia at the student health center. The goal was to increase extra-genital screening rates by implementing a sexual history-taking tool (see Appendix A). The questions on the sexual history-taking tool were designed to align with the Five Ps of sexual health: Partners, Practices, Protection from STIs, Past history of STIs, and Prevention of pregnancy (Centers for Disease Control and Prevention, 2022). The Five Ps were used as a guideline to assess the patient’s risk of extra-genital infection.

Description of the Methods and Measurement

The staff nurses and providers were educated on using the new sexual history-taking tool via a 20-minute PowerPoint presentation given by the project lead. The PowerPoint presentation included gonorrhea and chlamydia statistics, current clinic extra-genital screening rates, and information on the Five Ps of sexual history taking (See Appendix B). In addition, the project lead tracked compliance using the tool on an Excel spreadsheet weekly (See Appendix C).

The sexual history-taking tool was delivered to patients of the student health center via online access when they made an appointment for a gynecologic, genitourinary, or male health complaint. The tool consists of eight questions (See Appendix A). The patients were asked to complete the tool before visiting the provider. In addition, reviewing the tool would allow the nurses to confirm the answers with the patient on arrival and prepare the proper collection methods.

Discussion of the Data Collection Process

Lab services generated a weekly report to assess the number of sexual history-taking tools completed. An Excel spreadsheet was the data tool used to collect the number of screening tools completed weekly (See Appendix C). The project lead used the number of screening tests completed to assess if there was an increase in extra-genital testing when compared to the pre-data number of tests before implementation. Over 12 weeks, the project lead monitored if the screening tool was completed via a generated report for all STI-related visits, collected the number of patients seen, the number of tools completed, the number of extra-genital tests completed, the number of extra-genital diagnoses, and weekly totals. The Excel spreadsheet was

maintained as a Google document on a password-protected computer only accessible by the project champion, project lead, and the project coordinator.

Implementation Plan

Before implementation, the multidisciplinary team approved the sexual history-taking tool. The tool was incorporated online for patients to complete prior to the clinic visit. A virtual meeting by the project lead with the clinic provider staff was held to introduce the project, the sexual history-taking tool, along with a 20-minute PowerPoint presentation on the project's importance.

Timeline

The project pre-data collection began on January 25, 2023. The project lead conducted the project over 12 weeks (January 2023 – April 2023). A virtual provider information meeting occurred on February 1, 2023. On February 22, 2023, a virtual and face-to-face one-hour Area Health Education Center (AHEC) presentation, Part 1, was given as an update on the project. Data collection, meetings with the project champion, compliance with the tool, and staff follow-up occurred weekly. On May 3, 2023, a one-hour AHEC presentation, Part 2, discussed the results of the project and the goals for continuing the sexual history-taking tool at the student health center (See Appendix D).

Section IV. Results and Findings

Results

There was an increase in the number of extra-genital gonorrhea and chlamydia screening tests collected during implementation in Spring 2023 compared to the pre-data of Fall 2022. In Spring 2023, there were 504 extra-genital tests collected, resulting in a 38% increase in extra-genital testing, compared to 365 in Fall 2022. In addition, 824 patients presented with an STI complaint in Spring 2023. Of the 824, 229 patients received extra-genital testing, resulting in a 28% overall patient testing rate. Consequently, there was an overall increase in gonorrhea and chlamydia tests collected from all sites (endocervical, urogenital, pharyngeal, and rectal) during the implementation timeframe. In Fall 2022, the total number of swabs were 1,589 compared to 2,181 in Spring 2023, resulting in a 37% increase. Also, extra-genital diagnoses decreased by 50% in Spring 2023. In Fall 2022, there were 20 positive extra-genital diagnoses compared to 10 positive extra-genital diagnoses in Spring 2023 (See Appendix E and Appendix F).

Compliance with the sexual history-taking tool was also tracked during project implementation. The number of tools used were recorded weekly. The overall compliance rate during implementation was 93% (See Appendix G).

