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### Syphilis Screening Among Primary Care Providers

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Mississippi University for Women Graduate Nursing Program

**Syphilis Screening Among Primary  
Care Providers**

by

Sarah Christian  
Nikki Franklin  
Seth Stuart  
Casey Tramel  
Sereka Walker

A Project  
Submitted in Partial Fulfillment of the Requirements for the  
Degree of Master of Science in Nursing, College of Nursing  
and Speech Language Pathology  
Mississippi University for Women

COLUMBUS, MISSISSIPPI  
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Graduate Committee Approval

The Graduate Committee of Sarah Christian, Nikki Franklin, Seth Stuart,  
Casey Tramel, and Sereka Walker hereby approves his/her research project as meeting  
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Sereka Walker.

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or transmitted, in any form or by any means, electronic, mechanical, photocopying,  
recording or otherwise, without the authors' prior written permission.

### **Dedication**

I would like to thank my fellow researchers for all of the hard work they have done throughout this project. It has been a fruitful process to be able to complete such a mountainous task. I could not have done it without them. God has blessed me with the patience and strength to complete the research. I thank my husband, Jared, for always supporting me in my endeavors. Also, special thanks to my father, Bobby, for always supporting my educational efforts.

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Nikki Franklin

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Seth Stuart

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Casey Tramel

### **Abstract**

Syphilis is a sexually transmitted infection (STI) that can cause lesions on various mucosal areas of the body on an infected individual. If the disease is left untreated, syphilis can progress and affect an individual's cardiovascular, neurological, and immune systems. The STI rates are on the rise across the United States, especially in the state of Mississippi. Because of the increase in syphilis rates in Mississippi, the researchers developed this study. The purpose of this study is to determine if primary care providers (PCPs) are knowledgeable and screening according to the guidelines of the Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) and those set-in place by the Centers for Disease Control and Prevention (CDC). The researchers conducted a descriptive, quantitative study using a convenience sample of PCPs from multiple clinics within Mississippi. After obtaining approval from the Mississippi University of Women's Institutional Review Board, data was collected via survey using Google Forms. Data analysis determined 90.2% of respondents were not screening according to recommended guidelines. The researchers concluded there was a lack of knowledge among primary care providers regarding syphilis screening guidelines.

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Sarah Christian

Nikki Franklin

Seth Stuart

Sereka Walker

Casey Tramel

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## **Syphilis Screening Among Primary Care Providers**

### **Chapter I: Dimensions of the Problem**

Personal sexual practices are viewed as a taboo topic and a subject most individuals do not voluntarily initiate, even with healthcare providers; however, the topic is becoming increasingly important. Syphilis rates are on the rise across the United States, and the state of Mississippi is no exception. Mississippi now ranks 12th in the United States for primary and secondary syphilis infections (Centers for Disease Control and Prevention [CDC], 2015).

Syphilis is a sexually transmitted infection (STI) caused by the bacterium *Treponema pallidum* (Mayo Clinic, 2019). Both primary and secondary syphilis begins with chancres on the genitals, mouth, and rectum. Chancres turn to rashes then ulcerations. During this time, the individual must receive treatment since syphilis can become inactive after the initial phase only to become active again in the later stage, known as the tertiary phase. During the tertiary phase, syphilis can wreak havoc on the infected individual's cardiovascular, neurological, and immune systems (Mayo Clinic, 2019).

Syphilis is a rising concern; if detected early, syphilis can be easily cured, avoiding the devastating end-effects the disease can have on the infected individual and reducing transmission of the disease to other individuals (CDC, 2015). The purpose of this research project was to determine the knowledge of syphilis screening guidelines among Mississippi primary care providers (PCPs). This research study also aimed to evaluate syphilis screening practices of Mississippi healthcare providers.

The United States has seen an increase in primary and secondary syphilis infections. From 2017 to 2018, the primary and secondary syphilis rates increased by 14.4% (Centers for Disease Control and Prevention [CDC], 2019). Mississippi ranks 12th in the United States for primary and secondary syphilis infections (CDC, 2015). Primary and secondary syphilis cases increased three times from 2013 to 2016 (Mississippi State Department of Health [MSDH], 2019). Syphilis cases have increased in both men and women, especially in men who have sex with men (MSDH, 2019).

The U.S. Preventive Services Task Force (2016) made recommendations for syphilis testing regarding the asymptomatic, non-pregnant, and adolescent community. Individuals with the highest risk of contracting syphilis are men who have sex with men (MSM) and persons infected with human immunodeficiency virus (U.S. Preventive Services Task Force [USPSTF], 2016). Other factors creating high-risk situations are prostitution, incarceration, males less than 29 years old, and specific socioeconomic and regional risks (USPSTF, 2016). The current testing recommendations released from the Centers for Disease Control and Prevention (2015) are pregnant women, men who have sex with men, and people with HIV. Men who have sex with men and people with HIV should be tested for syphilis annually. More frequent screening should be done under the discretion of the PCP for people with high-risk factors (USPSTF, 2016).

The Centers for Disease Control and Prevention (CDC) distributed guidelines for PCPs to screen all patients aged 15 to 65 years. The CDC (2014) recommends every pregnant woman be screened for syphilis at the first prenatal visit. Retesting is recommended early in the third trimester and at delivery if the mother is at a higher risk. Men who have sex with men should be screened for syphilis annually if sexually active

(Centers for Disease Control and Prevention [CDC], 2014). Men who have sex with men who are at a higher risk should be screened every three to six months. At first HIV evaluation, the patient should be screened for syphilis as well as every year thereafter (Centers for Disease Control and Prevention [CDC], 2017). Primary and secondary syphilis, as well as congenital syphilis, are on the rise in the state of Mississippi. Unsafe sexual practices and a lack of sexual education can be the root cause of this increase (CDC, 2017).

Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) currently operates through federally funded Medicaid (Mississippi Division of Medicaid [MDM], 2019). The EPSDT makes recommendations for screening, diagnostics, and treatment for patients ranging from birth to 21 years old (MDM, 2019). The periodic screening guidelines include sexually transmitted infections. Syphilis screenings should occur between the ages of 11 years and 21 years of age with a focus on all sexually active females and sexually active males with an increased risk (American Academy of Pediatrics [AAP], 2019).

Syphilis is a well-known, sexually transmitted disease found in primary care. The disease starts as a pain-free sore on the genitals, mouth, or rectum (CDC, 2017). Syphilis is typically spread person to person through skin or mucous membrane contact with the sore. After becoming infected, the disease can lie dormant in the body for years and can be reactivated. When caught early, syphilis can be easily cured with a penicillin injection. Syphilis, when left untreated, can cause severe damage to the brain, heart, or other organs. Syphilis is not to be taken lightly, and can be life-threatening (CDC, 2017).

Syphilis is rising at exponential rates in Mississippi (MSDH, 2019). From 2013 to 2016, syphilis rates almost tripled, and the spikes are associated with African American MSM and women of childbearing age. Early detection is encouraged to decrease transmission and complications. Proper screening with adequate sexual history taking is needed to ensure proper control of syphilis spread (MSDH, 2019).

### **Purpose of the Research Project**

The purpose of this study was to assess the knowledge of current syphilis guidelines and syphilis screening practices of Mississippi PCPs. Evaluation of primary care providers' knowledge and screening practices may suggest further education is needed to improve syphilis screening and decrease syphilis cases in the state.

### **Significance of the Research Project**

According to the Mississippi State Department of Health (2019), syphilis cases are rising. Since 2014, the state has seen a 71% rise in both primary and secondary syphilis. Syphilis is a sexually transmitted infection (STI) that can be divided into four stages: primary, secondary, latent, and tertiary (CDC, 2017). Each stage has different signs and symptoms, which can make the disease confusing for those infected. Syphilis is acquired when a non-infected person has contact with the sore of an infected person. These sores may be in the genitalia area, inside the vagina, around the anus, inside the rectum, or even around the mouth (CDC, 2017). The risk of contracting syphilis can be reduced significantly by reducing the risk of exposure by not participating in high-risk sexual behaviors, maintaining a monogamous relationship, and by proper utilization of latex condoms (Mississippi State Department of Health [MSDH], 2018).

