4-2020

Increasing Chlamydia Trachomatis and Neisseria Gonorrhea Screening Among Women 15 to 24 Years Old Using a Multifaceted Approach

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INCREASING CHLAMYDIA TRACHOMATIS AND NEISSERIA GONORRHEA SCREENING AMONG WOMEN 15 TO 24 YEARS OLD USING A MULTIFACETED APPROACH

by

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EVIDENCE-BASED PRACTICE PROJECT REPORT

Submitted to the College of Nursing and Health Professions

of Valparaiso University,

Valparaiso, Indiana

in partial fulfillment of the requirements

For the degree of

DOCTOR OF NURSING PRACTICE

2020

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Student	Date	Advisor	Date

DEDICATION

This project is dedicated to my dear family and closest friends. To my parents, Michael and Peggy Myles, who have never wavered in support of my goals. They have loved me unconditionally and the sacrifices they have made for myself and my brother throughout the years do not go unnoticed. I proudly follow in my mother's footsteps as I continue this journey dedicating my days' work to the needs of others. To my husband, Nathan Shireman, who believes in me more than I believe in myself many days. You have always been my cheerleader and because of you we are accomplishing things I never would have dreamt I could accomplish without you by my side. To my daughter, Millicent Shireman, whom majority of my career goals have centered upon long before you were born. I have yearned for a family of my own and my path has never been and never will be solely for myself. To my brother, Matthew Myles, who has inspired me to never place a ceiling on goals and to welcome challenges along the way. To my grandparents, Bernard and Venita Vermillon, who have taught me patience, generosity, and kindness. I feel very fortunate to have grown up with you both. To my in-laws, Rita and Todd Shireman, who have cared for me as one of their own. You have raised the man of my dreams and continually serve as role models for hard work and commitment to family. To a few of my very best friends – Erica Seifert, Jennifer Dale, and Sarah Lubben – whom have helped me maintain my sanity throughout work, school, and life. God did not give me sisters, but you all are close enough and for that I am forever thankful.

ACKNOWLEDGMENTS

My project would not have been successful if it were not for the support of several kind and brilliant people. I want to begin by thanking my advisor, Dr. Christina Cavinder. You have guided me seamlessly through this process. You have provided the constructive criticism and support I needed along the way. Great educators like yourself pave the way for generations of nurses to come and I hope I can emulate your mentorship as I continue on my journey. I have the upmost gratitude for my physician colleague, mentor, and friend Dr. Dan Berger. I feel fortunate for the professional alliance we have and wish that all physicians and APRNs worked in such accord that we do. I would not be the clinician I am today without your encouragement, patience, guidance, and teaching. Additionally, I would like to thank Jenelle Sloop, NP for supporting my peer Marta Byma and my project, despite maintaining a very busy clinic. Your transformational leadership skills shine, making you the glue that holds our clinic together. Lastly, but not least, I would like to thank Ashley Jackson, CMA. I jokingly call her my “partner in crime”, but it is because of her that we are able to provide high quality care to our patients. She has been tremendous support throughout my program, helping me with inventory for the NUR 713 business proposal and serving as a change agent for my EBP project. You are the definition of a team player and I feel extremely privileged to call you my colleague and friend.

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ABSTRACT

The Centers for Disease Control and Prevention (CDC) (2017a) estimates that one-quarter of sexually active people are between 15 and 24 years old, but account for half of 20 million sexually transmitted diseases (STD) reported annually in the United States. Chlamydia trachomatis (CT) and Neisseria gonorrhea (NG) are the most common reportable STDs (CDC, 2018). The purpose of this project was to increase CT/NG screening rates among sexually active, nonpregnant women 15 to 24 years old within the primary care setting through colleague education, routine sexual history taking, and indicated testing. A 30-minute colleague in-service was provided to educate clinical colleagues on the significance of the problem and best practice intervention. During preventive office visit intake with the medical assistant (MA) over a 10-week intervention period, women 15 to 24 years old were asked about sexual activity. If a woman indicated she was sexually active, CT/NG testing via urine sample were offered. Ten-week pre-intervention and 10-week post-intervention data including demographics, number screened for sexual activity, number eligible for testing based on sexual activity, number tested for CT/NG, and number of positive results were collected via manual chart audit. Data between groups were analyzed using descriptive statistics and chi-square analyses. There were non-significant increases in number screened for sexual activity (61% vs. 79%) (χ2(1, N=32)=1.117, p>.05), number eligible for testing (45% vs. 64%) (χ2(1, n=22)=0.733, p>.05), and number tested for CT/NG (80% vs. 100%) (χ2(1, n=12)=1.527, p>.05). There was no significant difference between pre-intervention and post-intervention positive CT (20% vs. 14%) (χ2(1, n=12)=1.527, p>.05) or NG (20% vs. 0%) (χ2(1, n=12)=1.527, p>.05) results. A longer timeframe or larger sample sizes would further explore significance of the intervention. Based on current clinical guidelines provided by CDC (2014c) and USPSTF (2014), women 15 to 24 years old should be offered CT/NG screening annually.

CHAPTER 1

INTRODUCTION

Background

The Centers for Disease Control and Prevention (CDC) (2017a) estimates that one-quarter of sexually active people are between ages 15 and 24 years old, but account for half of 20 million sexually transmitted diseases (STD), or sexually transmitted infections (STI), reported annually in the United States. STDs are infections that are passed through vaginal, anal, and/or oral sex (Planned Parenthood, 2019). STDs are very common, but many people do not experience symptoms and therefore are often unaware they are infected. Females 15 to 24 years old have the highest rate of Chlamydia trachomatis infections, representing 62.6% of all reported cases in 2017 (CDC, 2017b). Males 20 to 24 years old have the highest rate of Neisseria gonorrhea infections (CDC, 2017b). According to the CDC, incidence of chlamydia and gonorrhea are increasing among both males and females 15 to 24 years old (2017b).

Certain behavioral risk factors increase the risk of STD acquisition such as multiple sex partners or sex partner with multiple sex partners, sex with sex workers, no or inconsistent condom use, new sex partner in the past 60 days, and sex with sex partners recently treated for STDs, among others (Ghanem & Tuddenham, 2018). Particular vulnerable groups of interest include young men and women as noted above, men who have sex with men, people with history of STD(s), pregnant women, and people using illicit drugs, among others (Ghanem & Tuddenhan, 2018).

STDs like chlamydia and gonorrhea are a cause of public health concern. People infected with chlamydia and gonorrhea often do not have symptoms or have minimal symptoms (Ghanem & Tuddenham, 2018). These infections can produce short-term and long-term ailment. When symptomatic, chlamydia and gonorrhea may produce urogenital symptoms (Ghanem & Tuddenham, 2018). In women, this may present as burning with urination, vaginal discharge or

odor, or pelvic pain (CDC, 2014a; CDC, 2014b). Men may experience burning with urination, penile discharge, or painful ejaculation. In rare cases, chlamydia can cause reactive arthritis (USPSTF, 2014) and gonorrhea can spread to the blood and joints and become life threatening (CDC, 2014b). Chlamydia and gonorrhea increase both sex's risk of contracting Human Immunodeficiency Virus (HIV) and Human Papilloma Virus (HPV), the virus that causes cervical cancer as well as many anal and oropharyngeal cancers (CDC, 2014a; CDC, 2014b; Ghanem & Tuddenham, 2018). While less likely among men, untreated infections can lead to reproductive sequela. Females may experience pelvic inflammatory disease (PID), chronic pelvic pain, difficulty becoming pregnant, and pregnancy complications such as miscarriage, ectopic pregnancy, or preterm labor (CDC, 2014a; CDC, 2014b; Ghanem & Tuddenham, 2018). Men may become sterile from chronic, untreated gonorrhea infection (CDC, 2014b). Despite increasing incidence of chlamydia and gonorrhea infections, screening rates and subsequent eradication are suboptimal (Ghanem & Tuddenham, 2018).

Data from the Literature Supporting Need for the Project

Nationally, chlamydia and gonorrhea infections are on the rise (CDC, 2018). Young women less than 25 years old account for the highest rates of chlamydia and gonorrhea infections (CDC, 2017b). According to the Indiana State Department of Health (ISDH) (2017a), there were 34,278 reported cases of chlamydia in Indiana in 2017. Of these 34,278 cases, 20,221 (59%) occurred among men and women 24 years old and younger (ISDH, 2017a). Specifically, Elkhart county reported 1,045 cases (ISDH, 2017a). In the same year, there were 11,835 reported cases of gonorrhea in Indiana (ISDH, 2017b). Of these 11,835 cases, 5,752 (49%) occurred among men and women 24 years old and younger. Elkhart County reported a total of 322 cases (ISDH, 2017b). Given the often asymptomatic presentation of chlamydia and gonorrhea, local incidence may be higher than reported.

Improved screening of chlamydia and gonorrhea is needed to reduce the burden of such infections. The National Committee for Quality Assurance (NCQA) Healthcare

Effectiveness Data and Information Set (HEDIS) measures chlamydia screening rates reported from several managed care entities. In 2017, 48.9% of commercial health maintenance organization (HMO), 46.9% of commercial preferred provider organization (PPO), and 57.6% of Medicaid HMO members between 16 to 24 years old were screened for chlamydia (NCQA, 2019). An analysis of 3,953 adolescents and young adults revealed that 11.5% of respondents reported undergoing STD screening in the last year (Cuffe, Newton-Levinson, Gift, McFarlane, & Leichliter, 2016).

Patient barriers noted in the Cuffe et al. (2016) survey include confidentiality concerns or feeling they are not at risk. Provider barriers include a lack of knowledge of current guidelines or understanding of state laws regarding parental consent (Kettinger, 2013). Both patients and providers may have concerns regarding cost-effectiveness. According to a multi-practice retrospective chart review, decreases in STD screening appear to be an unintended consequence of the release of the 2012 cervical cancer screening guidelines, which now recommends Papanicolaou tests every three to five years instead of yearly (Bogler et al., 2015). Talking about sex is often taboo, so this should also be considered a barrier among both parties.

Strong clinical guidelines call for increased STD screening among the target population. The United States Preventive Services Task Force (USPSTF) (2014) and CDC (2014c) recommend screening sexually active women less than 25 years old for chlamydia and gonorrhea annually. Additionally, a goal of Healthy People 2020 is to increase the proportion of sexually active women 24 years old and younger enrolled in commercial and Medicaid plans who are screened for chlamydia (United States Department of Health and Human Services [HHS], Healthy People 2020, 2019).

Data from the Clinical Agency Supporting Need for the Project

Providers at the project clinical site personally attested that STD screening of the target population occurs less often than it should. As a team of providers and Certified Medical

Assistants (CMA), inconsistency in obtaining necessary sexual histories as well as neglect of the provider to routinely recommend screening was noted. The electronic medical record (EMR) provides a mean to remind providers and colleagues to screen this population, yet it is often overlooked.

Purpose of the Evidence-Based Practice Project

The purpose of this evidence-based practice (EBP) project was to improve screening for Chlamydia Trachomatis and Neisseria Gonorrhea infections among sexually active, nonpregnant females 15 to 24 years old within the primary care setting. This project sought to determine effective interventions to improve screening rates to promote early detection and eradication of such diseases. This project aimed to increase screening for sexual activity and testing for chlamydia and gonorrhea among women at risk. Additionally, this project aimed to explore detection rates related to changes in screening interventions.

PICOT Question

Specifically, this project addressed the following PICOT question: Among sexually active, nonpregnant women 15 to 24 years old (P), how does colleague education, routine sexual history taking, and subsequent collection of urine specimen for sexually active women (I) compared to no standard practice (C) improve chlamydia and gonorrhea screening uptake (O) over a 10-week period (T)?

Significance of the EBP Project

Chlamydia and gonorrhea are the most common STDs (CDC, 2018). In 2017, two-thirds of 1,708,569 chlamydia infections reported nationally were among the 15 to 24 year old age group (CDC, 2018). The second most common reportable STD, gonorrhea, accounted for 558,608 cases in 2017 (CDC, 2018). Both rates continue to climb and many more people may be unknowingly infected.

Untreated chlamydia and gonorrhea infections can lead to multiple health complications which can be costly and generate life-long devastation. Complications cited include urogenital

manifestations, reactive arthritis (chlamydia), disseminated gonococcal infection, pelvic inflammatory disease, increased acquisition of HIV and HPV, and infertility (USPSTF, 2014). The CDC estimates that 24,000 women become infertile each year due to chlamydia or gonorrhea reproductive sequela (CDC, 2013). The National Commission on Prevention Priorities asserts that if 90% of sexually active young women were screened for chlamydia infection each year, 30,000 cases of pelvic inflammatory disease would be prevented (2007). It is estimated that chlamydia and gonorrhea, collectively, are associated with annual costs of approximately 678.8 million dollars in the United States alone (USPSTF, 2014).

This doctoral EBP project is valuable to reduce burden of STDs, specifically chlamydia and gonorrhea. This project served to increase patient and provider awareness of such infections, ask the hard questions related to sexual history, and reduce risk through targeted STD screening and prompt intervention. This multifaceted project over time could improve the clinical problem related to suboptimal chlamydia and gonorrhea screening among young women 24 years old and younger. Alleviating the identified clinical problem will help reduce health care costs and reproductive sequela.

CHAPTER 2

EBP MODEL AND REVIEW OF LITERATURE

Evidence-based Practice Model

Overview of EBP Model

The ACE Star Model was utilized for this EBP project. The ACE Star Model was created by Dr. Kathleen Stevens as a way to systematically assimilate primary search findings into EBP (Stevens, 2012). The step wise approach outlines five stages of transformation: discovery research, evidence summary, translation to guidelines, practice integration, and process/outcome evaluation. This model depicts the cycle of knowledge necessary to apply evidence into practice that will ultimately impact patient outcomes.

Application of EBP Model to DNP Project

The ACE Star Model was easily applied to the Doctor of Nursing Practice (DNP) EBP project process. Discovery research involved rigorously searching available literature related to the problem of interest, STD screening. Evidence summary involved critically appraising the relevant literature obtained by systematically reviewing scholarly databases. Translation to guidelines asked the doctoral student to evaluate how the literature coincides with nationally accepted guidelines, such as USPSTF and CDC, as well as organizational and personal goals. This required vital communication with key stakeholders. Practice integration required the doctoral student to determine how the proposed intervention needs to be implemented to promote healthy workflow. Finally, process/outcome evaluation asked the doctoral student to determine whether the evidence incorporated is effective and sustainable. This final step is considered dynamic and flexible, as needs may change over time and new evidence is constantly being introduced into practice.

Strengths and Limitations of EBP Model for DNP Project

Strengths of the ACE Star Model included its similarity to the nursing process the doctoral student is inherently familiar with as well as its applicability on an individual and organizational level. An abundance of literature identified in the discovery and evidence summary stages provided a variety of best practice interventions to improve upon the clinical problem. Given national clinical guidelines call to increase chlamydia and gonorrhea screening rates among women 15 to 24 years old, translation to guidelines provided significant foundation to solidify the need to change practice. Limitations included the vagueness in describing strategies to promote successful integration into practice at the project site (i.e. how to approach barriers related to organizational culture). Because of the nebulousness, there was little guidance for the evaluation of progress and outcome. Significant challenges were faced in terms of staff compliance to the screening initiatives and therefore likely deterred successful practice change.