Discussion of Major Findings

Currently, the CDC recommends that men who have sex with men receive both urogenital and extra-genital gonorrhea and chlamydia testing yearly (Workowski et al., 2021). However, there is no yearly standardized recommendation for heterosexual men and women. Project data revealed that there were ten positive extra-genital diagnoses during implementation. Six of ten (60%) were women, and four (40%) were men who had sex with men. These findings

reflect that six out of ten (60%) extra-genital diagnoses would have been missed had testing only been conducted according to the current recommendation, reflecting a gap in the recommendation standard for yearly extra-genital testing. The gap in the current recommendation leaves heterosexual men and women exposed to undiagnosed and untreated infections that could lead to severe and costly complications such as infertility, ectopic pregnancy, and HIV risk (Centers for Disease Control and Prevention, 2018).

During implementation, patients were sent the sexual history-taking tool online via a secure patient portal to complete before the clinic visit. The questions on the tool assessed the patients' risk of extra-genital infection and the need for testing. The testing resulted in ten positive extra-genital diagnoses over the 12 weeks of implementation. Without implementing this project, the ten positive results could have gone undiagnosed and untreated in the college health setting. Overall, there was a 50% decrease in extra-genital diagnoses compared to Fall 2022. The decrease represents appropriate screening from the use of the sexual history-taking tool, with a utilization rate of 93% over the 12 weeks of implementation.

Section V. Interpretation and Implications

Costs and Resource Management

One significant cost to implement this project was staff resource time spent collaborating with office nurses, providers, lab, and information technology (IT) services. Lab personnel printed an itemized report of patients screened for gonorrhea and chlamydia weekly. The itemized weekly report saved considerable time and made the chart review process more efficient. Time spent conducting chart reviews to assess sexual history-taking tool usage was approximately six to seven hours weekly. If there was an increase in extra-genital testing, one can extrapolate that there would be an increase in the cost of the supplies to perform testing. The cost of the swab to perform testing was billed to the patient. Continuing this project would cost student health services approximately $15,000 per year. The cost is estimated for a medical assistant to spend a third of their time on the project activities with a salary of $45,000 per year (See Appendix H). The hourly rate for this employee would be $21.63. The medical assistant would spend six to seven hours weekly conducting chart reviews, monitoring sexual history-taking tool compliance, and tracking project data on the spreadsheet.

The cost of the project outweighs the risk of an undiagnosed and untreated gonorrhea and chlamydia infection that results in the cost of complications for just one patient. If one patient leaves without being treated, this can lead to an increase in the spread of STIs as well as impact the entire student health population. If a patient is left undiagnosed, this patient can suffer from severe avoidable complications that could be costly for both the patient and the health care system. According to Kumar et al., (2021), the direct medical costs that can be averted by intervention programs such as this project is estimated to be $262,000.00 for women and $4,600.00 for men per year, which is significantly more than the $15,000.00 cost associated with

yearly interventions. Thus, continuing the interventions can improve healthcare outcomes by preventing undiagnosed and untreated gonorrhea and chlamydia infections.

Implications of the Findings

The project allowed student health services to track data related to gonorrhea and chlamydia testing in a student health population, evaluate if sexual history-taking occurs before testing, and decrease the chances of a missed diagnosis and untreated infection. If the project were to continue, it could perpetually impact the health and wellness of the campus community. Also, the project could easily be replicated at other student health centers for future reference.

Implications for Patients

Patients needed to be open and honest when completing the sexual history-taking tool. The project would not have been successful without open patient dialogue and honest answers. The most unanswered questions by patients on the sexual history-taking tool were: Have you ever had an STI? and Do you use protection? Patients were willing to answer these questions during face-to-face interviews with the nurse or provider, so it may appear that patients were more uncomfortable answering the questions via an online survey.

Another implication was that some insurance companies would not pay for extra-genital testing, and the cost became the patient's responsibility. Some patients may have opted out of testing due to the cost. The clinic providers documented medical necessity based on the risk identified by patient screening to resolve most cases of insurance nonpayment. Student health services would also allow patients to pay for extra-genital testing at a reduced cost out-of-pocket if medical insurance was not an option. The reduced out-of-pocket cost to the patient would be $10. Paying out-of-pocket also kept the extra-genital test off of the explanation of benefits that

would commonly be sent to the primary holder of the insurance, meaning the patient's parents in some cases, which was another concern for some patients. Aside from cost implications, extra-genital testing leads to early detection of sexually transmitted infections. Early detection leads to early treatment and prevention of missed diagnoses. Prevention of missed diagnoses decreases costly outcomes of untreated infections.