Syphilis is a growing concern for the United States. In 2019, the CDC disclosed 129,813 syphilis cases were reported, making the prevalence 40 per 100,000 people. Of those cases, 1,870 instances of congenital syphilis were reported with a prevalence of 49 in 100,000 live births (CDC, 2019). The overall prevalence of congenital syphilis increased from 34 per 100,000. The infliction of congenital syphilis can cause serious health complications that can ultimately lead to death (CDC, 2019).

Mississippi is among the states with syphilis outbreaks. In 2018, there were 464 female and 312 male cases of primary and secondary syphilis reported (MSDH, 2019). Four years prior, in 2014, there were only 16 female and 176 male cases of primary and secondary syphilis reported (MSDH, 2019). In 2018, there were three reported cases of congenital syphilis in Mississippi (CDC, 2019). From 2011 to 2015, there were a total of seven cases of congenital syphilis reported (Centers for Disease Control and Prevention [CDC], 2016).

The new resurgence of an old disease is quite troublesome and beseeches immediate action. Primary care providers are best poised to act in the fight against syphilis. Primary care providers treat patients across the lifespan and have an abundance of opportunities to identify at-risk patients and provide education regarding the transmission of syphilis and how high-risk sexual behavior places greater risk for contracting the disease. Primary care providers also provide patients with instruction on how to best prevent contracting the disease and support reducing high-risk sexual behaviors.

## **Conceptual Framework**

Pender's Health Promotion Model (HPM) was selected to guide the current research examining the increased rate of syphilis acquisition inside the state of Mississippi. Pender first introduced the HPM in 1982 as a balancing counterpart to models of health protection (Gonzalo, 2019). Pender's model aims to help an individual achieve optimal health through the multi-dimensional nature in which individuals interact with the environment. The HPM does so by defining health as a positive, dynamic state without viewing health as merely the absence of disease or illness (Gonzalo, 2019). Pender's HPM has been used to guide numerous research projects. The HPM is a flexible model applicable across the lifespan, and has become widely accepted by the nursing community, along with the expansion of wellness as a nursing specialty. There are numerous financial, human, and environmental burdens laid upon society by individuals who do not participate in health promotion and preventative actions (Alligood, 2018). The HPM provides a nursing-centered solution to healthcare issues by developing a way individuals can be motivated to gain personal health (Alligood, 2018).

The utilization of the HPM provides insight into the patient's individual experiences, perception of health, and the desire to commit to a plan of action (Alligood, 2018). Therefore, individuals should ultimately work toward the achievement of optimal health. These reasons made Pender's HPM a valuable tool for guiding this study.

## **Research Questions**

The following research questions guided this study:

1. Do primary care providers (PCPs) in Mississippi report knowledge regarding current syphilis screening guidelines?

2. Are primary care providers (PCPs) in Mississippi utilizing syphilis screening in clinical practice according to the guidelines recommended by the Centers for Disease Control and Prevention (CDC) and Early and Periodic Screening, Diagnostic, and Treatment (EPSDT)?

### **Definition of Terms**

#### ***Primary Care Provider***

**Theoretical.** The health care provider, including the nurse practitioner, physician's assistant, or physician, to whom a patient first goes to address a health problem (Venes, 2009, p. 1892).

**Operational.** The nurse practitioner, physician assistant, or physician in the clinical setting.

#### ***Patient***

**Theoretical.** An individual who is sick with or being treated for an illness or injury; also an individual receiving medical care (Venes, 2009, p. 1722).

**Operational.** Any person who is undergoing treatment for a disease, illness, or wellness exams.

#### ***Sexually Transmitted Disease (STD)***

**Theoretical.** Any disease that is acquired as a result of sexual intercourse or other intimate contact with an infected individual (Venes, 2009, p. 2110).

**Operational.** An infection transmitted to an individual via sexual intercourse or any sexual union; this may involve two or more participants.

### ***Sexually Transmitted Infection (STI) Screening***

**Theoretical.** Evaluating patients for diseases acquired as a result of sexual intercourse or other intimate contact with an infected individual before the condition becomes clinically obvious (Venes, 2009, pp. 2088, 2110).

**Operational.** Screening for the presence of sexually transmitted infections, also known as sexually transmitted diseases. Testing can be done by swab, urine, or blood.

### ***Syphilis***

**Theoretical.** A multistage infection caused by the spirochete *Treponema pallidum*. The disease is typically transmitted sexually, although some congenital infections occur during pregnancy (Venes, 2009, p. 2263).

**Operational.** A systemic disease caused by sexual transmission, contaminated needle use, or is congenital. The bacteria causes a wide variety of symptoms and usually affects all organ systems. The disease progresses from acute to chronic.

### ***Guideline***

**Theoretical.** An instructional guide or reference to indicate a course of action in a specified situation (Venes, 2009, p. 992).

**Operational.** A series of suggestions issued by official bodies, such as the Centers for Disease Control and Prevention, for the conduct of medical practitioners. Guidelines include advice on treating particular disorders or on effective ways of preventing conditions with screening recommendations and vaccine schedules.

### ***Centers for Disease Control and Prevention (CDC)***

**Theoretical.** The Centers for Disease Control and Prevention is a division of the U.S. Public Health Service in Atlanta, Georgia that investigates and controls various

diseases, especially those that have epidemic potential. The agency is also responsible for national programs to improve laboratory conditions and encourage health and safety in the workplace (Venes, 2009, p. 405).

**Operational.** The CDC sets guidelines for primary care providers regarding syphilis screening.

***Early Periodic Screening Diagnostic and Treatment (EPSDT)***

**Theoretical.** Early and Periodic Screening, Diagnostic and Treatment provides comprehensive and preventive health care services for children under the age of 21 years who are enrolled in Medicaid (MDM, 2019).

**Operational.** EPSDT provides a way for children with Medicaid insurance to receive screening for sexually transmitted infections including syphilis.

***Knowledge***

**Theoretical.** Information that a person has stored in memory about people, places, and things (Venes, 2009, p. 1274).

**Operational.** Providers have knowledge of EPSDT and CDC syphilis screening guidelines.

**Assumptions**

This study assumed primary care providers (PCPs) would respond truthfully to the provided survey. The researchers had an assumption the sample of primary care providers' responses to the survey would be adequate to draw conclusions based on the population. The researchers also assumed PCPs are knowledgeable about the most current syphilis testing guidelines according to the CDC and EPSDT but are not testing as recommended by said guidelines. Assuming PCPs are not following through with STD

testing and screening, which includes obtaining sexual health histories, because of a lack of knowledge regarding clinical guidelines for syphilis screening was the basis for this study. The assumption that fast-paced clinics and lost time are factors in not testing for syphilis exists. The researchers assumed PCPs were not testing or educating patients because providers were not aware of current statistics, recommendations, prevention, and treatments. Therefore, these reasons may potentially be contributing factors for increased cases of syphilis in Mississippi.

## **Chapter II: Literature Review**

To determine if primary care providers were screening sexually active patients for syphilis and if primary care providers were knowledgeable of syphilis screening guidelines recommended by the CDC and EPSDT, a review of literature was performed. The review of literature was divided into four sections. The first was a review of an article that implemented Pender's Health Promotion Model, which was chosen as the theoretical framework for the current research. The remaining sections were divided into cost effectiveness of syphilis screening, barriers found when performing syphilis screening, and articles found on recommended improvement of syphilis screening practices.

### **Conceptual Framework**

The first article examined was titled "Pender's Health Promotion Model and HPV Health-Promoting Behaviors Among College-Aged Males: Concept Integration" by McCutcheon et al. (2016). Inside the article, researchers pointed out that human papillomavirus (HPV), which is a sexually transmitted infection (STI) caused warts to grow in the genital area and anus of an infected individual (McCutcheon et al., 2016).