Literature Search

Sources Examined for Relevant Evidence

An exhaustive literature search was performed within several scholarly databases as well as via hand-searching and citation chasing. The following databases were systematically searched: Cochrane, Joanna Briggs Institute (JBI), CINAHL, and MEDLINE. Several keywords relevant to the PICOT question were utilized, until a “best search” was identified. Trialing multiple keywords was necessary to yield relevant articles. Boolean operators, truncation, and mesh terms were used as appropriate. Keywords and Boolean operators applied include: “sexually transmitted disease*,” “sexually transmitted infection*,” STD, STI, screen*, test*, “urine,” “young adult,” teen*, adolescen*, chlamydia, “chlamydia trachomatis,” gonorrhea, “neisseria gonorrhea,” “primary care,” “internal medicine,” “general practice,” “family practice,” “family medicine,” and “emergency department”. Limiters included 2009-2019, English language, and peer-reviewed. Please see Table 2.1 for the best and final literature search. JBI did not reveal any relevant evidence. MEDLINE provided some relevant evidence, but none

were selected for use. Cochrane and CINAHL each yielded two articles that were selected for use in this project.

Inclusion criteria included articles addressing chlamydia and/or gonorrhea screening, screening targeting women, and outpatient office setting and emergency department (ED) setting. Articles that discussed at home screening, screening among special populations such as sex workers or college students, treating (vs. screening) for chlamydia and/or gonorrhea, and screening involving STDs other than chlamydia and/or gonorrhea were excluded.

A hand search of the CDC website as well as the *Journal of Adolescent Health* and *Sexually Transmitted Diseases* periodicals was performed. The CDC website search yielded one high level piece of evidence which was deemed appropriate for this project. Three articles were then “citation chased” from this original article and selected for use. Many articles reviewed were pertinent in providing background data and discussion. Ultimately, a total of eight

Table 2.1.

Final literature search

Database	Limiters	Duplicates	Yielded Evidence	Abstracts Reviewed	Evidence Selected
Cochrane	2009-2019	2	166	7	2
JBI	2009-2019	0	10	0	0
CINAHL	2009-2019 English Peer-reviewed	0	48	8	2
MEDLINE	2009-2019 English Peer-reviewed	4	188	2	0
Hand Searched	N/A	0	3	3	1
Citation Chased	N/A	0	3	3	3
Total	N/A	6	418	21	8

articles were selected to provide a thorough literature review and develop the intervention for this doctoral project.

Levels of Evidence

The John Hopkins Nursing Evidence-Based Practice Research Appraisal Tool was used to level the evidence. This tool ranks evidence on a hierarchy level I to III, with I being the highest level and level III being the lowest level (Dang & Dearholt, 2017). Level I constitutes a randomized controlled trial (RCT) or experimental study. Level II is a quasi-experimental study. Level III is a nonexperimental study. A checklist with a series of questions leads the reader to determine the level of evidence. Questions to level a single research study involve identifying an independent variable, a control group, and presence of absence of randomization (Dang & Dearholt, 2017). With regard to systematic reviews and meta-analyses, the questions serve to identify the type of studies summarized in order to determine level.

Four of the eight pieces of evidence were rated as Level I evidence. Three of the eight pieces of evidence were rated as Level II evidence due to lack of randomization or quasi-experimental design. One of the eight pieces of evidence was rated as Level III as it is a systematic review that summarized RCTs (high level) and observational studies (low level). Please see table 2.2, which provides the level of each piece of evidence.

Appraisal of Relevant Evidence

The John Hopkins Nursing Evidence-Based Practice Research Appraisal Tool was used to appraise the evidence selected. This tool asks a series of questions and guides the reader to provide a recommendation of high quality (A), good quality (B), or low quality (C) (Dang & Dearholt, 2017). The tool asks the reader to inquire about the purpose of the study, literature review, sample size, study design, data collection and statistical analyses, results, and discussion of limitations, and conclusion. High quality (A) evidence provides consistent, generalizable results from a well-designed, controlled study (Dang & Dearholt, 2017). Good quality (B) evidence provides reasonably consistent results from a fairly-designed, controlled

Table 2.2.

Evidence Summaries

Citation (APA)	Purpose	Design	Sample	Measurement/ Outcomes	Results/Findings	Level/ Quality
(DiVasta et al., 2016)	To increase chlamydia screening in at-risk young women age 16-24 y/o through EMR changes and learning communities (LC)	Quality improvement project	45 intervention groups: 24 from LC 1, 21 from LC 2 (EMR prompt to obtain sexual health history and learning communities focused on education r/t STD screening) 40 control practices (EMR prompt to obtain sexual health history, NO additional education) Additional control included national data from Healthcare Effectiveness Data and Information set (HEDIS)	Difference in Chlamydia screening rates pre-intervention, post-EMR intervention, and post-LC intervention compared with control group rates pre-intervention and post-EMR intervention as well as national data reflecting chlamydia screening rate trends	LC 1: pre-intervention – 52.8%, post EMR intervention – 54.5% , post LC completion – 66.7% LC 2: pre-intervention – 57.8%, post EMR intervention – 61.5% , post LC completion – 69.3% Control: pre-intervention – 58.3%, post EMR intervention – 66.1% HEDIS showed a lack of national trend of increasing chlamydia screening during study period	II/B
(Goyal et al., 2017)	To assess whether a clinical decision support tool,	Single-blind, 2-arm, randomized	720 patients 14-19 years old: 367 were	STI testing frequencies between the intervention	323 from the intervention arm and 312 from the usual arm had evaluable data	I/B

	utilizing computerized STD risk assessments, would increase STDs (chlamydia/gonorrhea) testing of adolescents at high risk for STDs in the emergency department (ED)	controlled trial	randomized into the intervention arm and 353 to the usual care arm	and usual care arms for the entire cohort as well as asymptomatic participants screened at high risk for STIs	Significant increase in STI testing frequency among the intervention arm for the entire cohort and the asymptomatic high-risk groups	
(Guy et al., 2011)	To review the effect of interventions on chlamydia screening rates or total tests	Systematic review	16 interventions pulled from 11 RCTs and 5 observational studies targeting men only, women only, and both men and women	Interventions to improve Chlamydia screening with screening rates or total tests	6/15 interventions were significantly associated with increased chlamydia screening among women (multifaceted QI program, educational in-service, free sexual health visits, specimen collection with PAP, computer alerts) 2/6 interventions were significantly associated with increase chlamydia screening among men (universal urine STD screening, multifaceted QI project) Of 5 interventions targeted for women and men, 4/5 and 1/5 demonstrated a greater associated increase in chlamydia screening among men (incentive, education, QI) compared to women and men compared to women (QI), respectively	III/A
(Kettinger, 2013)	To determine if a tailored, multicomponent practice	Pre/post intervention quality	133 medical records pre-intervention and 130	Pre/post intervention screening and	Pre-intervention=53.4% screened for	II/A

	intervention results in increased chlamydia screening for nonpregnant, sexually active women 25 y/o or younger	improvement project	women post-intervention: nonpregnant women, 25 y/o or younger	testing rates for chlamydia	chlamydia/44.4% received testing Post-intervention=76.1% screened for chlamydia/64.6% received testing	
(Lawton et al., 2010)	To assess feasibility of an incentivized program to increase chlamydia screening in general practice	Pilot study for randomized controlled trial	3 practices (2 intervention, 1 control) in Wellington with 756, 712, and 936 male and female patients between 16-24 y/o, respectively	Change in chlamydia testing rates in the intervention groups (one nurse-led and one doctor-led that included staff compensation, education for staff and patients, offering testing, collecting specimen, f/u) compared to control group over 6 months	Practice A (nurse-led intervention): Significant increase in testing rates in the first and second month, followed by a steady decline back to baseline 6 months post intervention; similar rates between men and women Practice B (doctor-led intervention): Significant increase in testing rates in the first and second month, followed by a steady decline back to baseline 6 months post intervention; screening rates lower among men Practice C (control): No change	I/B
(McNulty et al., 2014)	To evaluate whether a structured complex intervention increase chlamydia screening rates among patients aged 15-24 years attending English general practices (GP)	Prospective, cluster randomized controlled trial with a modified Zelen design	15-24 year old patients at 76 intervention practices and 76 control practices in South West England	Intention to treat (absolute testing rates among all practices studied), per protocol (testing rate of full intervention practices compared to control	Intention to treat: greater increase among intervention practices compared with control practices; absolute testing rates of 15-24 year-old patients among intervention practices was increased, but marginal; practices in upper quartile of testing were more likely to have used	I/B

				practices), number of CT detected	invitation cards, posters, and prompts Per protocol: 2.33 times increased testing rate compared to control practices Number of CT detected: greater increase in detection rates among intervention practices; detection 1.8 times greater among per protocol (full intervention) practices compared to control practices	
(Taylor, Frasure-Williams, Burnett, & Park, 2016)	To identify interventions that improve chlamydia/gonorrhea/syphilis screening in community-based clinics while considering cost and resources	Meta-Analysis	42 interventions pulled from RCTs, NRCTs, interventional and controlled observational studies that described clinic-based interventions for STD screening	Difference in target population screened, cost analysis, and combined effectiveness and cost	Difference in target population screening: Of 42 interventions, 16 were rated as highly effective in increasing STD screening, 14 were moderately effective, and 12 were not effective Cost analysis: 28 intervention were less than $1K, 7 were between $1K-10K, 4 were between $10K-100K, 3 were $100L Combined effect and cost: automatic collection at visits and use of patient reminders were most cost effective	II/A

(Tebb, Wibbelsman, & Nauhas, 2009)	To develop and evaluate an intervention to increase chlamydia screening among sexually active adolescents during pediatric urgent care visits	Randomized controlled trial	10 general pediatric clinics (5 intervention, 5 control) in northern California, adolescent girls 14-18 y/o	Difference in clinic specific proportions of adolescents screened	Clinical specific proportions of adolescents screened were significantly greater post-intervention among intervention vs. control groups	I/A

study with fairly definitive conclusions. Low quality (C) evidence consists of an insufficient sample size, little evidence, or lack of definitive conclusions.

Four pieces of evidence were appraised as grade A, while the remaining four pieces of evidence were appraised as Grade B. Please see table 2.2 for evidence summaries with provided appraised quality.

Level I evidence.

Goyal et al. (2017) conducted a single-blind, two-arm RCT that assessed whether a clinical decision support tool would increase chlamydia and gonorrhea testing of adolescents in the ED setting. The clinical decision support tool started by assessing STD risk through a validated sexual risk assessment tool. Their responses categorized them as either low risk, at risk, or high risk. Based on their risk, the attending physician received a printed report recommending screening. Urine samples were collected and tested for chlamydia and gonorrhea on all patients, regardless if it was clinician ordered (as clinician failure to recommend screening was an expected limitation of the study).

Of the 720 participants ages 14 to 19 years old, 367 were randomized into the intervention arm and 352 were randomized the usual care arm. Patients in the intervention arm for the entire cohort (low risk, at risk, and high risk) were more likely to be tested for STDs than the usual care arm cohorts (OR 1.5 [95% CI, 0.9-2.6]) (Goyal et al., 2017). When adjusted for age and gender, the significance remained (aOR 2 [95% CI, 1.1-3.8]). Approximately 69% of patients who screened positive for chlamydia or gonorrhea underwent clinician-ordered testing, which speaks to the benefit of automatic collection of urine. This experimental study is level I, high quality (A) evidence.

Lawton et al. (2010) conducted a pilot study for a RCT that evaluated the feasibility of an incentivized program to increase chlamydia screening among patients ages 16 to 24 years old in a general practice setting. The sample consisted of one nurse-led intervention practice, one doctor-led intervention practice, and one control practice with 756, 712, and 936 patients,

respectively. The intervention consisted of staff compensation for screening, staff and patient education on screening recommendations, periodic staff meetings to provide feedback and coaching, offering testing to all patients with self-collected vaginal swabs (for women) and/or urine for testing (for men and women), and providing appropriate follow up care.

Pre-intervention chlamydia screening rates were similar among each practice. Both the nurse-led and doctor-led interventions practices experienced an increase in chlamydia screening rates compared to the control practice ($p<0.001$) (Lawton et al., 2019). The nurse-led intervention practice demonstrated a greater increase than doctor-led intervention practice ($p=0.04$). Unfortunately, each intervention practice experienced a steady decline to pre-intervention screening rates at the end of the six-month period. Due to lack of sustainability, this experimental study is level I, good quality (B).

McNulty et al. (2014) conducted an RCT that evaluated whether a structured, complex intervention increased chlamydia testing rates among patients age 15 to 24 years old attending a general practice. This study encompassed 76 intervention practice and 76 control practices in South West England. The complex intervention was based on the Theory of Planned Behavior (TPB) consisted of an outreach educational workshop with posters, invitation cards for patients, targets and feedback of practice testing performance with optional ongoing support. Staff attendance at the education varied and 13 practices refused any contact from a chlamydia support worker. Absolute testing among intervention practices was 1.76 times greater than control practices during the intervention period ($p<0.001$). In fully engaged practices, testing increased 2.33 times more than seen in control practices ($p<0.001$). This experimental study is level I, good quality (B) evidence due to inconsistency and some ambiguity in reporting statistical significance.

Tebb, Wibbelsman, and Nauhas (2009) conducted a study to develop and evaluate an intervention to increase chlamydia screening among sexually active adolescents ages 14 to 18 years old during pediatric urgent care visits in Northern California. Ten pediatric clinics were

randomly assigned to intervention and control groups. Intervention groups formed a team of staff who determined the most efficacious ways (i.e. developing a protocol, automatically collecting a urine sample from those who reported sexual activity, alerting the provider that the adolescent may be eligible for testing, etc.) to identify sexually active teens then collect urine samples for testing. Controls received one informational lecture on chlamydia screening. The proportion of adolescent girls screened among the intervention group were significantly greater than the control group (p=<0.001). This experimental study is level I, high quality (A) evidence.

Level II evidence.

DiVasta et al. (2016) provided insight on a quality improvement project aimed at increasing chlamydia screening among at-risk women age 16 to 24 years old through EMR changes and learning communities. A total of 85 primary care offices within the Boston's Children Hospital network opted to participate. Two learning community intervention groups were formed; 24 groups were assigned to learning community 1 (LC1) and 21 groups were assigned to learning community 2 (LC2). The remaining 40 groups were assigned to the control. LC 1 and LC2 consisted of four in-person educational session and two webinars that included content related to chlamydia screening, concerns surrounding legal issues and confidentiality, skills building, motivational interviewing, data review, case discussions, etc. Both LC groups and the control groups underwent changes in the EMR that prompted providers to collect sexual histories.

LC1, LC2, and controls experienced an increase in screening rates post-EMR and pre-LC intervention – 1.7% (95% CI, 0.1-3.2), 3.7% (95% CI, 2.0-5.3), and 7.8% (95% CI, 6.8-8.9), respectively (DiVasta et al., 2016). Post-EMR and post-LC intervention, both LC1 and LC2 experienced further increases in screening rates – 13.9% (95% CI, 13.0-14.8) and 11.5% (95% CI, 9.8-13.2), respectively. Overall data were compared to HEDIS, which did not show a national trend of increasing chlamydia screening during the study period. This experimental

study is level II, good quality (B) evidence based on lack of randomization into cohorts (solely participatory) and inability to disentangle the effects of EMR changes and LC participation.