Implications for Nursing Practice

The nursing staff assessed whether the sexual history-taking tool was completed before the provider visit. Discussing the tool with patients increased nursing knowledge of the Five Ps and promoted confidence when discussing sexual health. The clinic providers reviewed the screening tool questions with the patient and documented the answers in the patient's chart to ensure accurate screening. Providers ordered the appropriate testing and provided treatment. For advanced practice providers, these actions align with the Doctor of Nursing Practice (DNP) Essentials (American Association of Colleges of Nursing, 2006) that address the development of nursing practice through analyzing information, evaluating patient outcomes based on that information, and using that data to promote quality improvement in nursing practice and for patients. Advanced practice nurses are provided with the opportunity to create change based on best practices through quality improvement projects such as this.

Impact for Healthcare System

For the health system, the project encouraged collaboration and communication among staff. The project affected how patients are screened at student health services and impacted care delivery by providers and nursing staff. The project was a multidisciplinary team effort. The sexual history-taking tool was well implemented and consistently documented by the nurses and

providers. The project allowed student health services to accomplish its ultimate goal of increasing extra-genital gonorrhea and chlamydia testing and decreasing the number of STIs in the college health setting. Meeting these goals aligns with the objectives of the Triple Aim to reduce patient costs, enhance the patient care experience, and improve the population's health.

Sustainability

The project's sustainability comes from the decision of the project champion and the team coordinator. The project site plans to continue tracking data related to extra-genital sexually transmitted infections. Tracking STIs aligns with the Triple Aim for Populations and Healthy People 2030 objectives to improve healthcare outcomes. Student services will meet to discuss whether to keep the added questions on the sexual history-taking tool and whether to change the answers to always, sometimes, and never for question #3. Do you use protection? Through team discussion, it was found that some providers felt that changing the answer selection would give a more accurate assessment of the patient's risk. Further discussions with the student health center staff, providers, and information technology services will take place to assist with unanswered questions on the online sexual history-taking tool.

Dissemination Plan

The project lead created a staff education PowerPoint to introduce the project and presented it to nursing staff and providers at the project site. Next, a one-hour Area Health Education Centers (AHEC) PowerPoint presentation, Part 1, was given to update the project's status. Finally, a one-hour AHEC PowerPoint presentation, Part 2, was presented with project results. All presentations were virtual and open to the attendance of anyone in the AHEC network. The project lead submitted the DNP paper for this project to the University Scholarship Repository for public

access. In July, a formal presentation was presented to university faculty and peers at the University College of Nursing. Considering the national tracking of STIs by the CDC, other organizations such as local health departments, other student health clinics, and health associations such as the American College Health Association would benefit from the findings of this project.

Section VI. Conclusion

Limitations and Facilitators

One project limitation was the number of ways a patient is seen at the clinic. Some patients were seen in the STI Fast Track clinic, some were scheduled with providers, and others at satellite clinics on campus. The lab personnel needed to ensure that they were pulling data from all sites for the generated report to be accurate. The timeframe of only 12 weeks was also a limitation for the project.

One barrier that significantly impacted using the sexual history-taking tool was if STI was not the chief complaint. If STI was not the chief complaint, the patient did not receive the sexual history-taking tool via online access. The project champion will meet with nursing staff, providers, and information technology services to discuss how to improve this process in the future.

One of the most helpful facilitators was that lab services were able to generate a weekly report of all STI visits. The generated report made the review of the data much easier to access. Another facilitator was the full engagement of the team of nurses, providers, the team coordinator, and the project champion about the project from the very beginning.

Recommendations for Others

To replicate this project, one must consider the pre-data timeframe. It is recommended that the pre-data timeframe be decided early in the project and could range from weeks, months, semesters, or years. Another consideration is the time it will take for a comprehensive review of the data elements to be captured and data accessibility. For chart review, a decision must be made to screen every STI complaint or only GYN, GU, or male health visits to be reviewed. For

data integrity, decide whether to track each patient individually or the number of swabs each patient received when calculating patients or swabs. For this project, one patient was counted as one visit even though they may have been swabbed at three different sites, which affected the number of total swabs counted on the weekly generated report.