The virus was also a major cause of cervical, vaginal, vulvar, penile, and anal cancers. Human papillomavirus could even affect the oral-pharyngeal area causing oral-pharyngeal cancer. The authors pointed out that college-aged males are at the highest risk for contracting HPV due to commonly participating in high-risk sexual behaviors. The authors used Pender's model as a guide to encourage HPV health-promoting behaviors in college-aged males as a means of preventing the spread and contraction of HPV (McCutcheon et al., 2016).

The ability of an individual to have control over and improve personal health is what the authors were referring to when referencing health promotion (McCutcheon et al., 2016). The authors pointed out there had been HPV health promotion cited inside nursing literature, but the focus had been on disease prevention, not on health promotion, which may be a more effective philosophy. This was noted by the fact that despite the availability of an HPV vaccine, vaccination rates remained low. The authors debated whether the low vaccination rates could have been the result of inadequate education regarding potential dangers of HPV (McCutcheon et al., 2016).

The authors stated that in 2000, one-third of the U.S. population was aware of HPV and only 2% of individuals knew that HPV was an STI (McCutcheon et al., 2016). As a result of that finding, the authors felt that integrating HPV health-promoting behaviors into nursing-based programs to reduce the rate of HPV contraction in college-aged males was paramount. Pender's model examined the biopsychosocial practices that could motivate an individual to participate in health-promoting behaviors which made incorporating Pender's model into HPV health promotion of the college-aged male quite easy. The authors did this by examining shared associations in the model, which

consisted of self-efficacy, empowerment, participation, and community. The associations provide the guidance needed to incorporate HPV education into nursing-based programs (McCutcheon et al., 2016).

With self-efficacy, the individual examines personal ability to act (McCutcheon et al., 2016). Positive past performances could result in increased self-efficacy, increasing the likelihood an individual would participate in HPV health promotion. Empowerment obtained by elevated self-efficacy allows an individual to express full potential, produce living conditions, and ultimately control personal behavior. After the mastery of empowerment, comes participation. Once an individual reaches participation, the person is actively changing risky behavior. Continued participation leads to community involvement. Community involvement begins when an individual collaborates with other professionals, such as primary care providers, regarding health promotion. Once an individual advances through the steps, the presumptive result would potentially be a decreased contraction rate of HPV in the college-aged male (McCutcheon et al., 2016). Current researchers utilized Pender's Health Promotion Model to achieve the same goals in syphilis education and prevention as the above researchers who aimed to achieve with HPV prevention.

## **Review of Related Research**

### ***Cost Effectiveness***

Nibhanipudi and Cody (2017) performed a retrospective chart review that analyzed the instance of screening for syphilis in the suspicion of gonorrhea and chlamydia. The study aimed to determine the cost-effectiveness of syphilis screening with blood samples obtained in the suspicion of gonorrhea and chlamydia (Nibhanipudi

& Cody, 2017). The study was approved by the New York Medical College review board. During the study, New York State mandated institutions test for syphilis while also testing for gonorrhea and chlamydia. The usual practice in New York State for syphilis screening was to screen all sexually active adolescents during annual physicals. The researchers set out to determine the cost-effectiveness of routine screenings. No theoretical framework was identified (Nibhanipudi & Cody, 2017).

Nibhanipudi and Cody (2017) identified a hypothesis statement for the research. The hypothesis stated the researchers predicted syphilis screening during suspected gonorrhea and chlamydia infections would not be cost-effective (Nibhanipudi & Cody, 2017). The conduction of the study provided an example of a retrospective chart review. The setting was an emergency department in New York. The identified population involved 196 patients who were tested for gonorrhea, chlamydia, and syphilis. The sample included 78 patients who tested positive for either gonorrhea or chlamydia. The chart review was composed of charts from January 2004 to August 2006. The reviewed charts included the following: gonorrhea DNA probe, chlamydia DNA probe, and syphilis IgG (immunoglobulin G)/RPR (rapid plasma reagin). Analysis of each test performed was included in the study (Nibhanipudi & Cody, 2017).

The results of the study could be described as indicative of the researchers' hypothesis. Sixty-seven of the 78 patients (85.9%) were positive for chlamydia, and six patients (7.69%) were positive for gonorrhea (Nibhanipudi & Cody, 2017). Nibhanipudi and Cody (2017) incorporated the SILICO 2 x 4 Fisher exact test for the analysis of data. No patients were identified as positive for syphilis. Gonorrhea DNA probe, chlamydia DNA probe, and syphilis IgG positive and negative results yielded a 2-tailed P value of

<.0001. Statistically speaking, the answer supported the hypothesis. Screening recommendations coincided with the CDC's current syphilis screening guidelines and included patients who were deemed high risk for STIs, men who had sex with men, and pregnant women. The researchers deemed the practice cost-prohibitive and found testing was unnecessary for patients who were not deemed high risk (Nibhanipudi & Cody, 2017).

The researchers performed the correct analysis of the charts reviewed (Nibhanipudi & Cody, 2017). The small size of the sample was identified as a limitation. The sample size was the only limitation listed by researchers, but other weaknesses needed to be identified. The study was performed only at one New York state hospital. The study would be a better representation of the increase in syphilis cases if the study were done at several hospitals across the United States. Additionally, the study was based on outdated data, which posed another limitation (Nibhanipudi & Cody, 2017).

Even though the study's limitations could have potentially affected the prognosis of the hypothesis, the knowledge gained from the limitations increased the need for further research and development (Nibhanipudi & Cody, 2017). Based on the limitations of the small sample size, further testing should be performed with a larger sample. The study did demonstrate the providers were following set guidelines for syphilis testing in the state of New York. Researchers recommended further research should be conducted (Nibhanipudi & Cody, 2017).

### **Barriers to Practice**

Cuffe et al. (2016) performed a national-level study that examined STI testing among 15 year olds to 25 year olds and determined barriers to screening. Persons aged 15

years to 25 years have high sexually transmitted infection rates and suboptimal screening (Cuffe et al., 2016). There has been limited research analyzing barriers to STI testing at a national level. Females (16.6%) were more likely than males (6.1%) to have been STI tested in the last 12 months. Among sexually experienced respondents who were never tested, 41.8% did not seek testing because the individuals did not feel at risk for STIs. Males (60.1%) had significantly higher reports of preceding testing for confidentiality reasons than females (39.9%). There was no hypothesis identified in the study. The researchers used data from a national survey of youth. Bivariate and multivariable analyses examined differences in testing behaviors by demographics, separately by sex. Among sexually experienced respondents who reported never being tested, health system-related reasons for not testing were examined in bivariate and multivariable analyses (Cuffe et al., 2016).

A total of 3,953 adolescents and young adults were included in the final sample for analysis (Cuffe et al., 2016). Of the 3,953 participants, 11.5% reported receiving an STI test in the previous 12 months. When asked how respondents knew they were tested, 48.7% reported the doctor or nurse informed the individual the test was being performed, 45.0% reported asking to be tested, 34.0% were tested as part of routine health care, and 19.1% reported the provider called with results. Adolescent and young adult females (16.6%) were more likely than males (6.1%) to report receiving an STI test in the last 12 months. Sexually transmitted infection testing varied by several demographic characteristics. Young adult females (24.3%) and males (9.1%) reported higher testing in the last 12 months than adolescent females (6.7%) and males (2.4%). Among male respondents, non-Hispanic black males (15.6%) had the highest testing. When testing

patterns were analyzed by income, 20.5% of female respondents who had a household income of less than \$50,000 were tested in the last 12 months, compared with 13.4% of those with higher household income. Respondents who were not financially dependent on parents (25.9%) had the highest testing rate compared to those dependent on parents. Adolescents and young adults attending high school at the time of the survey reported meager testing proportions among females (4.1%) and males (1.5%). There were no differences in STI testing by census region, age at first sex (both sexes), and household income (Cuffe et al., 2016).

Cuffe et al. (2016) identified study limitations. Survey participation among adolescents aged less than 18 years was suboptimal (Cuffe et al., 2016). Demographic data of non-responders was not available to determine if the individuals differed from respondents. Perhaps the nonresponse group or teens who did not have parental permission had higher testing proportions than those who were able to participate in the study. Respondents were asked to describe household income before initiating the survey; therefore, the assumption was made that parents of adolescents aged 15 years to 17 years responded to the household income question. There is the possibility respondents did not know the test was performed. Some sample sizes were small (school based and STI clinic testing sites); therefore, caution should be used when extrapolating the results to the U.S. adolescent and young adult population. Efforts were made to control nonresponse and non-coverage biases in the Get Yourself Tested Survey design by applying post stratification adjustments based on recent data from the Current Population Survey (Cuffe et al., 2016).