Kettinger (2013) described a pre and post-intervention quality improvement project aimed at increasing chlamydia screening among nonpregnant, sexually active women less than 25 years old. One-hundred and thirty-three records pre-intervention were compared with 130 women post-intervention at a women's health practice in the Southern United States. In-services were held separately for providers and nursing staff to educate on chlamydia screening (national recommendations, feasibility, overcoming barriers). A screening policy was put in place to flag providers to screen sexually active women less than 26 years old. Specimens were collected with urine or vaginal swab (if pelvic exam was to be performed). Pre-intervention, 53.4% of women were screened and 44.4% received testing ($p<0.05$). Post-intervention, 76.1% of women were screening and 64.6% received testing ($p<0.05$). This quality improvement project, given its experimental nature, is level I, high quality (A) evidence.

Taylor, Frassure-Williams, Burnett, and Park (2016) provided a meta-analysis reviewing interventions that improve chlamydia, gonorrhea, and syphilis screening in community-based clinics. These researchers pulled 42 interventions from RCTs, non-RCTs, interventional, and controlled observational studies that described clinic-based STD screening interventions. Secondary analysis was conducted to determine cost-effectiveness of the interventions. Among the most effective interventions included automatic collection of specimens for testing during a routine or follow up visit, reminders in the EMR, patient reminders, and utilization of dedicated staff members to promote screening. Patient and provider education showed limited improvement, whereas motivational counseling and interviewing showed minimal improvement. Automatic collection of specimens for testing, EMR, and patient reminders were most cost-effective, while dedication of staff to promote screening was least cost-effective. Given this meta-analysis included a review of experimental and quasi-experimental studies, it is considered level II, high quality (A) evidence.

Level III evidence.

Guy et al. (2011) provided a systematic review that evaluated the effects of 16 interventions on chlamydia screening rates or total tests. Interventions were detailed among RCTs and observational studies. Six of 15 interventions were significantly associated with increased chlamydia screening among women and included quality improvement programs, educational in-service, free sexual health visits, specimen collection with Papanicolaou, and computer alerts ($p<0.05$). This evidence was deemed level III due to inclusion of observational studies and rated high quality (A).

Construction of Evidence-based Practice

Synthesis of Critically Appraised Literature

Staff education and involvement.

With the exception of Goyal et al. (2017), each piece of evidence associated staff education and involvement with increased STD screening (DiVasta et al., 2016; Guy et al., 2011; Kettinger, 2013; Lawton et al., 2010; McNulty et al., 2014; Taylor, Frassure-Williams, Burnett, & Park, 2016; Taylor, Frassure-Williams, Burnett, & Park, 2016; Tebb, Wibbelsman, & Neuhaus, 2009). Each article detailed varying duration and extensiveness of education. Three studies described focus group education as part of quality improvement projects to create protocols for testing at risk individuals (Kettinger, 2013; Guy et al., 2011; Tebb, Wibbelsman, & Neuhas, 2009). Varying depth of provider education showed improvement in screening rates across four studies. Taylor, Frassue-Williams, Burnett, & Park (2016) provided little detail on the degree of provider education and ultimately found limited improvement with this approach. Three articles described intensive provider education, with in-person education and/or webinars to communicate significance and approaches to screening (DiVata et al., 2016; Lawton et al., 2010; McNulty et al., 2014). Lawton et al. (2016) incorporated periodic staff meetings to discuss progress. McNulty et al. (2014) utilized “champions” who were staff trained to encourage and provide ongoing support for screening.

Regardless of approach, they each reached similar conclusions. A common theme emerged and asserts that clinicians and support staff need to be educated on the screening guidelines. It was also found that barriers to screening and means to approach communication about screening should be included in education.

Routine screening.

Four of the eight articles reviewed recommended routine screening of the target population based on clinical guidelines (Goyal et al., 2017; Kettinger, 2013; Lawton et al., 2010; Tebb, Wibbelsman, & Neuhaus, 2009). Goyal et al. (2017), Kettinger (2013), and Tebb, Wibbelsman, and Neuhaus (2009) discussed incorporating a policy to screen women under 25 years of age for sexual activity and recommending testing only if sexually active. This screening was either clinician driven or support staff driven. Lawton et al. (2010) recommended offering testing without screening for sexual activity, but rather based on age (16-24 years old) alone.

Automatic collection of specimens.

Three pieces of evidence recommended automatic collection of specimens with either urine testing or provider or patient collected vaginal swab (Guy et al., 2011; Tebb, Wibbelsman, & Neuhaus, 2009; Taylor, Frassure-Williams, Burnett, & Park, 2016). Guy et al. (2011) included chlamydia screening with all pap smears and fist-catch urine sample with any woman who fell between the ages of 16-25 years old. Tebb, Wibbelsman, & Neuhas (2009) collected sexual histories and offered urine screening for chlamydia. Taylor, Frassure-Williams, Burnett, & Park (2016) found that strategic placement of specimens for testing (i.e. with pap smear) and automatic collection of urine improved screening rates. Each noted routinely collecting specimens among the target population, regardless of sexual history.

EMR reminders.

Four articles spoke to EMR reminders as a proven means to increase STD screening (DiVasta et al., 2016; Goyal et al., 2017; Guy et al., 2011; Taylor, Frassure-Williams, Burnett, & Park, 2016). DiVasta et al. (2016) and Taylor, Frassure-Williams, Burnett, & Park (2016) used

the EMR to simply remind providers to screen adolescents and young adults. Guy et al. (2011) utilized an EMR reminder to screen based on age (16-24 years old). Goyal et al. (2017) incorporated a more complex intervention that included a built-in decision support tool that guided providers to screen and recommend testing based on risk for infection. Each demonstrated an increase in screening when EMR flagging was performed. This EMR flagging prompted the provider to screen for chlamydia and/or gonorrhea based on age.

Best practice model recommendation

After reviewing the available literature, it was determined a combination of two best practice approaches, education and routine screening, would be appropriate for this doctoral project. The first intervention included provider and CMA education. A one-hour in-service was provided prior to the intervention period to discuss importance of screening for chlamydia and gonorrhea in the target population, national guideline recommendations, barriers to and facilitation of screening, routine sexual history taking, and collection of specimens. The second intervention occurred during the post-intervention period and involved routine sexual history taking by the CMAs. They were requested to ask the target population about sexual activity. If the patient noted that she was or had been sexually active, the CMA automatically offered testing per the providers' recommendations. Urine specimens were collected for chlamydia and gonorrhea testing.

It is important to note that while EMR reminders were shown to improve screening rates, this is current practice at the project site and, to date, has been ineffective. The EMR specialists additionally notified the doctoral student that flagging options could not be changed and therefore this intervention could not be manipulated to be made more effective.

CHAPTER 3

IMPLEMENTATION OF PRACTICE CHANGE

Young women, less than 25 years old, account for the highest rates of chlamydia and gonorrhea nationwide (CDC, 2017b). In 2017, women 15 to 24 years old made up 62.6% of new chlamydia cases, or 3,635.3 cases per 100,000 people (CDC, 2017b). Additionally, women 15 to 24 years old accounted for 622.8 cases of gonorrhea per 100,000 people. USPSTF recommends screening all sexually active females less than 25 years old for chlamydia and gonorrhea annually (2014). Given the magnitude of the issue, a goal of Healthy People 2020 is to increase the proportion of sexually active women 24 years old and younger for chlamydia (HHS, Healthy People 2020, 2019). This project served to increase chlamydia and gonorrhea screening among sexually active, nonpregnant females between 15 and 24 years old within the primary care setting in order to identify infection and appropriately reduce burden of disease.

To reiterate, this doctoral project served to answer the following PICOT question: Among sexually active, nonpregnant women 15 to 24 years old (P), how does colleague education, routine sexual history taking, and subsequent collection of urine specimen for sexually active women (I) compared to no standard practice (C) improve chlamydia and gonorrhea screening uptake (O) over a 10-week period (T)?

Evidence has shown educational interventions aimed at promoting awareness among staff, asking the difficult question about women's sexual activity, and recommending testing as indicated by a positive response increases identification and treatment of chlamydia and gonorrhea. Details regarding the tailored intervention for this project are outlined below. This practice change occurred over a 10-week period between August 26th, 2019 and November 4th, 2019.

Participants and Setting

The setting for this doctoral project was a two-provider family practice in Bristol, Indiana. The practice is a part of a larger health system in Goshen, Indiana. This family practice setting serves patients from the greater Elkhart and St. Joseph counties as well as southern Michigan. Providers see patients across the lifespan. Women's health services, excluding antenatal care, is provided that includes placement of intrauterine devices (IUD).

The doctoral student is a Family Nurse Practitioner (FNP) at this location and has been in this capacity for over two years. The doctoral student's collaborating physician has over 25 years of experience in family medicine and has been practicing with this organization for over 15 years. Three certified CMAs, with varying years of experience, provide direct care to patients at this practice. All mentioned providers and colleagues participated in this project.

The patient population involved in the practice change included sexually active females between 15 and 24 years old presenting for preventive visits (well child/well adult or well woman exam) and/or contraceptive counseling/management. Ineligible patients included men, females presenting specifically for acute concerns including issues pertaining to the urogenital system, pregnant females, females 25 years and older, mentally disabled females, and incarcerated females.

Pre-Intervention Group Characteristics

Pre-intervention group characteristics were obtained via EMR audit 10 weeks prior to the intervention period. This was successful due to aid of the facility's EMR specialist, who assisted in extracting the data. Data were manually checked for patient eligibility and accuracy. There were 18 female patients between 15 and 24 years old that presented for preventive and/or contraceptive related visits and were deemed eligible for the intervention. Demographics, including age, insurance, race, and marital status were reviewed. Of these 18 females, over half were minors. Approximately 61% females were white or Caucasian, 11% were black or African American, and 28% were Hispanic. With regard to insurance coverage, over half were insured

through Medicaid compared to commercially insured. All participants reported being single. There was one positive chlamydia infection and one positive gonorrhea infection identified.

Intervention

In preparation for this multifaceted intervention, two items were prepared by the doctoral student. The first involved altering a chart preparation sheet that the CMAs use to anticipate the needs of each patient during his or her visit. This information largely consists of screening needs in relation to care guidelines. Examples include immunizations, colonoscopy, mammography, etc. Previously, there was not a place that included chlamydia and gonorrhea screening recommendations for the target population. Adjustments were made to account for this screening. Please see Appendix A and B for chart preparation documents – adult and pediatrics.

The second piece of preparation involved creating a PowerPoint presentation (Appendix C) addressing the following key points:

- Background information
- National, state, and county incidence of chlamydia and gonorrhea
- Current screening rates nationally (HEDIs reporting), regionally (Elkhart County Health Department reporting), and practice specific (via retrospective chart audit)
- Current recommendations published form USPSTF (2014) to screen all sexually active females 15 to 24 years old for chlamydia and gonorrhea
- Healthy 2020 goal of increasing proportion of sexually active females 15 to 24 years old screened for chlamydia (HHS, Healthy People 2020, 2019).
- Collecting information at preventive and contraceptive visits
- Prompting screening to those who are sexually active
- Exclusion of patients presenting for genitourinary concerns (i.e. those who are symptomatic)

A key element of this presentation was communicating the delegation of sexual history taking to the CMAs. The CMAs serve as gatekeepers in obtaining pertinent information that would direct preventive screening efforts. They were requested to ask any female 15 to 24 years old during a preventive or contraceptive related visit if she is sexually active. Sexually active could be by means of oral, vaginal, and/or anal sex. If the female responds yes, the CMA recommended screening via urine sample. Women who presented with potential symptoms of STD (vaginal discharge, dysuria) were excluded as this becomes diagnostic vs. screening. The provider shared the responsibility of reviewing information collected by the CMAs and providing rationale. A 30-minute in-service was provided to communicate the clinical problem and provide guidance on prompting screening. The remainder of the intervention was then initiated Monday, August 26th, 2019.

Comparison

Ten weeks leading up to the intervention period (June 14th to August 23rd), both providers at the practice saw 18 females between 15 and 24 years old for preventive exams or contraceptive related visits. None of these females presented with urogenital complaints. Of the 18 females evaluated, 11 were screened for sexual activity, five were eligible for testing based on sexual activity, and four were tested for chlamydia and gonorrhea. This equates to a 61 % percent screening rate, which is on par with the NCQA (2019) HEDIS managed health and commercial reported screening rates of 50-60%. Regardless, screening rates could be improved. Given the mean age of vaginal intercourse among females is 17.3 years old (CDC, 2017c), half of adolescents between ages 15 and 19 years old report ever engaging in oral sex (Copen, Chandra, & Martinez, 2012), and less than or equal to one-third of sexually active people ages 15 to 44 years old reported condom use with last intercourse (Copen, 2017), it is highly likely that necessary screening is vastly underperformed and many infections exist under the radar.

Prior to this project, there was no standard practice for obtaining sexual histories among this population. There was inconsistency among the EMR flagging system to screen for chlamydia based on current guidelines. Additionally, screening for gonorrhea was not included in the EMR flagging system, which is out of alignment with current guidelines.

Outcomes

The primary outcome this project evaluated included number of patients screened for sexual activity, eligible for chlamydia and gonorrhea testing based on sexual activity, and tested for chlamydia and gonorrhea among the target population post-intervention. A secondary outcome under investigation included number of positive chlamydia and gonorrhea results as a result specimen collection. Demographic characteristics including age ranges 15 to 17 years old and 18 to 24 years old, insurance, race, and marital status were evaluated pre- and post-intervention to identify similarities and differences among the pre-intervention and post-intervention participants.

Pre- and post-intervention data collection involved retrospective chart review. Information pertaining to demographic information, inquiry regarding sexual activity, documentation of testing for chlamydia and gonorrhea via Current Procedural Terminology (CPT) codes (see table 3.1) and results of chlamydia and gonorrhea screening via manual audit were extracted via assistance of the EMR specialist. The EMR specialist was able to generate and connect such information by submitting a footprint request to the EMR development team with required age ranges and International Classification of Diseases (ICD) codes (see table 3.2). This information was additionally audited by the doctoral student by manually extracting data from the EMR.

Table 3.1.

Preventive and Contraceptive ICD codes

ICD 10 code	Diagnosis description
T38.4X5A	Adverse effect of oral contraceptives
T83.9XXA	IUD complication
Z00.00	General medical examination, annual physical exam, health examination
Z00.01	Routine health exam, health maintenance exam
Z00.121	Well child exam
Z00.12	Well child exam
Z01.411	Well women/gynecologic exam with abnormal findings
Z01.419	Well women/gynecologic exam with normal findings
Z02.5	Sports physical
Z11.3	Screening for sexually transmitted disease(s)
Z12.4	Cervical cancer screening, encounter for Papanicolaou smear
Z30 (all codes)	Initial prescription/surveillance of contraceptive methods
Z53.8	Unsuccessful IUD insertion/removal
Z78.9	Other specified health status
Z97.5	Presence of IUD

Table 3.2.

CPT Code for Urine CT and NG Testing

CPT code	Test	Specimen Source
17305	CHLAMYDIA/N. GONORRHOEAE DNA, SDA	Urine

Statistical analyses were performed to compare pre-intervention and post-intervention demographics, patients screened for sexual activity, patients eligible for testing based on sexual activity, patients tested for chlamydia and gonorrhea, and patients positive for chlamydia and/or gonorrhea. Chi-square analysis was utilized to identify differences among all previously mentioned nominal data.