This project's scalability can apply to implementation at larger institutions such as hospitals, health departments, and primary health clinics. The project's sustainability is based on the ability of the organization to afford the cost of staff resources to continue to track the data. At this time, the project site plans to continue the project. The project's long-term impact is to prevent any missed diagnosis of extra-genital gonorrhea and chlamydia and avoid untreated STI complications. Patient education and prevention will also reduce the financial implications of undiagnosed and untreated STIs. The long-term implications of achieving the goal of prevention are better healthcare outcomes in the healthcare system where the project is conducted and in the population as a whole. This project lead hopes that this project could be replicated on a national level.

Recommendations for Further Study

Replication projects could include other STIs such as syphilis, HIV, human papillomavirus (HPV), or herpes simplex virus (HSV). The project could extend to other student health centers, sexual health clinics, and local health centers. Other populations, such as older adults, could also benefit from this project. Expanding the project's timeframe could allow additional time to collaborate on the screening tool and process data. A recommendation for further study is to revise the answers to sexual history-taking tool question #3 related to the use of protection. Changing the answer selection to always, sometimes, and never instead of yes or no allows for better treatment decisions.

Final Thoughts

The project aimed to increase extra-genital screening rates at a student health center by implementing a sexual history-taking tool. The sexual history-taking tool would screen patients for the need for extra-genital testing. The project data concluded with an increase in extra-genital testing and a decrease in extra-genital diagnoses during implementation. Increasing extra-genital testing reduces missed diagnoses and untreated sexually transmitted infections, thus improving patients' health in the college health setting.

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Appendix A

Sexual History-Taking Tool

Have you ever been sexually active? Yes No

Have you ever had a sexually transmitted infection? Yes No Unsure

Do you use protection (condoms, female condoms, dental dams, etc.)? Yes No

Who do you have sex with? **(Select all that apply)**

Men Women Both Men and Women Transgender

Ways you have sex:

- Vaginal

Do you want to have urine or vaginal (endocervical) STI screening for gonorrhea and chlamydia during your visit today?

Yes No

- Rectal

Do you want to have rectal STI screening for gonorrhea and chlamydia during your visit today?

Yes No

- Oral

Do you want to have oral STI screening for gonorrhea and chlamydia during your visit today?

Yes No

- Other

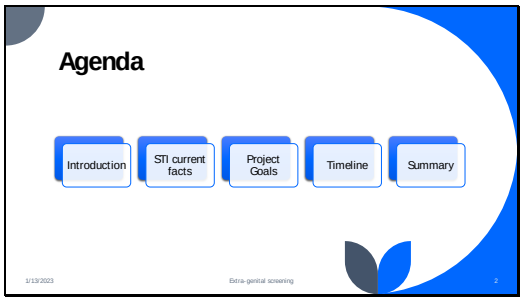
*******If you answered yes to STI screening, do not use the restroom, eat, drink, or chew gum prior to seeing the nurse*******

Appendix B

Extra-genital Screening PowerPoint Presentation

Slide 1

Slide 2



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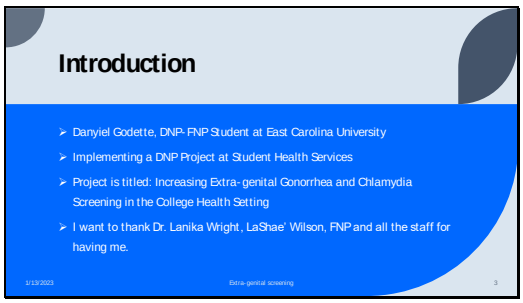

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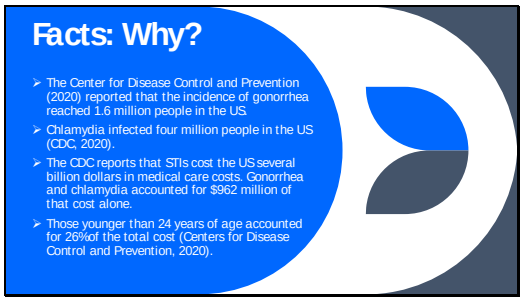

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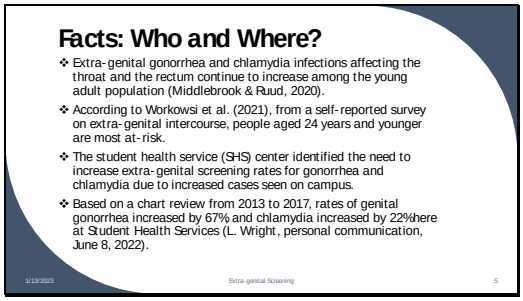


Slide 6

Facts: Why?