Despite the limitations, the study findings highlighted the need for addressing financial barriers to accessing STI screening services, other barriers relating to missed opportunities in STI screening, and concerns about confidentiality (Cuffe et al., 2016). The study results provided a national-level analysis of barriers to seeking testing services in adolescents and young adults. Medical providers could use the information to improve or develop appropriate STI screening practices for adolescents and young adult patients. The results also highlighted the importance of examining clinic and insurance plan privacy policies given confidentiality and privacy concerns that would deter adolescents and young adults from seeking STI testing. The study was relevant to the current study because the study highlighted the lack of STI screening and common barriers to such testing among adolescents and young adults (Cuffe et al., 2016).

Trettin et al. (2015) used a phenomenological, hermeneutical approach through qualitative interviews to address any barriers in STD testing and understand the barriers in order to improve quality of care and increase STD screening. The purpose of the study was to investigate young people at risk of contracting STDs, who have not attended a sexual health clinic, to determine the individual's point of view on STD screening (Trettin et al., 2015). The study sought to eliminate any barriers toward testing, to understand the barriers, and to increase the number of young people getting STD screenings. Sexually transmitted diseases can have severe consequences, such as pelvic infections, cervical cancer, and infertility, when left untreated. Screening for STDs is often associated with shame and embarrassment. Existing research shows young people feel exposed when getting tested for STDs because of a stigma on social status. Other

studies often show young people do not get tested because of a lack of knowledge regarding STDs (Trettin et al., 2015).

The process of analysis used in the study follows Ricoeur's Philosophy of Interpretation (Trettin et al., 2015). Ricoeur's philosophy states there is an ongoing movement between three levels including naïve reading, structural analysis, and critical interpretation. The following two study questions were used: 1. what thoughts and expectations do adolescents have when being tested for sexually transmitted diseases, and 2. which factors could influence the decision to get tested? Focus group interviews were used in the study to gain an understanding of what young people think of STD testing (Trettin et al., 2015).

The study included four focus groups, which consisted of three to eight participants in each group (Trettin et al., 2015). The interviews lasted anywhere from 82 minutes to 102 minutes and averaged 94 minutes. Focus groups were arranged by age and gender. Participants were from a local high school and a local university. The interview addressed the following topics: feelings and attitudes toward testing, knowledge of STDs, suggestions of ideal testing scenarios, and how to address the target group. All interviews were recorded, transcribed, and the results broken down into categories. The first, barriers toward testing, proved participants still wanted to be tested in secret and involve as few as possible people. Participants found taking initiative to get tested difficult because of inconvenience and confidentiality. Both male and female participants were afraid of the actual discomfort of getting tested. The second category was the wish of detachment versus lack of knowledge. All participants wanted more knowledge of STDs, but not in a testing setting. Participants felt they would be humiliated when speaking with healthcare

workers about safe sex practices. Participants want advice and guidance on STD prevention, not STD treatment. The participants equally lacked knowledge of STD treatment and transmission. The third category is making testing a normal occurrence. All participants preferred routine testing for STDs, which would reduce stigma and embarrassment if all young people were tested routinely. Male and female participants of all ages preferred STD testing to be readily available and a normal occurrence (Trettin et al., 2015).

The study was performed by giving young people an anonymous call option for STD counseling (Trettin et al., 2015). Self-collection female swabs and male urine swabs were implemented to decrease fear of STD test discomfort. Communication skills of nurses were discussed and implemented to reduce the stigma and embarrassment of STD testing in young people. The intention was to create a more welcoming atmosphere for young people to feel comfortable requesting testing. After 12 months, the implementations contributed to a 35% increase in the number of patients being seen in the clinic for STD testing. The study did not include demographic data that could have been relevant to the study research (Trettin et al., 2015).

The study related to current research because the goal of the research was to understand if primary care providers were following recommended guidelines for RPR screening in Mississippi (Trettin et al., 2015). The study gave reasons as to why young people are not getting tested for STDs. The information provided in the article benefited future research in determining the patients' side of STD testing. The article proved that missed opportunities in screening did not always fall on the provider. The information provided benefited researchers by including educating primary care physicians on the

thoughts and stigma in young people on STD testing. Implementing the findings in the article helps pave the way for routine STD screening and ways to educate and test young people while still making adolescents feel comfortable and confident during the testing visit, as well as decrease the negative stigma of getting STD tested (Trettin et al., 2015). These changes, in turn, would increase screening, prevention, and timely treatment of syphilis in Mississippi by primary health care providers.

### ***Improving Screening Practices***

Romo et al. (2019) performed a study to determine if an educational intervention improved provider screening for syphilis among men who have sex with men utilizing an urban urgent care center. Syphilis rates have increased in the United States, especially among men who have sex with men (Romo et al., 2019). A patient survey was created and given to clients to increase identification of the behaviors of men who have sex with men and to prompt providers to order syphilis testing. The CDC national data shows rates of primary and secondary syphilis, the most infectious stages of syphilis, have increased by 17.6% since 2015. The men who have sex with men population have the highest proportion of infections, representing 58% of primary and secondary syphilis cases nationally compared to 12% identified in women. New York City saw an 81% rise in syphilis from 2012 to 2016, with 88% male cases identifying same-sex practices (Romo et al., 2019).

There were no hypotheses identified in the study (Romo et al., 2019). The study was conducted at an urban urgent care center. The clinic was staffed by emergency medicine trained clinicians and served self-referred patients. All men over the age of 18 were eligible to participate in the intervention, and all staff, including health care

providers and nursing, participated in the educational intervention. The data collected included the number of males seen, surveys collected and surveys completed. A total of 1341 males were seen, with 1067 surveys collected. The mean average was 35.6, and 57.4% were Hispanic. Overall, 72 (5.4%) males identified as men who had sex with men. Approximately 50% of all men who had sex with men identified had RPRs collected, and of these, 13.5% tested positive for syphilis. During the intervention, a weekly email was sent to the urgent care medical staff to notify providers of the outcomes, including the volume of surveys and tests ordered (Romo et al., 2019).

To increase syphilis screening among at-risk patients, the project included an educational intervention focused on provider education regarding the 2015 CDC STD treatment guidelines and implementing a patient-tool to assess sexual practices (Romo et al., 2019). At the start of the project, the project team held a focused group and met with urgent care staff, including nursing and medical providers, to assess gaps and barriers to sexual risk screening and to discuss potential areas for change in the workflow of the clinic to improve the process. Educational interventions were put in place after the assessment and were evaluated at 12 weeks into the study. After, evaluation updates were given to the urgent care staff, nurses, physicians, and general education about syphilis and testing (Romo et al., 2019).

In the first weeks of the study, there were 272 completed surveys; 40 men who had sex with men were identified, and 21 (7.7%) had an RPR collected (Romo et al., 2019). Researchers then held a debriefing of the testing that occurred, and education on screening was provided. Researchers then modified the workflow when the survey was administered to have the physicians perform the survey during the provider visit. The

change resulted in a 10% increase in survey completion in the first 12 weeks (49%) and second 12 weeks (60%), and a 28% increase in order completion for requested RPRs. During the study, 66.5% (729 of 1067) of surveys were either incomplete (414) or left blank (295). The most frequently omitted question (84.5%) was the question about sexual partners (Romo et al., 2019).

Romo et al. (2019) identified several weaknesses of the study. The overall sample size was small, and few men who had sex with men were identified, limiting the assessment's generalizability. Also, participant surveys were incomplete, with sexual health questions often lacking or left blank, possibly due to the patient's lack of comfort disclosing sexual practices in a medical setting (Romo et al., 2019). Another impediment to screening in the setting was the lack of a standardized order set. Perhaps physicians either forgot or missed ordering the syphilis screening test despite the test being requested. Providers also expressed concerns regarding follow-up procedures should patients receive a positive result (appropriate referrals for further management, contacting patients and partners, etc.). Future studies were needed to determine if increased sexual health screening to identify men who had sex with men would improve syphilis infection rates in the setting (Romo et al., 2019).