Time

The first step of the project began with a 30-minute in-service for the collaborating physician and four CMA colleagues on Friday, August 23rd, 2019. The site manager, also site facilitator, was also present. An hour of their time was blocked out to receive this information. A brief PowerPoint presentation outlining the purpose and dynamics of the intervention was developed and approved by the faculty supervisor prior to the in-service. Chart preparation documents were also updated prior to the in-service. This was approved by the collaborating physician, CMAs, and project facilitator. Monday, August 26th, 2019 the CMAs began asking eligible participants whether they are sexually active and offering urine chlamydia and gonorrhea testing if they indicated they were or had been sexually active. The project ran for 10 weeks and was completed at the end of the work day Friday, November 1st, 2019. The timeline was developed to allow for successful completion as a longer time frame was desired to achieve an adequate sample size.

Protection of Human Subjects

Protection of human subjects was a vital component necessary to complete this doctoral project. Appropriate approval was obtained by the organization to participate in the doctoral project on site. Prior to initiation of the project, the doctoral student completed a doctoral level ethics course and completed basic ethics training through the Collaborative Institutional Training Initiative (CITI) (Appendix D). Information detailing the project components was provided to Valparaiso's Institutional Review Board (IRB) and it was deemed exempt from IRB review. A formal application for IRB exemption was then processed and approved**.** The doctoral student

additionally met with Goshen Health's IRB chair to determine necessary review on the organization's end. Goshen Health's IRB chair additionally approved the IRB exemption (Appendix E) and no further action was necessary from the organization's standpoint.

All colleagues, including the doctoral student, at the project site were educated on and abide by organizational policies and procedures aimed at protecting patient confidentiality in accordance with the Health Insurance Portability and Accountability Act of 1996 (HIPAA). Appropriate consent for evaluating and treating minors without a parent (this only excludes vaccine administration) was kept on file in the patient's chart (Appendix F). This was completed upon registration as a new patient at any of our organization's outpatient offices and therefore was in place prior to any services being rendered. All colleagues were familiar with mandated reporting of positive chlamydia and gonorrhea results to the Elkhart County Health Department. Patients or guardians were made aware of this necessary reporting upon communication of a positive result.

The doctoral student extracted pre-intervention and post-intervention data with the assistance of the organization's EMR specialists. All information was de-identified to protect the privacy of the patients. Information was extracted on the facility's computer while logged into the facility's secured network. While the doctoral student is a provider within the facility, she did not initiate the intervention requiring interaction with the participant.

CHAPTER 4

FINDINGS

This EBP project was designed to determine if a multifaceted intervention increased chlamydia and gonorrhea screening among nonpregnant women 15 to 24 years old, in accordance with USPSTF (2014) and CDC (2014c) clinical guidelines. Retrospective chart review was performed to collect demographics (age, insurance, race, marital status), number of women screened for sexual activity, number of women eligible for chlamydia and gonorrhea testing based on sexual activity, number of women eligible for testing that were tested for chlamydia and gonorrhea, and number of positive chlamydia and gonorrhea results of eligible participants throughout a 10-week pre-intervention and 10-week post-intervention period.

There were nonsignificant increases in the number of women screened for sexual activity, number of women eligible for testing, and number of eligible women tested during the 10-week post-intervention period compared with the 10-week pre-intervention period. There were no significant differences in demographics, number of positive chlamydia results, or number of positive gonorrhea results when comparing the 10-week pre-intervention group with the 10-week post-intervention group.

Participants

Size

Ten weeks pre-intervention, 18 eligible females presented to the clinic for either a well visit or contraceptive related visit compared with 14 eligible females during the 10-week post-intervention period.

Characteristics

Demographic characteristics for participants in the pre-intervention and post-intervention (*N*=32) groups were analyzed using descriptive statistics via frequencies (Table 4.1). Majority of participants were between the ages of 15 and 17 years old pre-intervention (61%) and post-

Table 4.1.

Demographics

Demographic		Frequency (%)	
		Pre-intervention	**Post-intervention**
Age Range	15-17 y/o	11 (61%)	8 (57%)
	18-24 y/o	7 (39%)	6 (43%)
Insurance	Medicaid	10 (56%)	11 (79%)
	Commercial	8 (44%)	3 (21%)
Race	Caucasian/White	11 (61%)	8 (57%)
	AA/Black	2 (11%)	1 (7%)
	Hispanic/Latino	5 (28%)	3 (21%)
	Declined/Other	0 (0%)	2 (14%)
Marital Status	Single	18 (100%)	14 (100%)
	Married	0 (0%)	0 (0%)

intervention (57%), while 39% and 43% were between the ages of 18 and 24 years old in the pre-intervention and post-intervention groups, respectively (Figure 4.1, Figure 4.2). There were more participants insured through Medicaid in the pre-intervention (56%) and post-intervention (79%) groups compared with commercial insurers (44% and 21%, respectively) (Figure 4.3, Figure 4.4). In the pre-intervention group, 61% were white or Caucasian, 11% were black or African-American, and 28% were Hispanic or Latino (Figure 4.5). In the post-intervention group, 57% were white or Caucasian, seven percent were black or African-American, 21% were Hispanic or Latino, and 14% were other races or declined to specify (Figure 4.6). All 32 participants (100%) reported being single (Figure 4.7, Figure 4.8).

Figure 4.1.

Age Range Pre-Intervention

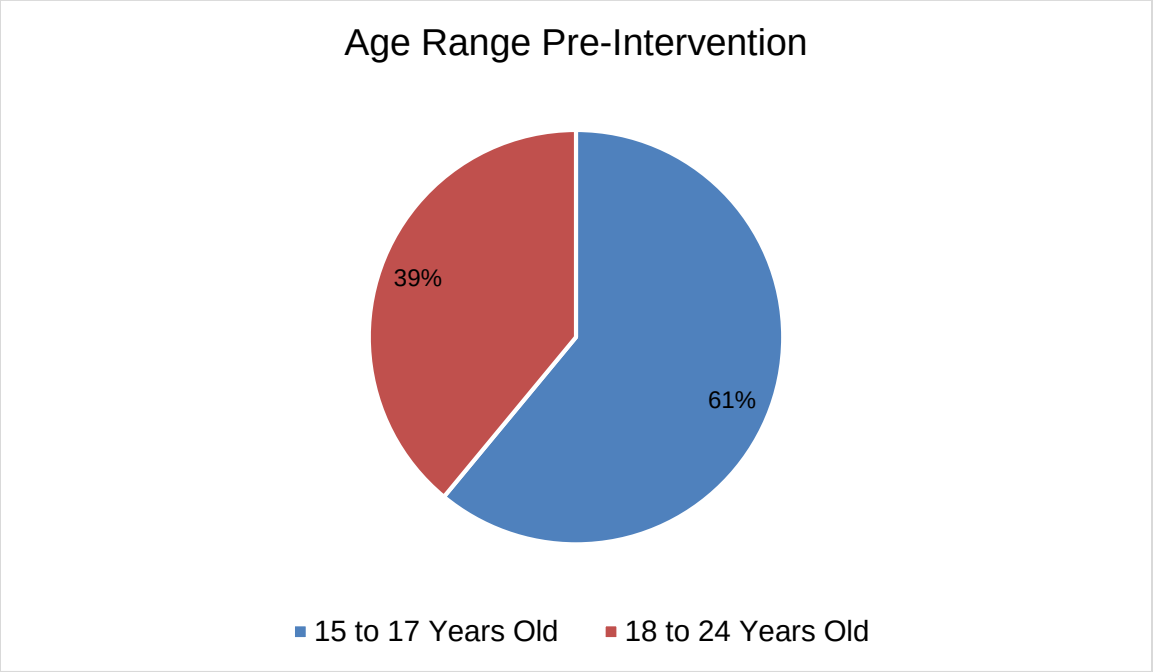


Figure 4.2.

Age Range Post-Intervention

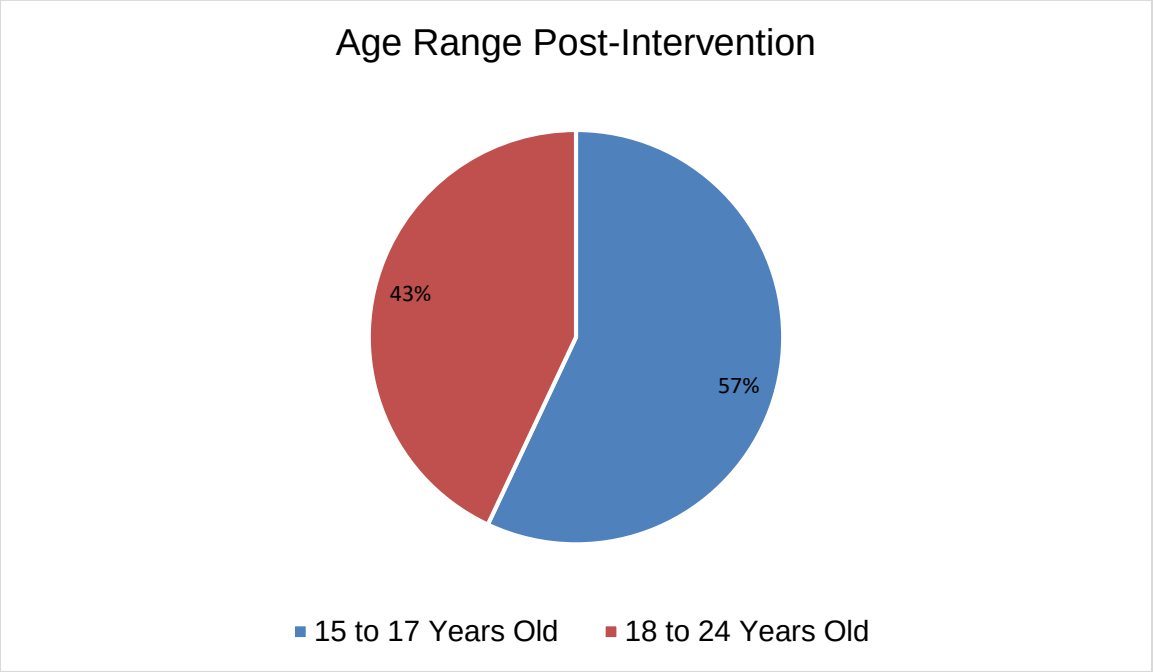


Figure 4.3.

Insurance Pre-Intervention

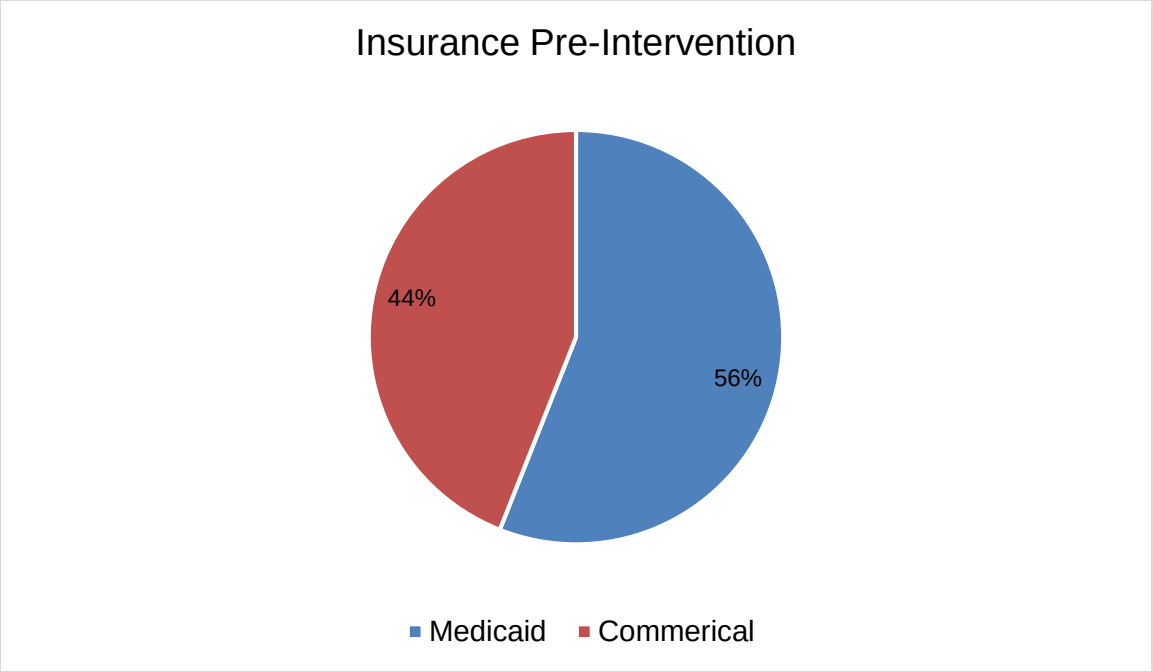


Figure 4.4.

Insurance Post-Intervention

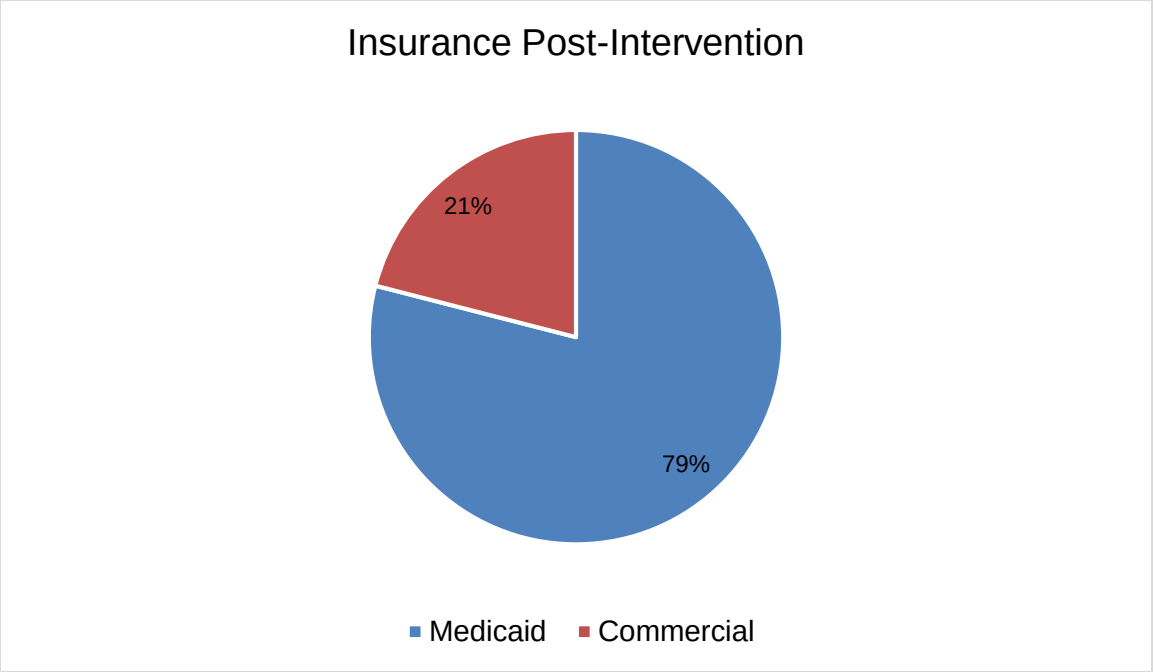


Figure 4.5.