- Student Health Services has identified the need to streamline screening patients for extra- genital STIs and increase testing rates.
- Low rates of extra- genital screening present the problem of a missed diagnosis of gonorrhea and chlamydia.
- Any missed diagnosis delays evidence- based treatment and contributes to the spread of STIs and avoidable complications.

1/13/2023 PRESENTATION TITLE 6

Slide 7

Project Goals: What?

- ✓ Implement a modified version of the sexual- history taking tool.
- ✓ The modified version aligns with the 5 P's of sexual history taking according to the CDC.
- ✓ The Five P's are Partners, Practices, Protection from STIs, Past history of STIs, and Prevention of pregnancy (Centers for Disease Control and Prevention, 2022).
- ✓ The Five P's is a foundation to help guide the conversation about the patient's sexual health and offers a practical method for sexual history-taking.
- ✓ Middlebrook & Ruud (2020) found that increasing staff knowledge of the Five P's helped the multidisciplinary team to evaluate a patients' risk, establish eligibility criteria, and define the process of extra-genital swabbing.

1/13/2023 Extra-genital Screening 7

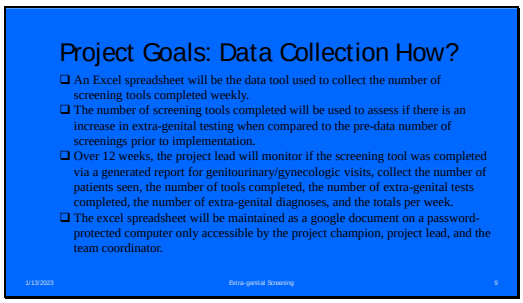
Slide 8

8

Sexual History-Taking Tool
Have you ever been sexually active? Yes No
Have you ever had a sexually transmitted infection? Yes No Unsure
Do you use protection, (condoms, female condoms, dental dams, etc.)? Yes No
Who do you have sex with? **(Select all that apply)**
Men Women Both Men and Women Transgender
Ways you have sex:
Vaginal
Do you want to have urine or vaginal (endocervical) STI screening for gonorrhea and chlamydia during your visit today?
Yes No
Rectal
Do you want to have rectal STI screening for gonorrhea and chlamydia during your visit today?
Yes No
Oral
Do you want to have oral STI screening for gonorrhea and chlamydia during your visit today?
Yes No
Other
*****If you answered yes to STI screening, do not use the restroom, eat, drink, or chew gum prior to seeing the nurse*****

1/13/2023 Extra-genital Screening

Slide 9



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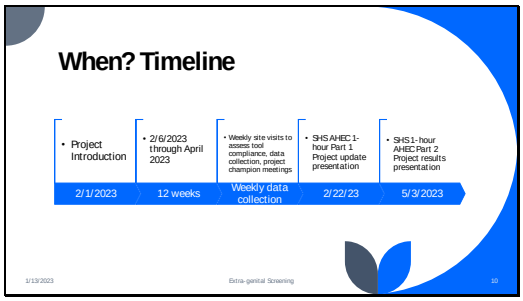

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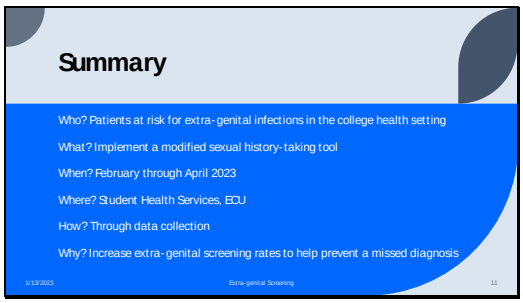