The study was relevant to the current study for several reasons. Syphilis rates are increasing in Mississippi, especially in men who have sex with men. The basis of the study was to screen more people for syphilis, which is the same topic in which the current researchers used to collect data (Romo et al., 2019). The previous researchers suggested that targeted screening of males using a self-administered questionnaire could assist in identifying men who had sex with men, which in turn, could help to facilitate syphilis

screening (Romo et al., 2019). The current researchers answered the research recommendations by examining clinic-based interventions.

Burchell et al. (2016) performed a trial to improve syphilis screening amongst men with HIV. A clinical-based intervention was utilized that aimed to increase the untreated syphilis detection rate, widen the screening reach, increase screening frequency, and increase screening in high-risk populations (Burchell et al., 2016). The coinfection of HIV and syphilis has detrimental effects on an individual's health. Transmission rates among co-infection may also increase, making the concern for increased cases plausible. International guidelines suggest people with HIV should be screened for syphilis at least once a year. Some agencies recommend more frequent syphilis screening. Studies showed that despite the current recommendations, screenings remained low in numerous locations. Screening was often only done whenever the patient revealed high-risk sexual behavior. In the United States, only 55% of sexually active people with HIV were tested yearly for syphilis. In Ontario, the average was 53% for annual testing. The information was derived from studies in 2009. In 2013, the annual testing rate increased to 64% in Ontario. People with HIV routinely go in for scheduled viral load examinations every three months to every six months. A study performed in London implemented syphilis testing in the acquired routine blood work samples. The implementation led to a 27% increase in early syphilis detection. The intervention period lasted 12 months. Other studies included syphilis in routine STI tests. Four patients with primary or secondary syphilis were identified in 12 months, whereas none were previously identified. The grounded theory methodology was the theoretical framework used (Burchell et al., 2016).

Burchell et al. (2016) created a clinic-based intervention that included an opt-out syphilis test with routine viral load blood work for those with HIV. The researchers hypothesized the intervention would increase syphilis detection by 75%, and screening coverage would increase up to 85% (Burchell et al., 2016). The researchers also hypothesized each patient would have an average of three tests per year. Further hypothesis indicated the above-listed increases would be equal among all men, unrelated of sexual behavior. The researchers used a pragmatic, cluster-randomized controlled superiority trial. A stepped wedge design was implemented to use a periodical pattern of implementation. Four HIV clinics in Ontario participated in the trial. Each clinic had six months of control and implementation. The researchers chose the stepped wedge design so each clinic would have the opportunity to implement the intervention. The intervention involved a standing order for syphilis testing to be included in the routine viral load testing of HIV patients (Burchell et al., 2016).

The sample included 3,893 HIV patients (Burchell et al., 2016). The period was 30 months. Each patient in the sample was followed over the time period. Testing results were obtained from an Ontario laboratory, standardized clinical worksheets, and medical chart reviews. Compliance of the participating clinics was audited by a process evaluation plan for audit and feedback to recognize any obstacles to the intervention's insertion into routine practice. Health components and cost-effectiveness were also evaluated. Statistical analysis consisted of individual clinics and men's characteristics, assessing the effects and trends at month 18, and comparisons of control and intervention periods at month 30. The intention-to-treat opinion at the end of the study was also analyzed. Variables included primary syphilis case detection, secondary screening

coverage, screening frequency, and reached men. The study took place from February 2015 to July 2017. Participants in the trial were interviewed between November 2017 and April 2018. Qualitative data analysis was used for the interview analysis (Burchell et al., 2016).

The study's results yielded an increase in mean tests per person per year from 0.65 (control period) to 1.44 in the intervention period (Burchell et al., 2016). The study noted 217 (C: 81; I: 136) new cases of syphilis were identified, in which 147 (C: 61; I:86) were in the early stages. The 3,893 participants were identified in statistical analysis as 7,468 person-years (PY). The detection rate improved from 1.51 per 100PY to 2.50 per 100PY. Statistically, the study yielded a modest rise in early syphilis detection. Unfortunately, the increase was a non-significant increase. Researchers did not require the men to disclose sexual orientation (Burchell et al., 2016).

The study was pertinent to the current research at hand regarding syphilis screenings in the primary care setting. Although the study was not performed in the primary care setting, the study would be replicated to adjust to primary care. Burchell et al. (2016) provided a strong foundation for future studies. Grounded theory methodology was used in the interviews with chosen participants after the trial (Burchell et al., 2016). By directly theorizing from data analysis, researchers supported the conclusions that based the theories. Burchell et al. (2016) suggested the task of replicating such a study in the primary clinic would be difficult but could produce valuable results. Suggested, was the use of routine testing to reduce the stigma associated with STIs and syphilis. The purpose of the study was to increase the detection of syphilis in the HIV clinic setting.

Using testing for syphilis during routine STI screenings, the study could be relevant in the primary care setting (Burchell et al., 2016).

Stahlman et al. (2015) performed a study in which researchers examined syphilis screening in men over the age of 18 years who have sex with men. In the study, researchers examined numerous different methods of frequent syphilis screening in MSM (Stahlman et al., 2015). Although the sample size in the study was small, the study was still able to highlight the importance of frequent syphilis screening of individuals who participated in high-risk sexual practices. In the study, the researchers sought participants' opinions of several syphilis prevention methods to determine which interventions participants would prefer the most, if at all (Stahlman et al., 2015).

This study was conducted via an in-depth interview approach in which participants had to provide written, informed consent before being interviewed (Stahlman et al., 2015). The participants were chosen between the years 2010 and 2011 by using the Los Angeles County Department of Public Health syphilis morbidity data. Subjects were only allowed to participate if the individuals were male, over the age of 18 years, have male sex partners, and had been diagnosed with early syphilis no less than twice in the past five years. Using the parameters 33 individuals were approached regarding the study, but only 19 chose to participate. The participants were interviewed using a semi-structured, open interview guide, which was audio recorded. The interview was then transcribed (Stahlman et al., 2015).

In response to getting a reminder every three months from a public health investigator to be tested, participants, as a majority, stated patients were already receiving regular testing (Stahlman et al., 2015). The responses to having a public health

investigator come to the home to provide testing brought mixed reviews. Some participants were in favor of the option, while others felt that the home visit was an invasion of privacy and individuals did not want others knowing the dwelling location. Most of the participants stated individuals would use a website devoted to syphilis testing and information. Participants who opposed did so because the individuals felt there was already enough information on syphilis available on the internet. The intervention of an automated web-based system that sends reminders every three months was a favorable option. Of the individuals who favored the option, the preference of those who preferred to receive reminders via text versus email was split in half equally (Stahlman et al., 2015).

The idea of free in-home self-test syphilis kits was received warmly with 14 participants responding positively and several more felt the test would be convenient and discreet (Stahlman et al., 2015). Monetary compensation was received positively with 16 participants agreeing to be tested more frequently for payment. Although the compensation patients were willing to receive to be screened more frequently varied, the average range was \$40 to \$50. The intervention of prophylactic antibiotic treatment received the most favorable response, but there was concern expressed regarding side effects, the possibility of forgetting to take the medication daily, fear of decreased effectiveness, and some participants even expressed concern that the intervention could make people feel invincible and increase risky sexual practices. The researchers noted that, based on the results of past studies, MSM are unlikely to reduce risky sexual behaviors; therefore, increased syphilis screening could prove to be a promising strategy to reduce the rates of syphilis infection in MSM. Health departments could look at

offering a variety of intervention options to MSM who have had repeated syphilis infections to better suit individual needs (Stahlman et al., 2015).