Race Pre-Intervention

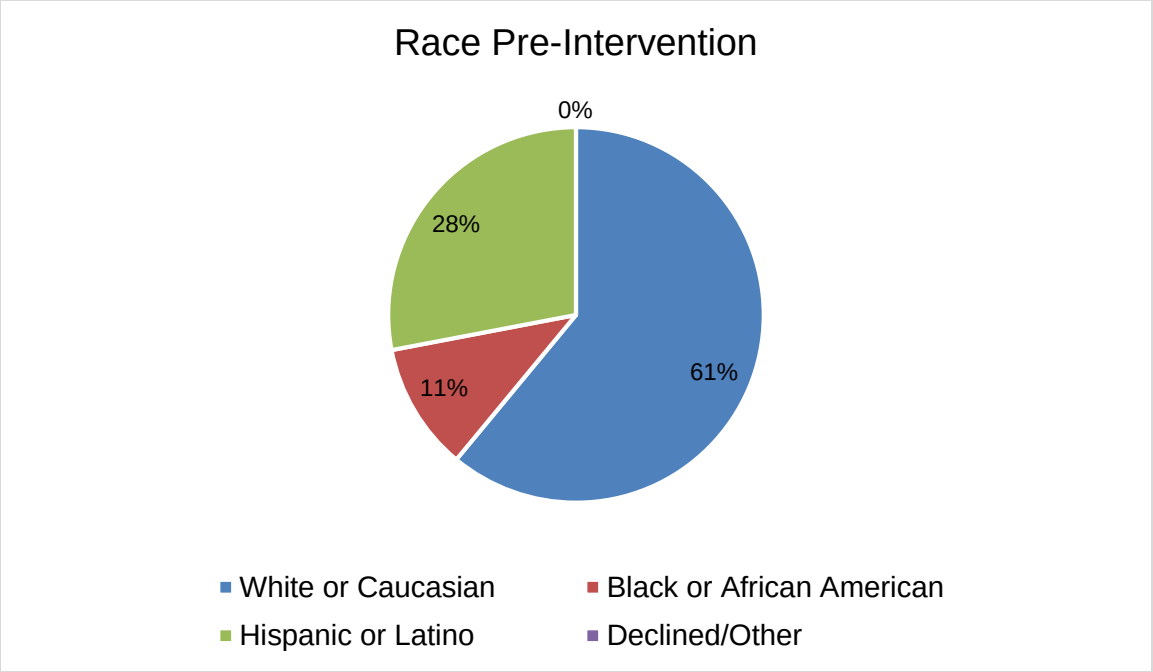


Figure 4.6.

Race Post-Intervention

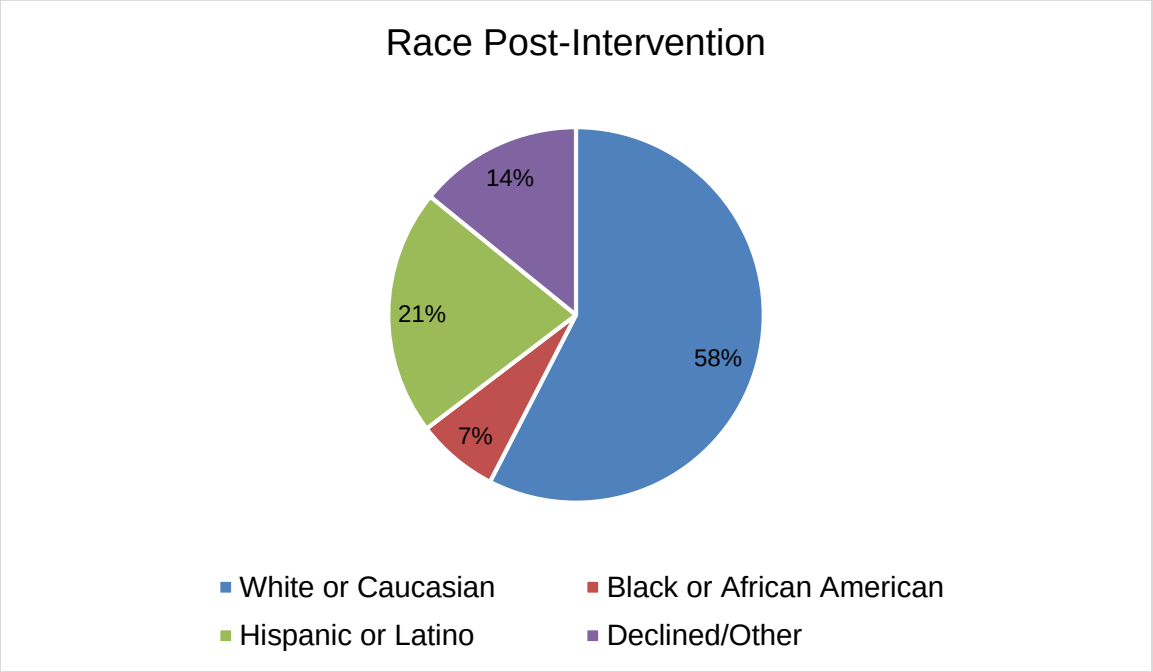


Figure 4.7.

Marital Status Pre-Intervention

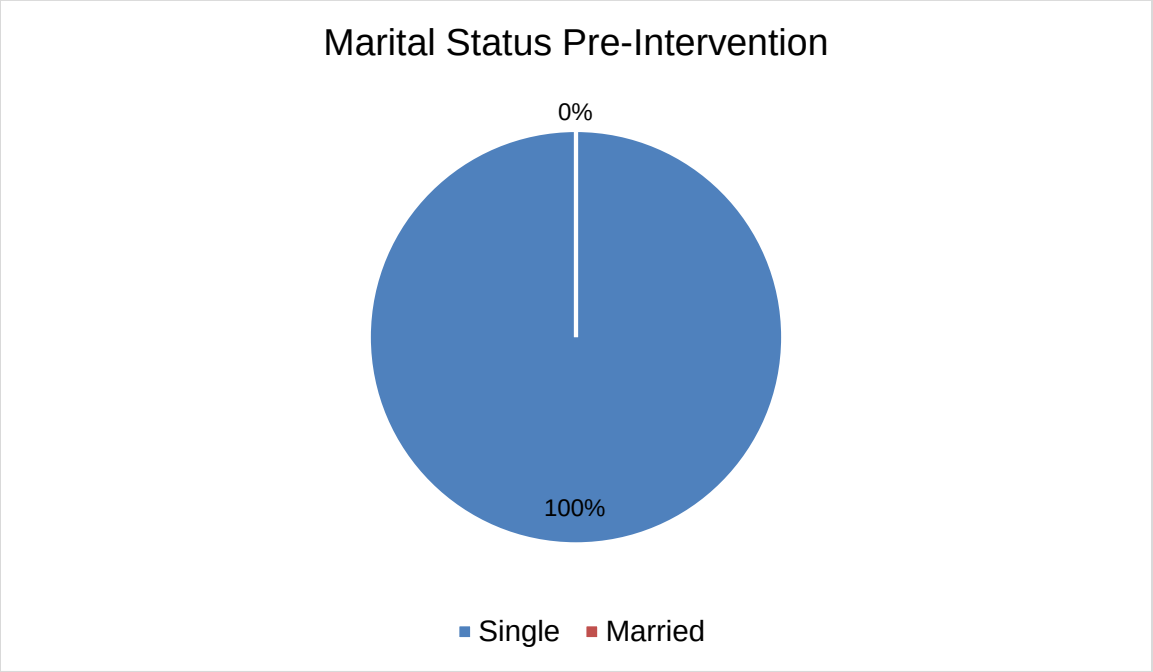
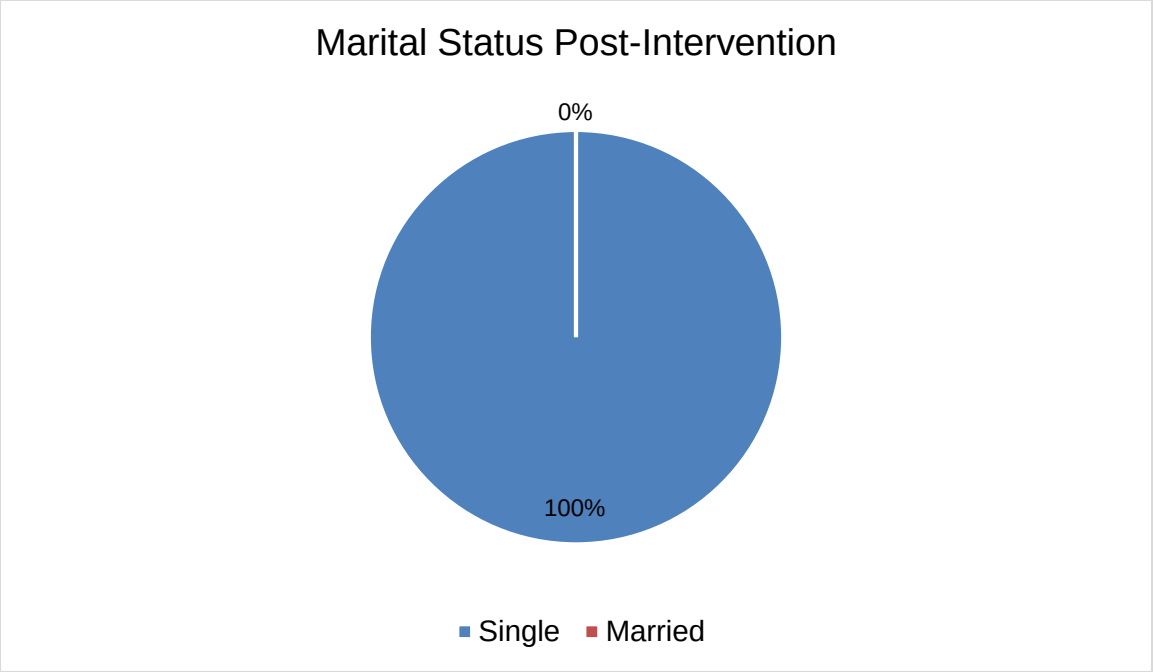


Figure 4.8.

Marital Status Post-Intervention



Changes in Outcomes

Statistical Testing and Significance

Primary outcomes of this EBP project included number of women screened for sexual activity, number of women eligible for testing based on sexual activity, and number of women eligible for testing that were tested for chlamydia and gonorrhea. Secondary outcomes included in this EBP project were number of positive chlamydia and gonorrhea results as a result of testing.

Data were entered into the Statistical Package for Social Sciences (SPSS) Version 25 for analysis. Chi-square analysis was used to compare differences among pre-intervention and post-intervention participant demographics, number screened for sexual activity, number eligible for testing, number tested for chlamydia and gonorrhea, number positive chlamydia results, and number positive gonorrhea results. Statistical significance was set at $p<.05$ for all analyses.

Demographics

Chi-square analyses revealed no significant difference in age ($\chi 2(1, N=32)=.051$, $p>.05$), insurance ($\chi 2(1, N=32)=1.849$, $p>.05$), race ($\chi 2(3, N=32)=2.852$, $p>.05$), or marital status (N/A – all participants in each group were single) of participants in the 10 week pre-intervention group compared with participants in the 10 week post-intervention group.

Primary Outcomes

There were nonsignificant increases in the number of women screened for sexual activity, number of women eligible for testing, and number of women tested for chlamydia and gonorrhea. Results are displayed in Table 4.2 and Figure 4.9.

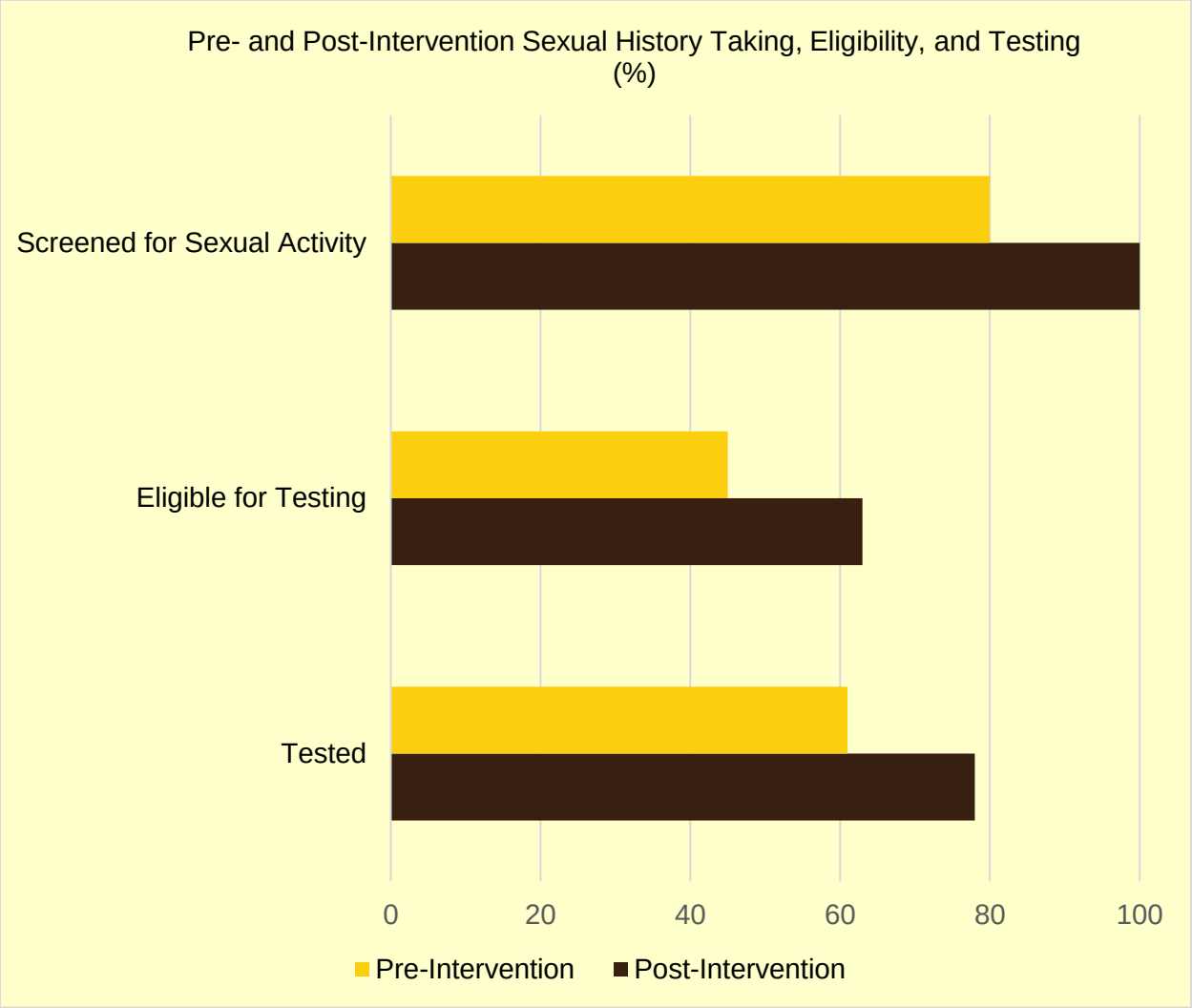
Table 4.2.

Primary Outcomes

Outcome	Frequency (%)	
	Pre-Intervention	**Post-Intervention**
Screened for Sexual Activity	11 (61%)	11 (79%)
Eligible for CT/NG Testing	5 (45%)	7 (64%)
Tested for CT/NG	4 (80%)	7 (100%)

Figure 4.9.

Pre- and Post-Intervention Sexual History Taking, Eligibility, and Testing (%)



Number of women screened for sexual activity.

There was a nonsignificant increase in the number of women screened for sexual activity (χ2(1, *N*=32)=1.117, *p*>.05). Sixty-one percent of women were screened for sexual activity in the pre-intervention group compared with 79% in the post-intervention group.

Number of women eligible for testing.