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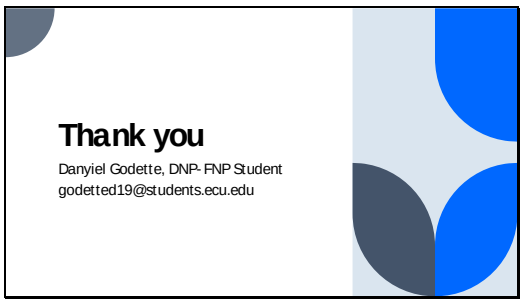


Slide 13

Appendix C

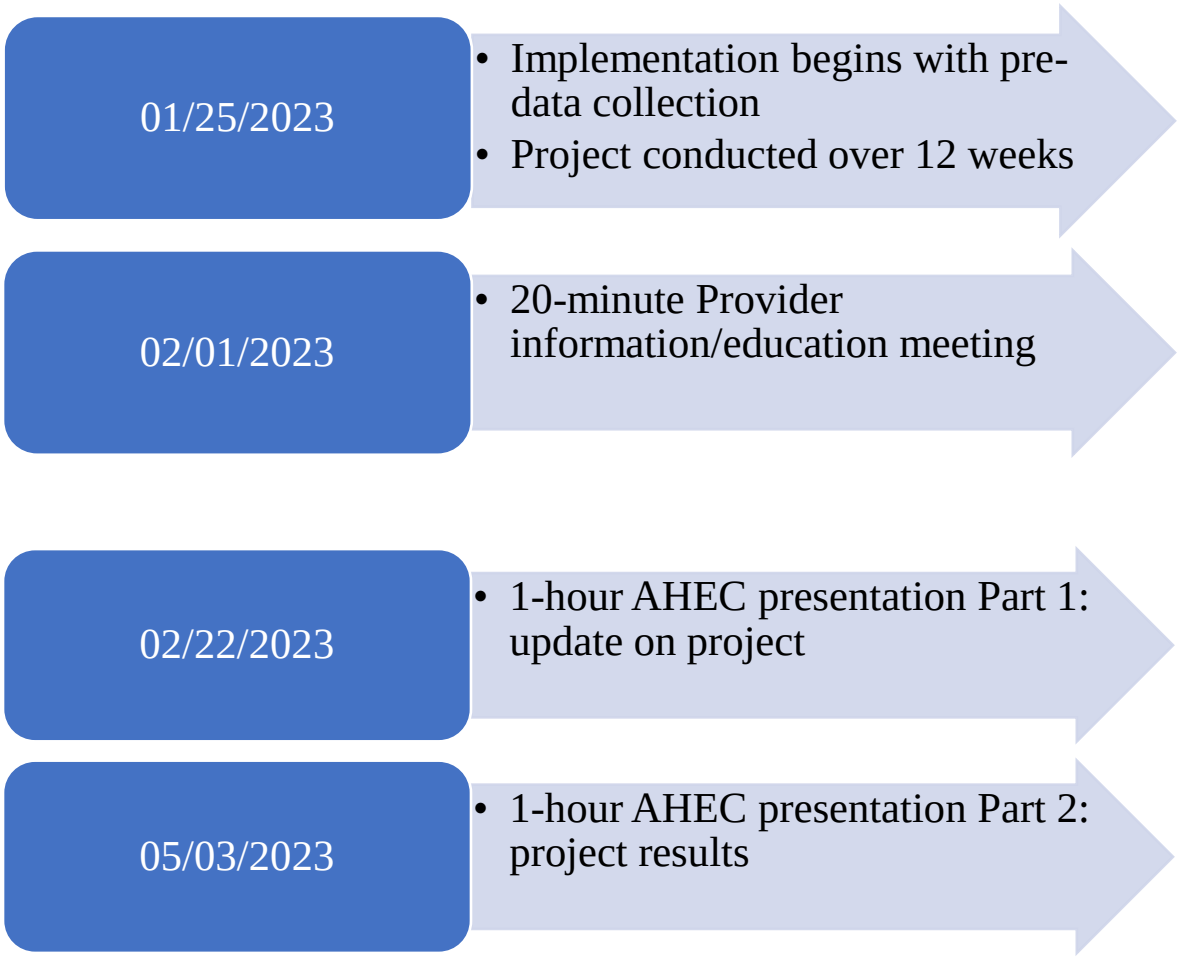
Data Collection Tool

	No. of STI patient visits	No. of screening tools completed	No. of extra-genital tests	No. of extra-genital dx's
Week 1				
Week 2				
Week 3				
Week 4				
Week 5				
Week 6				
Week 7				
Week 8				
Week 9				
Week 10				
Week 11				
Week 12				
Totals				
Total swabs				
Pre-data				
Fall 2022				