Jichlinski et al. (2018) performed a study in which researchers examined whether adolescents who were diagnosed with Pelvic Inflammatory Disease (PID) were also being screened for HIV and syphilis. The CDC recommends all women diagnosed with PID be screened for HIV, but does not specifically state that women diagnosed with PID be screened for syphilis; however, the CDC does recommend that individuals who practice high-risk sexual behavior be screened for syphilis (Jichlinski et al., 2018). Therefore, PID constitutes a condition placing women at increased risk for contracting syphilis, requiring the females to be screened. Although the CDC recommends all women diagnosed with PID be screened for HIV, the researchers realized that there is a low rate of HIV and syphilis screening in women with PID despite many women being diagnosed with PID (Jichlinski et al., 2018).

Jichlinski et al. (2018) conducted the study via retrospective cohort utilizing the Pediatric Health Information System (PHIS) spanning the years 2010 through 2015. This allowed researchers to collect data from 48 children's hospitals across the United States. Patients visiting any of the hospitals affiliated with the PHIS between the ages of 12 and 21 who had a diagnosis of PID were included in this study. There were a total of 10,698 patients who met the criteria for inclusion in the study. The outcome of this study was measured by reviewing transaction classification codes, these were used to determine whether testing was ordered. Also, any sexually transmitted infection (STI) testing that occurred at either of the facilities within seven days before the index visit was included. This is because STI test results are not always available immediately; therefore, patients

may have to return for treatment. Patient-level factors included the year of visit, ER disposition, age, race, ethnicity, and insurance status. Hospital-level factors included the size of the hospital, more than or less than 300 beds, and geographic location (Jichlinski et al., 2018).

Jichlinski et al. (2018) performed the study between the years 2010 and 2015. There were 10,698 participants with a median age of 16.7 years (Jichlinski et al., 2018). Adolescents who were publicly insured accounted for most of the participants diagnosed with PID (70.5%). Of the patients, approximately half (54.2%) were non-Hispanic African American. More than half of the diagnoses were made in large hospitals (69.2%) and a third of the cases resulted in the patient being admitted to the hospital. Of all the participants in the study who were diagnosed with PID, 27% underwent syphilis screening, and 18.4% were screened for both syphilis and HIV. Additionally, 407 patients were identified who visited the ER within seven days before a visit, which led to a diagnosis of PID. Only 13.3% were screened for syphilis at the previous visit with 19.5% being screened for syphilis at the second visit that led to a diagnosis of PID. The study found that hospital syphilis screening ranged from 2.9% to 62.2%, giving a wide range of screening patterns. Across all the 48 hospitals that participated in the study, there was a low rate of syphilis and HIV screening discovered despite the increased risk of the population, as well as high variability in HIV and syphilis screening practices (Jichlinski et al., 2018).

### **Chapter III: Methodology**

The purpose of this study was to assess knowledge of current syphilis guidelines and syphilis screening practices of Mississippi primary care providers. Syphilis screening

guidelines from the CDC and EPSDT suggest screening should be done on patients to reduce spread of the disease and decrease incidence of permanent damage. In the following sections, the researchers have discussed the design, setting, population, sample, methodology, and data analysis of the current study.

### **Design of the Study**

The researchers utilized a descriptive, quantitative survey design to examine knowledge of the syphilis screening guidelines and screening practices of PCPs in Mississippi. Within the survey, there were 15 questions pertaining to demographics, knowledge, and personal practices. Data was collected from 110 Google Docs used to create and store the survey. A convenience sample of Mississippi providers was reached through multiple email contacts and social media platforms. The Facebook group for the Mississippi Association of Nurse Practitioners (MANP) was utilized for the dissemination of the survey. One hundred and ten providers responded to the survey.

### **Setting for the Research Project**

This survey research design was conducted via email to active primary care providers of Mississippi. This survey was available to participants via Google Forms. Surveys were sent to primary care providers who provide care for patients in various settings.

### **Population and Sample**

This research study included primary care providers (nurse practitioners, physicians, and physician assistants) in Mississippi. A smaller sample was taken from the target population for survey participation because of convenience. The study's sample

size was 92 Mississippi providers. The convenience sample was reached through email contacts and posting on social media outlets associated with MANP.

### **Instrumentation**

The data for the research was collected using a survey designed by researchers. The questions on the surveys pertained to syphilis screening guideline knowledge and screening practices. The survey also included questions regarding demographics and experience of the providers. The results were organized according to the question type and answer.

### **Methods of Data Collection**

Prior to the initiation of data collection, researchers pursued and were granted permission through the Institutional Review Board (IRB) at Mississippi University for Women. Researchers developed a survey reflecting the research questions previously mentioned. The survey data collection was from human subjects through the provider convenience sample. Mississippi PCPs provided answers about the providers' knowledge and practices of CDC and EPSDT syphilis guidelines. The data used in this study was collected through Google Forms. The survey was distributed by hyperlink through social media to the MANP members and through email to multiple provider contacts.

### **Methods of Data Analysis**

Following the conclusion of this study, researchers compiled data through Google Forms. Data collected from the survey was representative of the numerical measurements of the multiple-choice questions answered. The sample population's knowledge and screening practices were calculated and derived from the percentages of correct answers

to survey questions. The data formulated from Google Forms was transferred to a statistician for formal analysis with percentages and descriptive statistics.

### **Other**

The survey did not ask for any identifying data such as the participants' name, date of birth, etc. The survey did not ask for any identifying information regarding patients. With the survey link, recipients then selected whether to participate or not participate. Google Forms collected the participants' answers and compiled the results to the extent of application limits. The compiled data was then sent to a statistician for analysis. No identifying information of the patient or provider was collected in the study. No identifying information of either the patient or provider was sent to the statistician. The results of the study were used for research purposes only. The data aided in the assessment of provider knowledge and screening practices of syphilis screening guidelines.

## **Chapter IV: Results**

This chapter presents the data collected from the researchers' survey reflecting the research questions in Chapter I. The data presented represents Mississippi providers' knowledge and screening practices of CDC and EPSDT syphilis screening guidelines.

Syphilis is a preventable disease that has seen a substantial increase in recent years. According to the Centers for Disease Control and Prevention (2021), primary and secondary syphilis have increased by 11.2% each year since 2001. An unfortunate consequence of contracting syphilis is congenital syphilis. The incidence of congenital syphilis has increased with recent numbers of 1,870 cases in 2019 (Centers for Disease Control and Prevention [CDC], 2021). Syphilis can cause lifelong ailments, disabilities,

and even death. Prompt detection and treatment decreases the risks and consequences of the disease.

The purpose of this study was to assess the knowledge of current syphilis guidelines and syphilis screening practices of Mississippi primary care providers. The researchers' objectives were compiled into a 15-question survey that was dispersed through social media and email contacts. The survey questions were composed to demonstrate the sample's demographics, such as years of experience, provider title, area of practice, patient age group, and practice specialty. The researchers also questioned the sample about knowledge concerning current governing agencies with syphilis guidelines, knowledge of when to initiate screening based upon age, knowledge of high-risk groups for which screening would be warranted, and knowledge of how frequently the guidelines suggest providers can screen for syphilis. Personal practices of syphilis screening pertaining to how often providers screen, if providers include syphilis into regular STI screening, at what age do providers start screening, and if providers regularly investigate the most updated guidelines for screening.

### **Profile of Study Participants**

A total of 92 PCPs responded to the study through Google Forms. The study participants were voluntary and anonymous. The PCPs provided answers to the demographic questions without revealing personal identity. The demographics are displayed in Table 1. Of the total study participants, 95.7% ( $n = 88$ ) of respondents were nurse practitioners. Medical doctors (MD) accounted for 3.3% ( $n = 3$ ) and physician assistants (PA) were 1.1% ( $n = 1$ ) of the remaining study participants. There were no doctor of osteopathy (DO) study participants identified.