There was a nonsignificant increase in the number of women eligible for testing based on sexual activity (χ2(1, *n*=22)=0.733, *p*>.05). Forty-five percent of women were eligible for testing in the pre-intervention group compared with 63% in the post-intervention group.

Number of women tested for chlamydia and gonorrhea.

There was a nonsignificant increase in the number of women tested for chlamydia and gonorrhea (χ2(1, *n*=12)=1.527, *p*>.05). Eighty percent of eligible women were tested for chlamydia and gonorrhea in the pre-intervention group compared with 100% in the post-intervention group.

Secondary Outcomes

Number of positive chlamydia results.

There was no significant difference in the number of positive chlamydia results (χ2(1, *n*=12)=1.527, *p*>.05). There was one positive chlamydia result within each group (20% vs. 14% pre-intervention and post-intervention, respectively) (Table 4.3).

Number of positive gonorrhea results.

There was no significant difference in the number of positive gonorrhea results (χ2(1, *n*=12)=2.203, *p*>.05). There was one positive gonorrhea result within the post-intervention group (20% vs. 0% pre-intervention and post-intervention, respectively) (Table 4.3).

Table 4.3.

Secondary Outcomes

Outcome	Frequency (%)	
	Pre-Intervention	**Post-Intervention**
Positive CT	1 (20%)	1 (14%)
Positive NG	1 (20%)	0 (0%)

CHAPTER 5

DISCUSSION

This chapter serves to explain how a multifaceted intervention impacted chlamydia and gonorrhea screening among sexually active, nonpregnant women 15 to 24 years old over a 10-week post-intervention period at a northern Indiana Family Medicine clinic. Findings will be integrated with the EBP model selected to guide the project. Strengths, limitations, and implications for the future will be elaborated.

Explanation of Findings

While there was an increase in the percentage of women screened for sexual activity, women eligible for testing based on sexual activity, and women tested for chlamydia and gonorrhea, these increases were not significant ($p>.05$). Analysis of secondary outcomes showed no significant difference in the number of women tested that resulted positive for chlamydia or gonorrhea.

When considering available evidence to improve asymptomatic screening of chlamydia and gonorrhea, results of this EBP project were somewhat in alignment with available literature. This EBP project modeled Kettinger (2013) most similarly. Kettinger discussed an intervention that involved a one-time educational in-service for colleagues and implementing a flagging feature within the EMR. This flagging feature reminded colleagues (providers and support staff) to screen women less than 25 years old for sexual activity. Results of Kettinger's intervention were significant (<0.05). While this EBP project was unable to alter the EMR flagging system, a chart preparation worksheet (Appendix A, Appendix B) was used as a substitution.

As mentioned, EMR modifications were substituted by utilization of a MA driven chart preparation document (Appendix A, Appendix B). DiVasta et al. (2016), Goyal et al. (2017), and Taylor, Frasure-Williams, Burnett, & Park (2016) cited EMR changes to remind colleagues and providers to screen and/or risk assess for chlamydia, gonorrhea, and/or syphilis exposure.

Tebb, Wibbelsman, & Nauhas (2009) discussed initiating a support staff driven protocol for screening eligible women and notifying providers about patients eligible for testing. Each article reported significant increases in testing rates.

Guy et al. (2011), Lawton et al. (2010), McNulty et al. (2014), Taylor, Frasure-Williams, Burnett, & Park (2016), and Tebb, Wibbelsman, & Nauhas (2009) incorporated educational in-services (single or a series of in-services) as an effort to increase chlamydia, gonorrhea, and/or syphilis screening. Each article reported significant increases in testing, although Taylor, Frasure-Williams, Burnett, & Park, 2016 noted marginal increases in testing as a result of educational in-services. McNulty et al., 2014 noted increases in chlamydia detection rates, which was not evident in this EBP project.

Due to concerns that automatic collection of specimens for testing cited by Goyal et al. (2017), Guy et al., (2011), Tebb, Wibbelsman, & Nauhas (2009), and Taylor, Frasure-Williams, Burnett, & Park (2016) would violate the ethical principal of informed consent, this intervention was not used in this EBP project. By automatically collecting specimens without discussing with the patient, this could void privacy (i.e. a minor billed under parents' insurance) or the patient could incur charges for testing she otherwise would have declined. Patients should be fully involved in their healthcare. This involves holding an evidence-based conversation to enable them to make informed decisions. Additionally, such diseases are required to be reported to the health department. It would be unethical to report a disease to the health department if the patient was never aware she was going to be tested for such disease. Leaving the patient out of the conversation places the patient and provider trust at significant risk. However, automatic collection of specimens noted in the evidence showed significant increases in each of these studies. Regardless, it was deemed inappropriate for inclusion in an EBP project for the aforementioned reasons.

This EBP project sought to answer the following question: Among sexually active, nonpregnant women 15 to 24 years old (P), how does colleague education, routine sexual

history taking, and subsequent collection of urine specimen for sexually active women (I) compared to no standard practice (C) improve chlamydia and gonorrhea screening uptake (O) over a 10-week period (T)? The biggest caveat to asserting the EBP project results reflected available literature was the lack of significance. Results and relationship with the evidence will be explained further as outcomes are examined.

Participants

Age range.

The highest rates of chlamydia and gonorrhea occur among people 15 to 24 years old (CDC, 2017b). In 2017, CDC reported the highest rates of chlamydia among women 19 and 20 years old (2018). Guidelines surrounding annual chlamydia and gonorrhea screening target women less than 25 years old (CDC, 2014c; USPSTF, 2014). Unless consent (Appendix F) to treat a minor at the project site is on file at the project site, all minors must be accompanied by a parent or guardian. Therefore, data collection involved splitting participants into groups to evaluate differences in women presenting for preventive and/or contraceptive related visits based on minor status. While there were greater frequencies of minors who presented throughout the pre-intervention and post-intervention period, there was no significant difference in age range (15-17 years old vs. 18-24 years old) between the groups ($p>.05$).

Insurance.

A goal identified by Healthy People 2020 is to increase the proportion of sexually active women 24 years and younger enrolled in commercial and Medicaid plans who are screened for chlamydia (HHS, Healthy People 2020, 2019). Greater frequencies of Medicaid insured women compared to commercially insured women presented for preventive and/or contraceptive related visits in the pre-intervention (56% vs. 44%, respectively) and post-intervention groups (79% and 21%, respectively). There was no significant difference in type of insurance when comparing pre-intervention and post-intervention groups ($p>.05$).

Race.

There was no significant difference among race (Caucasian/White, African American/Black, Hispanic/Latino, other/declined) between the pre-intervention and post-intervention groups ($p>0.05$). Between the pre-intervention and post-intervention groups, there were greater frequencies of Caucasian/White women (61% and 57%, respectively) compared to African American/Black women (11% and 7%, respectively). This raises the question of health disparities in preventive health care and contraceptive access for Black/African American women, especially considering the highest rates of chlamydia and gonorrhea occur among Black/African American women (CDC, 2017b).

Marital status.

Marriage is assumed to be monogamous, which should hypothetically mean little to no risk for contracting STDs. National clinical guideline recommendations do not exclude married women. Marital status was evaluated between the pre-intervention and post-intervention groups. Each participant reported being single, therefore statistical analyses were not performed.

Primary outcomes

Number of women screened for sexual activity.

While there was an increase in the frequency of women screened for sexual activity when comparing pre-intervention (61%) and post-intervention (79%) groups, the results did not yield significance ($p>.05$). Kettinger (2013) modeled the EBP project design and reported significant increases in women screened for sexual activity. The results of this EBP project do not support that the multifaceted intervention increased the number of women screened for sexual activity. Small sample size pre-intervention ($n=18$) and post-intervention ($n=14$), short timeframe (10 weeks), and lack of colleague participation in the project likely contributed.

Number of women eligible for testing.

While there was an increase in the frequency of women eligible for testing based on sexual activity when comparing pre-intervention (45%) and post-intervention (64%) groups, the

results did not yield significance (p>.05). Results do not support that the multifaceted intervention increased detection of women eligible for testing. Small sample size pre-intervention (n=18) and post-intervention (n=14), short timeframe (10 weeks), and lack of colleague participation in the project likely contributed.

Number of women tested for chlamydia and gonorrhea.

While there was an increase in the frequency of women tested for chlamydia and gonorrhea when comparing pre-intervention (80%) and post-intervention (100%) groups, the results did not yield significance (p>.05). Kettinger (2013) modeled the EBP project design and reported significant increases in women tested for chlamydia. The EBP project results do not support that the multifaceted intervention led to more women being tested for chlamydia and gonorrhea. Small sample size pre-intervention (n=18) and post-intervention (n=14) and short timeframe (10 weeks) likely contributed. Colleague participation is not to blame for results of this outcome given 100% of women who met criteria for testing were tested. Additionally, no women who were recommended testing declined.

Secondary Outcomes

Number of positive chlamydia results.

There was no significant difference in chlamydia infections detected when comparing pre-intervention (20%) and post-intervention (14%) groups (p>.05). Given chlamydia usually has an asymptomatic presentation (CDC, 2014a), it was expected more infections would be detected with increase in testing. As previously noted, the increase in testing was not significant. Results likely were limited by small sample size pre-intervention (n=18) and post-intervention (n=14) and short timeframe (10 weeks). Results did not align with McNulty et al. (2014) who reported a significant increase in chlamydia detection rates as a result of their interventions.

Number of positive gonorrhea results.

There was no significant difference in gonorrhea infections detected when comparing pre-intervention (20%) and post-intervention (0%) groups (p>.05). Given gonorrhea usually has

an asymptomatic presentation (CDC, 2014b), it was expected more infections would be detected with increase in testing. However, as previously noted, the increase in testing did not yield significance. Results were likely limited by small sample size pre-intervention (n=18) and post-intervention (n=14) and short timeframe (10 weeks).

Strengths and Limitations of the DNP Project

Strengths

A few strengths were noted throughout this project. One strength was that the EBP project was performed at the DNP student's well-established practice. She had support of the organization including administration, her collaborating physician, IT, and clinical colleagues. She had access to resources that may have not been readily available for a student not employed by the clinical site. She was familiar with current practice and personally identified gaps in care surrounding this project.

Another strength involved the simplicity of the interventions. The DNP student was able to organize and facilitate a brief in-service to educate colleagues on the EBP project. The second part of the intervention involved altering workflow for clinical colleagues so women 15 to 24 years old presenting for preventive and/or contraceptive related visits were screened for sexual activity. This aspect of the intervention involved changing a master document, namely chart preparation sheets (Appendix A, Appendix B) for the MAs. The MA would simply incorporate this into their health maintenance responsibilities and recommended urine testing if the woman indicated she was or has been sexually active. Overall, the concept for the MAs was very straightforward.

Several steps of the ACE Star Model (Stevens, 2012) utilized for this EBP project was shown to be congruent with the goals of the project. Four of the five stages of transformation were successfully applied to the EBP project. Discovery research and evidence summary was accomplished by the DNP student who brought forth the strongest evidence available supporting best practice interventions. Translation to guidelines was supported by known clinical

national guidelines to both providers – USPSTF and CDC. Process and outcome evaluation is ongoing as both providers work toward making the practice change sustainable, recognizing there were several barriers along the way. Both providers are committed to changing practice and the organization supports ongoing quality improvement efforts.

Limitations

Limitations were encountered throughout this project that may have impacted results. When considering the ACE Star Model (Stevens, 2012) that was used to guide the project, the step involving practice integration was not as successful as hoped due to high colleague turnover (one termination and two resignations) and reluctance to change workflow. One MA served as a change agent, but due to discourse among three other colleagues, the change agent was unsuccessful in shifting the other clinical colleagues' perspectives. The colleagues unwilling and disinterested in committing the practice change noted a lack of time and feeling overwhelmed by daily schedules. Several times it was mentioned that they simply forgot to screen, despite utilizing the chart preparation documents (Appendix A, Appendix B). The physician colleague admitted he forgot to follow up on screening performed by the MA colleagues due to time constraints.

Sample size may have contributed to lack of significant results. Sample sizes pre-intervention (n=18) and post-intervention (n=14) were small. Considering volume of the two-provider practice holding a combined practice panel of approximately 3,000 patients, 10 weeks was likely insufficient time to collect an adequate sample size.

Implications for the Future

Practice

Strong clinical guidelines assert screening sexually active females less than 25 years old for chlamydia and gonorrhea annually (CDC, 2014c; USPSTF, 2014). Several interventions, including those implemented in this project, are supported in literature as best practice interventions. While there are currently no plans to provide another colleague in-service related

to the clinical problem, the practice continues to use the chart preparation documents (Appendix A, Appendix B) that were modified for the EBP project. This chart preparation documents will continue to remind clinical colleagues to screen women for chlamydia and gonorrhea.

Theory

Theoretical concepts and evidence-based practice models should continue to guide EBP projects. EBP models like the ACE Star Model (Stevens, 2012) help drive quality change by condensing volumes of research into evidence-based approaches that clinicals can employ. Further research surrounding screening efforts should incorporate social cognitive theories that focus on provider beliefs and practices. To date, behavioral theories like social cognitive theory, have been applied to primary prevention research (reducing high risk sexual behaviors) opposed to secondary prevention research that provided the foundation of this EBP project (CDC, 2012).

Research

Further research on how to incorporate chlamydia and gonorrhea screening in a way that is perceived as time efficient would be beneficial. It was noted by the site physician and clinical colleagues that a lack of time and being behind schedule were barriers to screening women for sexual activity and thus making appropriate recommendations for testing.

Additionally, many interventions noted in the literature were effective. Interventions ranged from automatic collection of specimens for testing to series of educational sessions for colleagues or developing detailed policies and protocols. It would be useful to compare these interventions to determine superiority of one intervention over another.

Education

Implications for education should focus on providers and clinical staff. This encourages more effort to ask the hard question surrounding sexual activity in order to identify females at risk of contracting chlamydia and gonorrhea. Providers in primary care practices should be briefed on the magnitude of the problem relating to chlamydia and gonorrhea incidence and

prevalence among patients less than 25 years old. They should be informed that people between 15 and 24 years of age acquire half of all new STDs and that one in four sexually active adolescent girls will acquire a STD (CDC, 2017b).

Many providers are already aware, but should be reminded that majority of chlamydia and gonorrhea infections are asymptomatic (Ghanem & Tuddenham, 2018). Additionally, it is important to explain that recommendations surrounding chlamydia and gonorrhea screening set forth by USPSTF (2014) and CDC (2014c) focus on females less than 25 years old due to potential reproductive sequela such as chronic pelvic pain, miscarriage, and infertility (CDC, 2014a; CDC, 2014b; Ghanem & Tuddenham, 2018). While intuitively it makes sense to screen men and women and providers should utilize their best judgement, the risks associated with chronic infection are higher among women than men. Hence, the evidence emphasizes screening women in this age group.

Conclusion

As chlamydia and gonorrhea infection rates increase yearly among people less than 25 years old (CDC, 2017b), it is important that primary care providers, including Advanced Practice Registered Nurses (APRN), are screening patients according to national clinical guidelines. CDC (2014c) and USPSTF (2014) both recommend screening sexually active women less than 25 years old for chlamydia and gonorrhea annually. In 2017, NCQA (2019) HEDIS report revealed suboptimal chlamydia screening from participating payers. The clinical site for this EBP project noted lagging chlamydia and gonorrhea screening rates as well, thus supporting the need for intervention.