Appendix D

Timeline

January 2023 – April 2023



Appendix E

Project Data Results Excel Spreadsheet

	No. of STI patient visits	No. of screening tools	No. of extra-genital tests	No. of extra-genital dx's
Week 1	76	74	15	1
Week 2	67	65	16	0
Week 3	60	56	20	1
Week 4	82	74	24	1
Week 5	84	81	26	0
Week 6	**SPRING BREAK**NO DATA			
Week 7	61	54	13	0
Week 8	80	73	24	0
Week 9	77	73	22	4
Week 10	59	51	16	1
Week 11	85	77	24	1
Week 12	93	88	29	1
Totals	824	766	229	10
Total swabs	2181		504	
Pre-data				
Fall 2022	1589		365	20

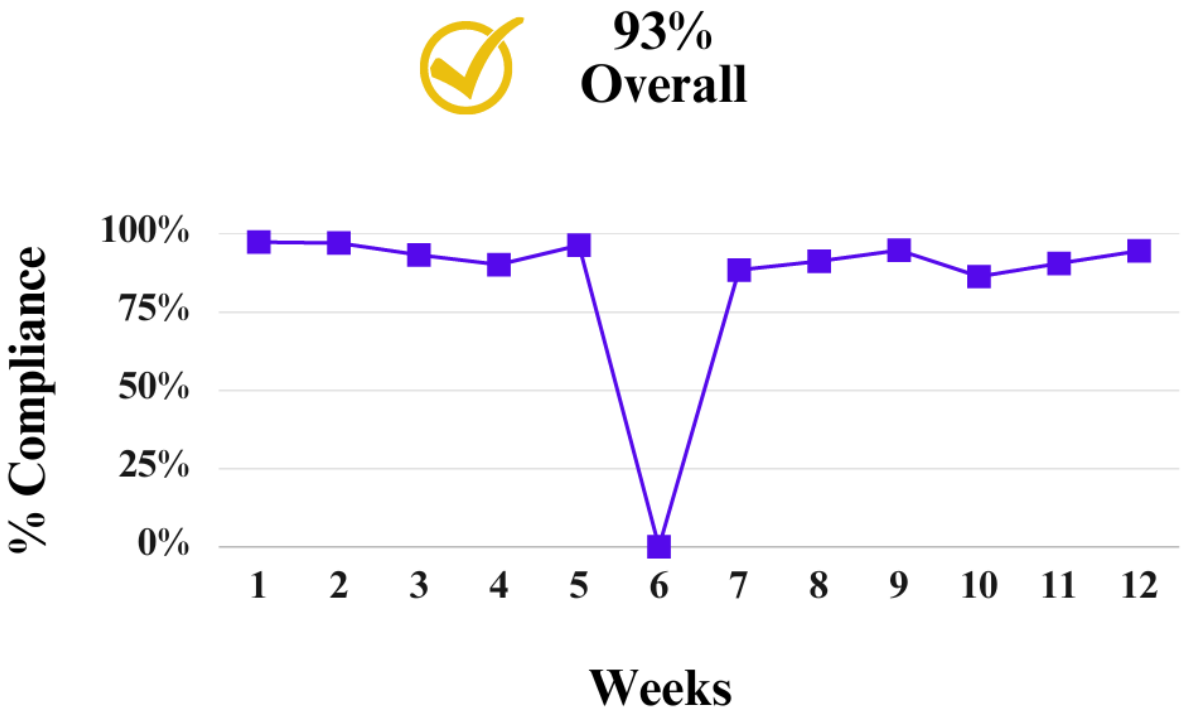
Appendix F

Comparison Data

	Fall 2022	Spring 2023
Total Swabs: 37% ↑	1589	2181
EG Swabs: 38% ↑	365	504
EG Dx's: 50% ↓	20	10

Appendix G

Screening Tool Utilization



Appendix H

Project Cost v Benefit Analysis