**Table 1*****Demographics of Survey Respondents (N = 92)***

<b>Title</b>	<b>Number of Respondents</b>	<b>% of Respondents</b>
MD	3	3.3
NP	88	95.7
PA	1	1.1
<b>Specialty</b>		
Hospital/ER	9	9.8
Pediatrics	2	2.2
Primary Care	67	72.8
Urgent Care	11	12.0
Women's Health	3	3.3
<b>Years in Practice</b>		
< 5	49	53.3
6- 10	20	21.7
11-20	15	16.3
> 20	8	8.7
<b>Majority Patient Ages</b>		
Adult/Geriatrics	18	19.6
Geriatrics	4	4.3
Adults	42	45.7
Pediatrics/Adolescents	1	1.1
Pediatrics/Adolescents/Adults	7	7.6

Of the study participants, 53.3% ( $n = 49$ ) have been in practice for five or less years, 21.7% ( $n = 20$ ) have been in practice six years to 10 years, 16.3% ( $n = 15$ ) have been in practice for 11 years to 20 years, and 8.7% ( $n = 8$ ) have been in practice greater than 20 years. The majority of the study participants, 72.8% ( $n = 67$ ), were in the primary care setting. The remaining participants responded with 12.0% ( $n = 11$ ) in urgent care,

9.8% ( $n = 9$ ) in the hospital/emergency setting, 3.3% ( $n = 3$ ) in women's health, and 2.2% ( $n = 2$ ) in pediatrics.

Participants were also questioned about the age range of patients to whom care was provided since the current syphilis screening guidelines are specific for age. The question was constructed with a select all that apply method. The participants responded with 19.6% ( $n = 18$ ) working with adults and geriatrics; 2.2% ( $n = 2$ ) working with adolescents, adults, and geriatrics; 45.7% ( $n = 42$ ) providing care for adults only; and 1.1% ( $n = 1$ ) caring for pediatrics and adolescents.

### **Statistical Results**

As previously stated in Chapter 1, the researchers developed the following two questions:

1. Are primary care providers (PCPs) in Mississippi knowledgeable regarding current syphilis screening guidelines?
2. Are primary care providers (PCPs) in Mississippi screening according to the guidelines recommended by the Centers for Disease Control and Prevention (CDC) and Early and Periodic Screening, Diagnostic, and Treatment (EPSDT)?

To address the research questions, the researchers distributed a 15 question survey through social media links and email contacts. Survey participants remained anonymous and were voluntary.

***Question 1: Are Primary Care Providers in Mississippi Knowledgeable Regarding the Current Syphilis Screening Guidelines?***

Questions six, seven, eight, nine, and 10 were used to determine the study participants' knowledge of syphilis screening guidelines. For question six, study participants were asked, "What agencies currently have specific guidelines for syphilis?" Of the 92 study participants, 73 answered "EPST and CDC," which signified participants were knowledgeable of the current agencies with syphilis screening guidelines. Researchers found 16.3% ( $n = 15$ ) of study participants answered with, "none of the above." Of the remaining study participants, 3.3% ( $n = 3$ ) answered "CMS," and 1.1% ( $n = 1$ ) answered "OSHA and HHS."

Through question seven of the survey, researchers asked, "At what age do you think the Mississippi State Health Department recommends starting routine screening for syphilis?" Of the responses, 10.9% ( $n = 10$ ) of the study participants answered correctly that the MSDH recommends syphilis testing begin at the age of 11 years. Of the remaining participants, 22.8% ( $n = 21$ ) answered 21 years old, 38.0% ( $n = 35$ ) answered 18 years old, and 28.3% ( $n = 15$ ) answered 15 years old.

Question eight asked, "What groups are at risk for contracting syphilis?" "All of the above" was answered by 95.7% ( $n = 88$ ) of study participants. The answer was correct since men who have sex with men, people with high-risk sexual behaviors, and pregnant women are all at risk for contracting syphilis (CDC, 2019). Study participants who did not choose the correct answer chose people with "high-risk sexual behaviors" at 4.3% ( $n = 4$ ).

Question nine from the survey asked, “What patient group do you think has the highest recommendation by the CDC to be tested for syphilis?” Study participants responded with “adolescents 15-21” and “men who have sex with men (MSM)” equally with 34.8% ( $n = 32$ ). The remaining 30.4% ( $n = 28$ ) of study participants answered with “pregnant women.” None of the participants chose “infants.”

In question 10, the researchers asked, “How frequently does the CDC say providers can test at risk individuals for syphilis?” The majority of study participants, 50% ( $n = 46$ ), answered “12 months.” Of the remaining participants, 43.4% ( $n = 39$ ) answered with “3-6 months,” 5.4% ( $n = 5$ ) responded “monthly,” and 2.2% ( $n = 2$ ) answered every “9-11 months.” The correct answer for the question is every “3-6 months.”

A variable was created to determine the number of correct answers a participant answered to the knowledge questions. The possible scores range from zero to five. Below are tables displaying the descriptive statistics of the variable and frequency.

**Table 2**

*Statistics for the Count of Correct Answers to Knowledge Questions*

Statistic		Values
N	Valid	92
	Missing	0
Mean		2.6304
Median		3.0000
Std. Deviation		.96894
Percentiles	25	2.0000
	50	3.0000
	75	3.0000

From the data, as collected, this question revealed the PCPs in this sample are fairly knowledgeable. Table 3 represented the number of correct answers to questions. The scores ranged from zero correct answers to all five correctly answered. The mean score was 2.63 and the standard deviation was 0.97. Figure 1 displays the distribution of the scores.

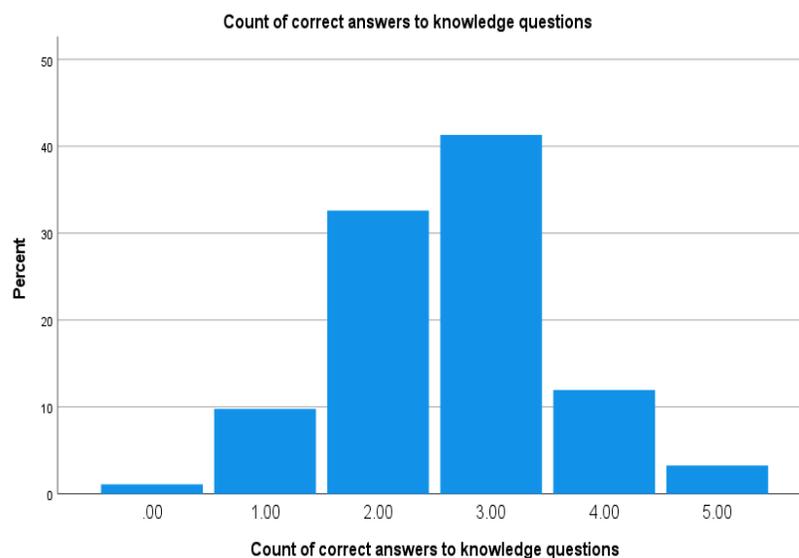
**Table 3**

*Count of Correct Answers to Knowledge Questions*

Correct Answers	Frequency	Percent	Valid Percent	Cumulative Percent
.00	1	1.1	1.1	1.1
1.00	9	9.8	9.8	10.9
2.00	30	32.6	32.6	43.5
3.00	38	41.3	41.3	84.8
4.00	11	12.0	12.0	96.7
5.00	3	3.3	3.3	100.0
Total	92	100.0	100.0	

**Figure 1**

*Correct Answers to Knowledge Questions*



*Note.* Only one study participant answered 0 questions correctly.

***Question 2: Are Primary Care Providers in Mississippi Screening According to the Guidelines Recommended by the Centers for Disease Control and Prevention and Early and Periodic Screening, Diagnostic, and Treatment?***

For question 11, the researchers asked, “When performing wellness exams, do you routinely screen patients for sexually-transmitted diseases?” The majority of study participants, 34.8% ( $n = 32$ ), answered with “sometimes.” Of the remaining respondents, 23.9% ( $n = 22$ ) answered “rarely”, 21.7% ( $n = 20$ ) answered “often”, and 19.6% ( $n = 18$ ) stated “almost always.”

For question 12, the researchers asked, “When screening for STDs do you include syphilis in testing?” The majority of study participants, 45.7% ( $n = 42$ ), answered with “almost always.” Of the remaining participants, 20.7% ( $n = 19$ ) responded “sometimes,” 17.4% ( $n = 16$ ) stated “rarely,” and 16.3% ( $n = 15$ ) answered “often.” Less than half of participants claimed to test for syphilis regularly.