The EBP project sought to answer the following PICOT question: Among sexually active, nonpregnant women 15 to 24 years old (P), how does colleague education, routine sexual history taking, and subsequent collection of urine specimen for sexually active women (I) compared to no standard practice (C) improve chlamydia and gonorrhea screening uptake (O) over a 10-week period (T)? There was a nonsignificant increase in chlamydia and gonorrhea

screening uptake over the 10-week period. A longer time frame and larger sample size would further explore significance of the multifaceted intervention. Of the patients who were screened and eligible for testing, none declined. This information is encouraging and may indicate women are likely to get tested if their provider initiates the more difficult conversation related to sexual health.

REFERENCES

Bogler, T., Farber, A., Stall, N., Wijayasinghe, S., Slater, M., Guiang, C., & Glazier, R. H. (2015). Missed connections: Unintended consequences of updated cervical cancer screening guidelines on screening rates for sexually transmitted infections. *Canadian Family Physician, 61*, e459-466. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4607350/pdf/061e459.pdf

Centers for Disease Control and Prevention. (2012). Behavioral interventions for STD/HIV prevention. Retrieved from https://www.cdc.gov/std/training/std101/presentations-2012/behavioral-interventions.pdf

Centers for Disease Control and Prevention. (2013). Sexually transmitted infections among young Americans. Retrieved from https://www.cdc.gov/std/products/youth-sti-infographic.pdf

Centers for Disease Control and Prevention. (2014a). Chlamydia – CDC fact sheet. Retrieved from https://www.cdc.gov/std/chlamydia/stdfact-chlamydia.htm

Centers for Disease Control and Prevention. (2014b). Gonorrhea – CDC fact sheet. Retrieved from https://www.cdc.gov/std/gonorrhea/stdfact-gonorrhea.htm

Centers for Disease Control and Prevention. (2014c). Which STD tests should I get? Retrieved from https://www.cdc.gov/std/prevention/screeningreccs.htm

Centers for Disease Control and Prevention. (2017a). CDC fact sheet: Information for teens and young adults: Staying healthy and preventing STDs. Retrieved from https://www.cdc.gov/std/life-stages-populations/adolescents-youngadults.htm

Centers for Disease Control and Prevention. (2017b). STDs in adolescents and young adults. Retrieved from https://www.cdc.gov/std/stats17/adolescents.htm

Centers for Disease Control and Prevention. (2017c). Key Statistics from the National Survey of Family Growth - S Listing. Retrieved from https://www.cdc.gov/nchs/nsfg/key_statistics/s.htm#sexualactivity

Centers for Disease Control and Prevention. (2018). Sexually transmitted disease surveillance 2017. Retrieved from https://www.cdc.gov/std/stats17/2017-STD-Surveillance-Report_CDC-clearance-9.10.18.pdf

Copen, C. E. (2017). Condom use during sexual intercourse among women and men aged 15–44 in the United States: 2011–2015 National Survey of Family Growth. *National Health Statistics Reports*, No. 105. Retrieved from https://www.cdc.gov/nchs/data/nhsr/nhsr105.pdf

Copen, C. E., Chandra, A., & Martinez, G. (2012) Prevalence and timing of oral sex with opposite-sex partners among females and males aged 15–24 years: United States, 2007–2010. *National Health Statistics Reports*, No. 56. Retrieved from https://www.cdc.gov/nchs/data/nhsr/nhsr056.pdf

Cuffe, K. M., Newton-Levinson, A., Gift, T. L., McFarlane, M., & Leichliter, J. S. (2016). Sexually transmitted infection testing among adolescents and young adults in the United States. *Journal of Adolescent Health, 58*, 512-519. doi:10.1016/j.jadohealth.2016.01.002

Dang, D., & Dearholt, S. (2017). *John Hopkins nursing evidence-based practice: Models and guidelines.* Retrieved from http://ebookcentral.proquest.com

DiVasta, A. D., Trudell, E. K., Francis, M., Focht, G., Jooma, F., Vernacchio, L., & Forman, S. F. (2016). Practice-based quality improvement collaborative to increase chlamydia screening in young women. *Pediatrics, 137*(5). doi:10.1542/peds.2015-1082

Ghahnem, K. G., & Tuddenham, S. (2018). Screening for sexually transmitted infections. In A. Bloom (Ed.), *UpToDate*.

Goyal, M. K., Fein, J. A., Badolato, G. M., Shea, J. A., Trent, M. E., Teach, S. J.…Chamberlain, J. M. (2017). A computerized sexual health survey improves testing for sexually transmitted infection in a pediatric emergency department. *The Journal of Pediatrics, 183*, 147-152. http://dx.doi.org10.1016/j.jpeds.2016.12.045

Guy, R. J., Ali, H., Liu, B., Poznanski, S., Ward, J., Donovan, B., Kaldor, J., & Hocking, J. Efficacy of interventions to increase the uptake of chlamydia screening in primary care: A systematic review. *BMC Infectious Diseases, 11*(211)*,* 1-13. https://doi.org/10.1186/1471-2334-11-211

Indiana State Department of Health. (2017a). Reported cases of chlamydia by age, sex, race/race and by county, 2013-2017. Retrieved from https://www.in.gov/isdh/files/Chlamydia,%202013-2017.pdf

Indiana State Department of Health. (2017b). Reported cases of gonorrhea by age, sex, race/race and by county, 2013-2017. Retrieved from https://www.in.gov/isdh/files/Gonorrhea,%202013-2017.pdf

Kettinger, L. D. (2013). A practice improvement intervention increases chlamydia screening among young women at a women's health practice. *Journal of Obstetrics, Gynecologic, & Neonatal Nursing, 42*, 81-90. doi: 10.1111/j.1552-6909.2012.01427.x

Lawton, B. A., Rose, S. B., Elley, C. R., Bromhead, C., MacDonald, E. J., Baker, M. G. (2010). Increase the uptake of opportunistic chlamydia screening: A pilot study in general practice. *J Primary Healthcare, 2*(3), 199-207.

McNulty, C. A. M., Hogan, A. H., Ricketts, E. J., Wallace, L., Oliver, I., Campbell, R….Charlett, A. (2014). Increasing chlamydia screening tests in general practice: A modified Zelen prospective cluster randomised controlled trial evaluating a complex intervention based on the Theory of Planned Behaviour. *Sex Transm Infect, 90*, 188-194.

National Commission on Prevention Priorities. (2007). *Preventive care: A national profile on use, disparities, and health benefits.* Retrieved from https://www.rwjf.org/en/library/research/2007/08/preventive-care-national-profile-on-use.html

National Committee for Quality Assurance. (2019). Chlamydia screening in women (CHL). Retrieved from https://www.ncqa.org/hedis/measures/chlamydia-screening-in-women/

Planned Parenthood. (2019). STDs. Retrieved from https://www.plannedparenthood.org/learn/stds-hiv-safer-sex

Stevens, K. R. (2012). Delivering on the promise of EBP. *Nursing Management, 43*(4), 19-21. doi:10.1097/01.NUMA.0000413102.48500.1f

Taylor, M. M., Frasure-Williams, J., Burnett, P., & Park, I. U. (2016). Interventions to improve sexually transmitted disease screening in clinic-based settings. *Sexually Transmitted Diseases, 43*(1), S28-41. doi: 10.1097/OLQ.0000000000000294

Tebb, K. P., Wibbelsman, C., Neuhaus, J. M. (2009). Screening for asymptomatic chlamydia infections among sexually-active adolescent girls during pediatric urgent care. *Arch Pediatr Adolelesc Med, 163*(6), 559-564. doi:10.1001/archpediatrics.2008.570

United States Department of Health and Human Services, Healthy People 2020. (2019, July 3). *Sexually transmitted diseases.* Retrieved from https://www.healthypeople.gov/2020/topics-objectives/topic/sexually-transmitted-diseases/objectives

United States Preventive Services Task Force. (2014). Final recommendation statement: Chlamydia and gonorrhea: Screening. Retrieved from https://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/chlamydia-and-gonorrhea-screening

BIOGRAPHICAL MATERIAL

MACKENZIE S. SHIREMAN

Mrs. Shireman earned her Bachelor of Science in Nursing from Purdue University in 2014. During her undergraduate studies, she served in academia as a teaching assistant for clinical assessment and simulation center leader. After obtaining her Registered Nurse licensure, she worked within the critical care setting in a CardioThoracic Intensive Care Unit in Lynchburg, VA and a general Intensive Care Unit in Goshen, IN. During this time, Mrs. Shireman continued her studies to become a Family Nurse Practitioner (FNP). She obtained her Critical Care Registered Nurse (CCRN) certification August of 2016 and retains her alumnus CCRN certificate. She was awarded her Master of Science in Nursing degree by Ball State University and FNP Certificate through the American Association of Nurse Practitioners Credentialing Board summer of 2017. Working within the Goshen Health system, Mrs. Shireman is a primary care provider. She continues to successfully build a panel of patients within the Bristol, IN and surrounding communities. She enjoys caring for a varied population, while holding special interests in women's health and pediatric care. Mrs. Shireman is a preceptor at her practice and frequently provides contracted supervisory services for Ball State University FNP students. Mrs. Shireman is a member of the American Association of Nurse Practitioners (AANP) and the Coalition of Advanced Practice Nurses of Indiana (CAPNI). She is a peer reviewer for AANP. She presented her Doctor of Nursing Practice (DNP) project at CAPNI's annual advanced practice registered nurse (APRN) conference in February 2020. She is a volunteer provider for the Center of Healing and Hope in Goshen, IN, which serves individuals who are uninsured or underinsured. Mrs. Shireman is a May 2020 DNP candidate at Valparaiso University with aspirations of growing her primary care practice while contributing to the advancement of the APRN community through academia and political advocacy.

ACRONYM LIST

CDC: Centers for Disease Control and Prevention

STD: Sexually transmitted disease

CT: Chlamydia Trachomatis

NG: Neisseria Gonorrhea

CMA: Certified Medical Assistant

USPSTF: United States Preventive Services Task Force

STI: Sexually transmitted infection

HIV: Human Immunodeficiency Virus

HPV: Human Papilloma Virus

PID: Pelvic inflammatory disease

ISDH: Indiana State Department of Health

NCQA: National Committee for Quality Assurance

HEDIS: Healthcare Effectiveness Data and Information Set

HMO: Health maintenance organization

PPO: Preferred provider organization

HHS: Department of Health and Human Services

CMA: Certified Medical Assistant

EMR: Electronic medical record

EBP: Evidence-based practice

DNP: Doctor of Nursing Practice

JBI: Joanna Briggs Institute

ED: Emergency Department

RCT: Randomized controlled trial

LC: Learning community

IUD: Intrauterine device

FNP: Family Nurse Practitioner

CPT: Current Procedural Terminology

ICD: International Classification of Diseases

CITI: Collaborative Institutional Training Initiative

IRB: Institutional Review Board

HIPAA: Health Insurance Portability and Accountability Act

SPSS: Statistical Package for Social Sciences

APRN: Advanced Practice Registered Nurses

APPENDIX A

Appointment Date: _____ Appointment Time: _____

Patient Name: _____ Patient DOB: _____

Visit Length (circle one): Short Long Reason for Visit: _____

ADULT

WT_____HT_____BP____/_____PULSE_____O2_____TEMP_____

PREVIOUS VISIT: WT:_____ HT:_____ LMP:_____

PREV

DX:_____

_

CURRENT MEDICATIONS:

_____
_____
_____
_____
_____
_____

PREVIOUS OFFICE VISIT NOTES/PLAN:

_____
_____
__

LABS AND DATE:

CMP:_____
TSH:_____
LIPIDS:_____
Hep C:_____

DIABETIC CARE:

Urine Micro: _____
HgbA1C: _____
DM Eye Exam:_____
Foot Exam:_____

Diagnostic/Tests/SCREENINGS/DATES

Colonoscopy:_____ Prostate cancer screening:_____
Mammogram:_____ BMI:_____ DEXA:_____
PAP w/ HPV:_____ Low Dose Lung Screening:_____
STD Screening(15-24) if sexually active_____
ECG:_____ FALL RISK: Y/N PhQ-9:_____
ALCOHOL: Y/N TOBACCO: Y/N **INFLUENZA**:

ADDITIONAL INFORMATION:

Rev. 10/06/2016

APPENDIX B

Goshen Physicians
FAMILY MEDICINE & URGENT CARE

Appointment Date: _____ Appointment Time: _____

Patient Name: _____ Patient DOB: _____

Visit Length (circle one): Short Long Reason for Visit: _____

PEDATRIC

WT_____HT_____BP_____/_____PULSE_____O2_____TEMP_____

PREVIOUS WT_____HT_____ HC_____ LMP_____

PREVIOUS DX:_____ _____ _____ _____ **CURRENT MEDICATIONS:** _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	**EXAM FINDINGS:**_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____
PREVIOUS OFFICE VISIT NOTES/PLAN: _____ _____ _____ **Other diagnostics** • **Eye/Hearing exam** • **Dental referral** • **DEPRESSION/ALCOHOL/TOBACCO** • **STD Screening (15-24) if Sexually Active**	**NEW MEDICATIONS**: _____ _____ _____ _____
Immunizations • Birth: Hep B • 2 mo: Pentacel, Hep B, Prevnar, Rotateq • 4 mo: Pentacel, Prevnar, Rotateq • 6 mo: Pentacel, Hep B, Prevnar, Rotateq • 9 mo: none unless behind • 12 mo: MMR, Varicella, Hep A • 15mo: Pentacel, Prevnar • 18 mo: Hep A • 4-6 year: Quadracel(Dtap+ polio), Proquad(MMR+Varicella) • 11 years: Adacel, Menactra • 16-18 years: Menactra, Trumemba • Gardasil at 11-12 • **Flu vaccine** Annually 6 mo + **OTHER**: Dtap, HIB, Polio, Hep A, Hep B, Rotavirus, Pneumococcal, Meningococcal, Varicella, MMR, Gardasil	**PT REFERRALS**: _____ _____ _____ **FUTURE LABS/RADIOLOGY**: _____ _____ _____ **ADDITIONAL INFORMATION**: _____ _____ _____ _____ _____ _____

Rev. 10/06/2016

APPENDIX C

9/11/19

VALPARAISO UNIVERSITY

Testing, testing, 1…2…3: Increasing chlamydia and gonorrhea screening among women 15-24 years old using a multifaceted approach

Mackenzie Shireman, MSN, RN, NP-C
DNP Candidate 2020

"I have neither given or received, nor tolerated others' use of unauthorized aid"

Background

- People 15-24 y/o account for half of the 20 million sexually transmitted diseases (STD) diagnosed annually
  - Chlamydia trachomatis (CT) and Neisseria gonorrhea (NG) are the most common reportable STDs
  - Incidence is increasing each year

CDC, 2014a; CDC, 2014b; CDC, 2017a; CDC, 2017b; CDC, 2018; Ghanem & Tuddenham, 2018

VALPARAISO UNIVERSITY

Background

- Usually without symptoms
- Symptoms may include
  - Vaginal or or penile discharge
  - Abnormal vaginal bleeding
  - Burning with urination
  - Pain or swelling in testicles
  - Rectal pain or bleeding
- Once infected, more likely to get again

CDC, 2014a; CDC, 2014b

VALPARAISO UNIVERSITY

Background

- Mean age of vaginal intercourse among females is 17.3 years old
- Half of adolescents between ages 15 and 19 report ever engaging in oral sex
- Less than or equal to one-third of sexually active people ages 15 to 44 years old reported condom use with last intercourse

CDC, 2017c; Copen, 2017; Copen, Chandra, & Martinez, 2012

VALPARAISO UNIVERSITY

Background

- Barriers to screening
  - Providers unaware of or uncomfortable with recommendations
  - Patients do not feel they are at risk or are uncomfortable asking for screening
  - Patients believe their confidentiality may be compromised
  - Paps are no longer performed as frequently
  - Cost/reimbursement concerns

Bogler et al., 2015; Cuffe et al., 2016; Kettinger, 2013

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Significance

Reported cases 2017	Chlamydia		Gonorrhea	
	All ages	≤24 y/o	All ages	≤24 y/o
National	1,708,569	9,986.9 per 100,000 people	555,608	2,297.4 per 100,000 people
Indiana	34,278	20,221	11,835	5,752
Elkhart County	1,045	N/A	322	N/A

CDC, 2018; ISDH, 2017a; ISDH, 2017b

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9/11/19

Significance

- Substantial public health concern
  - Asymptomatic presentation
    - Often presents without symptoms
    - Symptoms may be contributed to other etiology
      - Dysuria could easily be misdiagnosed without proper questioning and treated as UTI
  - Complications
    - Increased risk of contracting Human Immunodeficiency Virus (HIV) and Human Papilloma Virus (HPV)
    - Sterilization among men (gonorrhea)
    - Pelvic inflammatory disease, chronic pelvic pain, infertility, miscarriage (including ectopic pregnancy), and preterm labor among women

CDC, 2014a; CDC, 2014b; Ghanem & Tuddenham, 2018

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Supporting Data

- Screening is currently largely underperformed
  - Nationally: *50-60%* per the National Committee for Quality Assurance (NCQA) Healthcare Effectiveness Data and Information Set (HEDIS)
  - Clinical site: 23/116 (*19.8%*) females who presented between June 2018-June 2019 for preventive care, urogenital complaints, or contraceptive management were tested for STDs
    - Unable to capture eligible patients, but represents "missed opportunities" for screening/testing
    - Routine sexual history taking not currently performed

NCQA, 2019

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Supporting Data

- United States Preventive Task Force (USPSTF) and CDC recommend screening sexually active females <25 y/o annually for CT and NG
- Healthy People 2020 recommends increasing proportion of sexually active females 24 years and younger screened for chlamydia

CDC, 2014c; HHS, Healthy People 2020, 2019; USPSTF, 2014

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Purpose

- To increase chlamydia and gonorrhea screening among sexually active, nonpregnant women between ages 15 and 24 y/o

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Purpose

- PICOT (population, intervention, comparison, outcome, timeframe) Question
  - Among sexually active, nonpregnant females 15-24 years old (P), how does colleague education, routine sexual history taking, and subsequent collection of urine specimen for sexually active women (I) compared to no standard practice (C) improve chlamydia and gonorrhea screening uptake (O) over a 10 week period (T)?

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Literature Synthesis

- Best practice interventions
  - Staff education and involvement
  - Routine screening (offer testing)
  - Automatic collection of specimens for testing
  - Electronic medical record (EMR) reminders for providers
- Best practice most appropriate for project
  - Staff education, routine screening, specimen collection if sexually active

DiVasta et al., 2016; Goyal et al., 2017; Guy et al., 2011; Kettinger, 2013; Lawton et al., 2010; McNulty et al., 2014; Taylor, Frasure-Williams, Burnett, & Park, 2016; Tebb, Wibbelsman, & Neuhas, 2009

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9/11/19

Intervention

- Who?
  - Females age 15 to 24 y/o
- When?
  - Preventive visits (well child/well adult/well woman)
  - Contraceptive visits
  - NOT during acute visits

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Intervention

- How?
  - Ask if she is sexually active, or has ever been sexually active
  - If she says "yes", offer urine screening
  - MA driven, with provider follow up
    - Education, reassurance may be needed
  - Chart prep has been adjusted to reflect intervention

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Intervention

- For how long?
  - Project length is 10 weeks
  - Ideally, this is sustainable

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Conclusion

- Chlamydia and gonorrhea infections are a growing and spreading problem
- Rates are highest among those younger than 24 y/o
- Strong clinical guidelines recommend screening all sexually active women less than 24 y/o

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Conclusion

- Screening rates in office are low
- This intervention serves to increase chlamydia and gonorrhea screening among this population by making this standard practice

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Conclusion

- Questions? Concerns?

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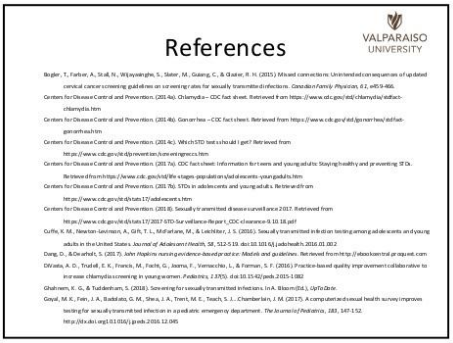
9/11/19



References

Bigler, T., Farber, A., Stall, N., Wijeysinghe, S., Slater, M., Guiang, C., & Cloutier, R. H. (2015) Missed connections: Unintended consequences of updated cervical cancer screening guidelines on screening rates for sexually transmitted infections. *Canadian Family Physician, 61*, e459-466.

Centers for Disease Control and Prevention. (2014a). Chlamydia – CDC fact sheet. Retrieved from https://www.cdc.gov/std/chlamydia/stdfact-chlamydia.htm

Centers for Disease Control and Prevention. (2014b). Gonorrhea – CDC fact sheet. Retrieved from https://www.cdc.gov/std/gonorrhea/stdfact-gonorrhea.htm

Centers for Disease Control and Prevention. (2014c). Which STD test should I get? Retrieved from http://www.cdc.gov/std/prevention/screeningrecs.htm

Centers for Disease Control and Prevention. (2017a). CDC fact sheet: Information for teens and young adults: Staying healthy and preventing STDs. Retrieved from https://www.cdc.gov/std/life-stages-populations/std-adolescents-youngadults.htm

Centers for Disease Control and Prevention. (2017b). STDs in adolescents and young adults. Retrieved from http://www.cdc.gov/std/stats17/adolescents.htm

Centers for Disease Control and Prevention. (2018). Sexually transmitted disease surveillance 2017. Retrieved from http://www.cdc.gov/std/stats17/2017-STD-Surveillance-Report_CDC-clearance-9.10.18.pdf

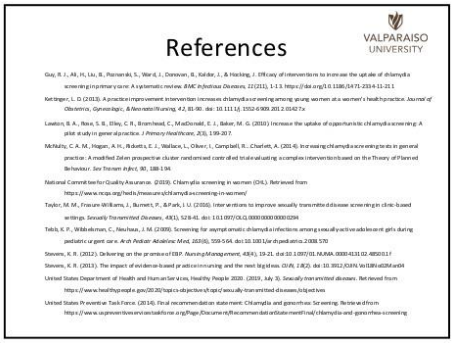
Coffin, K. M., Newton-Levinson, A., Gift, T. L., McFarlane, M., & Leichliter, J. S. (2016). Sexually transmitted infection testing among adolescents and young adults in the United States. *Journal of Adolescent Health, 58*, 512-519. doi:10.1016/j.jadohealth.2016.01.002

Dang, D., &Zechariah, S. (2017). *John Hopkins nursing evidence-based practice: Models and guidelines*. Retrieved from http://ebooksentral.proquest.com

DiVasta, A. D., Trudell, E. K., Francis, M., Feicht, G., Joerns, F., Vernacchio, L., & Forman, S. F. (2016.) Practice-based quality improvement collaborative to increase chlamydia screening in young women. *Pediatrics, 137*(5). doi:10.15-62/peds.2015-1382

Ghahroei, K. G., & Tuddenham, S. (2018). Screening for sexually transmitted infections. In A. Bloom (Ed.), *UpToDate*.

Goyal, M. K., Fein, J. A., Badolato, G. M., Shea, J. A., Trent, M. E., Teach, S. J., Chamberlain, J. M. (2017). A computerized sexual health survey improves testing for sexually transmitted infection in a pediatric emergency department. *The Journal of Pediatrics, 183*, 147-152. http://dx.doi.org/10.1016/j.jpeds.2016.12.045



References

Guy, R. J., Ali, H., Liu, B., Piscarski, S., Ward, J., Donovan, B., Kaldor, J., & Hocking, J. Efficacy of interventions to increase the uptake of chlamydia screening in primary care: A systematic review. *BMC Infectious Diseases, 12*(211), 1-13. https://doi.org/10.1186/1471-2334-11-211

Ketzinger, L. D. (2013). A practice improvement intervention increases chlamydia screening among young women at a women's health practice. *Journal of Obstetrics, Gynecologic, & Neonatal Nursing, 42*, 81-90. doi: 10.1111/j.1552-6909.2012.01427.x

Lawton, B. A., Rose, S. B., Elley, C. R., Bromhead, C., MacDonald, E. J., Baker, M. G. (2010.) Increase the uptake of opportunistic chlamydia screening: A pilot study in general practice. *J Primary Healthcare, 2*(3), 199-207.

McNulty, C. A. M., Hogan, A. H., Roberts, E. J., Wallace, L., Oliver, I., Campbell, R., Charlett, A. (2014). Increasing chlamydia screening tests in general practice: A modified Zelen prospective cluster randomised controlled trial evaluating a complex intervention based on the Theory of Planned Behaviour. *Sex Transm Infect, 90*, 188-194.

National Committee for Quality Assurance. (2019). Chlamydia screening in women (CHL). Retrieved from https://www.ncqa.org/hedis/measures/chlamydia-screening-in-women/

Taylor, M. M., Frasure-Williams, J., Burnett, P., & Park, I. U. (2016). Interventions to improve sexually transmitted disease screening in clinic-based settings. *Sexually Transmitted Diseases, 43*(1), 523-41. doi: 10.1097/OLQ.0000000000000294

Tebb, K. P., Wibblesman, C., Neuhaus, J. M. (2009). Screening for asymptomatic chlamydia infections among sexually active adolescent girls during pediatric urgent care. *Arch Pediatr Adolesc Med, 163*(6), 559-564. doi:10.1001/archpediatrics.2009.570

Stevens, K. R. (2012). Delivering on the promise of EBP. *Nursing Management, 43*(4), 19-21. doi:10.1097/01.NUMA.0000413102.48503.1f

Stevens, K. R. (2013). The impact of evidence-based practice in nursing and the next big ideas. *OJIN, 18*(2). doi:10.3912/OJIN.Vol18No02Man04

United States Department of Health and Human Services, Healthy People 2020. (2019, July 3). *Sexually transmitted diseases*. Retrieved from https://www.healthypeople.gov/2020/topics-objectives/topic/sexually-transmitted-diseases/objectives

United States Preventive Task Force. (2014). Final recommendation statement: Chlamydia and gonorrhea: Screening. Retrieved from https://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/chlamydia-and-gonorrhea-screening

APPENDIX D

CITI PROGRAM

Completion Date 22-Apr-2019
Expiration Date N/A
Record ID 31329724

This is to certify that:

Mackenzie Shireman

Has completed the following CITI Program course:

Group 1: Social Behavioral Educational Researchers (Curriculum Group)
Group 1: Social Behavioral Educational Researchers (Course Learner Group)
1 - Basic Course (Stage)

Under requirements set by:

Valparaiso University

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?wfccc827e-f304-4adb-a5c3-735c02860f22-31329724

APPENDIX E

Goshen Hospital
200 High Park Avenue
Goshen, IN 46526

FWA Number 00000079
IRB Number IRB00000806
IORG Number IORG0000484

DATE:	July 30, 2019
TO:	Mackenzie Shireman, NP
FROM:	Goshen Hospital Institutional Review Board
PROJECT TITLE:	[1473650-1] DNP Project Proposal - STD Testing
REFERENCE #:	
SUBMISSION TYPE:	New Study - STD Testing
ACTION:	DETERMINATION OF EXEMPT STATUS
DECISION DATE:	July 30, 2019
REVIEW CATEGORY:	Exemption category

Thank you for your submission of materials for your DNP Project - STD Testing. The Goshen Hospital Institutional Review Board has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations.

We will retain a copy of this correspondence within our records.

If you have any questions, please contact Debra Filley at 574-364-2476 or dfilley@goshenhealth.com. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Goshen Hospital Institutional Review Board's records.

APPENDIX F

Consent to Treat

Your health information is protected by federal law and it is important to us that private information about you is shared only in the manner that you wish, and only with those with whom you would wish us to share it. The following sections pertain to your consent for us to communicate and share your private information. They are optional, and you are not obligated to give us permission to share your information.

Consent to share your private information with others: Please provide us with the names and phone numbers of any people with whom you wish for us to be able to share information about you, such as spouse, family members, or friends:

Name _____ Relationship _____ Phone Number _____

Name _____ Relationship _____ Phone Number _____

☐ Check here if you do not want your private information shared with any family members or friends.

Authorization for Consent to Treat a Minor (please check one):

☐ My child, *regardless of age*, must have parent/guardian present to receive treatment.

☐ My child, *aged 16 years and older*, may be treated *without* the presence of a parent and/or guardian (*this does not cover routine vaccinations*).

☐ I acknowledge my child, *under the age of 16*, must be accompanied by an adult. This adult must be 18 years of age or older, provide photo identification and is listed on registration below.

☐ Designated individual(s) listed below (*must be 18 years of age or older*) may give consent for my child:

Name _____ Relationship _____

Name _____ Relationship _____

These above individuals may give consent for the following Medical Treatments: ***(check all that apply)***

☐ Vaccinations ☐ All surgical and medical treatment deemed necessary by the provider

_____ (initials) I acknowledge that any individual accompanying a minor that is *not* listed above will require written consent from parent/guardian and photo identification.

_____ **(initials) Notice of Privacy Practices:** I acknowledge that I have been offered or received a copy of Goshen Health's Notice of Privacy Practices.

_____ **(initials) Advanced Directive:** Please initial here if you have a living will or other advanced directive and provide details to our staff:

Please read the following sections and sign the bottom to allow us to treat you and file claims with your insurance:

Consent to Treat: I request and give consent to my physician to provide and perform such medical/surgical care, tests, procedures, drugs, and other services and supplies as are considered necessary or beneficial by my physician for my health and well-being. I acknowledge that no representations, warranties, or guarantees as to the results or cures have been made to me or relied upon by me.

Release of Medical Information and Authorization to Pay Insurance Benefits: I authorize my physician to release information from my medical record to my insurance carrier(s), or government agency for the processing of claims for my medical benefits. I request that my insurance company(s) honor my assignment of insurance benefits applicable to the services and pay all assigned insurance benefits directly to my physician on my behalf.

Infectious Disease Testing: I agree to allow Goshen Hospital to test for infectious diseases including hepatitis and human immunodeficiency virus (HIV) and that these tests may be ordered by Colleague Health if one of my care givers is exposed to my blood or body fluids. There is no cost for post-exposure testing.

Medicare Certification (For Medicare recipients only): I certify that the information given by me in applying for payment under the TITLE XVIII of the Social Security Act is correct. I authorize my physician who treats me to release information from my record to the Social Security Administration and/or the Medicare program or its intermediaries or carriers. I request that payment of authorized benefits be made directly to the physician treating me, on my behalf.

Financial Agreement: I have read and understand the Patient Financial Policy and understand that the remaining balances due, is my responsibility.
I understand that 100% of co-pays are due at the time of service.

Returned Check Fee: I understand that there is a fee of $25 for returned checks.

I declare that the information I have given on this form is correct to the best of my knowledge:

Signed (Responsible party): _____ **Date:** _____

05.8010.201904