For question 14, the researchers asked, “At what age do you start screening patients for sexually-transmitted diseases?” Fifty-one (55.4%) participants answered with “16-20 years old.” Of the remaining participants, 34.8% ( $n = 32$ ) responded “12-15,” 8.7% ( $n = 8$ ) stated “> 20,” and 1.1% ( $n = 1$ ) answered with “< 12.” The correct answer was less than 12 for age 11 years. Only one of the participants answered this question correctly.

***Other Findings***

Questions 13 and 15 addressed the study participants' practices of questioning patients on sexual health history and also if providers routinely stay up to date regarding STD screening. In question 13, study participants were asked, “Do you routinely question

patients about their sexual history/practices/protection?” In question 15, study participants were asked, “Do you stay up to date on the Mississippi State Health Department’s sexually-transmitted disease screening recommendations?” The answers are demonstrated in Table 4. The answers to question 13 revealed only 31.4% of providers question patients almost always about personal sexual history, practices, and prevention. The answers to question 15 revealed that 47.8% of the study participants stay up to date regarding MSDH STD screening recommendations “almost always.”

**Table 4**

***Frequency of Responses Regarding Screening***

<b>Question</b>	<b>Almost Always</b>	<b>Often</b>	<b>Sometimes</b>	<b>Rarely</b>
Do you routinely question patients about their sexual history/practices/protection?	31.5%	41.3%	22.8%	4.3%
Do you stay up to date on the Mississippi State Health Department’s sexually transmitted disease screening recommendations?	47.8%	26.1%	15.2%	10.9%

## **Chapter V: Implications**

The current rates of syphilis are soaring, especially in Mississippi. According to the CDC (2015), Mississippi now ranks 12th in the United States for primary and secondary syphilis infections. When syphilis is left undetected or untreated, detrimental lifelong ailments or disabilities can occur. This research aimed to determine the knowledge of current syphilis screening guidelines that healthcare providers within the state of Mississippi currently utilize. The study focused on identifying syphilis screening practices of Mississippi providers.

Guidelines from EPSDT and the CDC were utilized as a guide in this research. Early and Periodic Screening, Diagnosis, and Treatment Bright Futures and AAP Recommendations for Preventive Health Care lists that syphilis screenings should occur between the ages of 11 years and 21 years old (MDM, 2019). This group's screening also focused on sexually active females and sexually active males with an increased risk of transmission

The CDC (2017) distributed guidelines for PCPs to screen all patients aged 15 years to 65 years of age. In addition, the CDC recommends every pregnant woman be screened for syphilis at the first prenatal visit. Retesting is recommended early in the third trimester and at delivery if the patient is at higher risk (CDC, 2017). Men who have sex with men should be screened for syphilis at least once a year if sexually active. The MSM group should be screened more frequently because men who have sex with men are at a higher risk. Those within the MSM group with multiple or anonymous partners should be screened every three to six months. At first HIV (human immunodeficiency virus) evaluation, the patient should also be screened for syphilis. Screening should continue every year thereafter (CDC, 2017).

A review of literature determined past influences and recommendations for further consideration of syphilis testing. Due to the lack of available resources, the researchers were challenged to locate specific studies pertaining to the current research. Literature came from various backgrounds, settings, and methodologies. During the literature review, the investigators noticed the need for further research due to the recent resurgence of the disease and lack of correlating studies. Health promotion was then

selected as the primary theoretical basis for the study. Pender's Health Promotion Model was utilized as a guide.

The researchers created a survey aimed to answer the questions 1. Do primary care providers (PCPs) in Mississippi report knowledge regarding current syphilis screening guidelines, and 2. Are primary care providers (PCPs) in Mississippi utilizing syphilis screening in clinical practice according to the guidelines recommended by the Centers for Disease Control and Prevention (CDC) and Early and Periodic Screening, Diagnostic, and Treatment (EPSDT)?

The survey was distributed amongst a convenience sample of Mississippi PCPs through email contacts and social media platforms, such as the MANP (Mississippi Association of Nurse Practitioners) Facebook page. Data collected from the survey was sent to a statistician for statistical analysis.

### **Summary of the Findings**

The researchers concluded primary care providers, in this sample, are screening patients for syphilis. However, with 34.8% ( $n = 32$ ) starting screening at 12 years to 15 years of age and 55.4% ( $n = 51$ ) between the ages of 16 years to 20 years of age, for a total of 90.2% of respondents reporting providers start screening patients between the ages of 12 years to 20 years of age, which is older than the recommended age for initial screening. Only one respondent reported screening at less than 12 years of age, in line with the Mississippi State Department of Health recommendation of starting screening at 11 years of age. The other 8.7% ( $n = 8$ ) of providers reported initiating screening patients for sexually transmitted diseases at age 20 years and above. No statistically significant

difference in screening was found between nurse practitioners, medical doctors, and physician assistants.

### **Discussion of the Findings**

The study's goal was to identify if primary care providers (PCPs) in Mississippi are screening for syphilis according to the recommended screening guidelines provided by the CDC. According to the results, most respondents indicated providers remain up-to-date on the current recommendations some of the time. Although, according to the study findings, only one respondent correctly identified the age at which the CDC recommends initially starting syphilis screening. The study also determined that PCPs sometimes ask about sexual practices when performing wellness exams and STD screening. If providers are not asking about sexual practices, providers are unable to identify individuals considered high-risk for contraction of syphilis. Primary care providers almost always include syphilis when conducting STD screening, which is a plus.

The study determined 91% of providers do not start testing individuals until age 16 years, missing a large group of adolescents aged 11 years to 15 years who need testing (AAP, 2019). Only approximately 50% of respondents knew how often providers could test individuals for syphilis, which is every three months to every six months for high-risk individuals. Overall, providers are performing STD screening, but if not prompted to do so, providers are not taking the initiative to determine which individuals are high-risk for contracting syphilis. The fact that only one respondent knew the correct age to start screening shows that more education is needed regarding the CDC's guidelines for syphilis screening. As stated previously, research for syphilis testing in Mississippi was a challenge to locate. Researchers used the literature to determine if Mississippi PCPs are

using the current standards of care in the goals of prevention, early detection, and timely treatment of syphilis.

Nibhanipudi and Cody (2017) performed a study aimed at determining the cost-effectiveness of syphilis screening in the setting of clinical suspicion of gonorrhea and chlamydia infection. The researchers hypothesized that screening for syphilis might not be cost-effective in such cases (Nibhanipudi & Cody, 2017). The goal was to promote the enhancement of syphilis screening in primary care. The researchers deemed the cost of testing as unnecessary for patients not considered to be high risk, such as men who have sex with men and pregnant women. This study did find the providers were following the set guidelines for syphilis testing in New York (Nibhanipudi & Cody, 2017). Also, the current research shows that providers are generally following the established guidelines for syphilis testing in Mississippi. Although some were not as knowledgeable of the guidelines, the majority of the respondents do test for syphilis when screening for STDs in high-risk individuals.

Burchell et al. (2016) performed a trial to improve syphilis screening amongst men with HIV, which aimed to increase the untreated syphilis detection rate, widen the screening reach, increase screening frequency, and increase screening in high-risk populations. Current guidelines suggest people with HIV should be screened for syphilis at least once a year (Burchell et al., 2016). The purpose of the study was to increase the detection of syphilis in the HIV clinic setting (Burchell et al., 2016). The researchers hypothesized the increase in detection of syphilis would improve by 75%. The study yielded a modest rise in early syphilis detection (Burchell et al., 2016). Although the current researchers surveyed primary care providers and not those associated with an HIV

clinic, the same conclusion can be drawn that with increased knowledge of syphilis screening guidelines, the syphilis detection rate will also increase.

Cuffe et al. (2016) performed a national-level study to examine STI testing among 15 year olds to 25 year olds and determine if there were any barriers in screening. The study highlighted the need for addressing financial barriers to accessing STI screening services, other barriers relating to missed opportunities in STI screening, and concerns about confidentiality (Cuffe et al., 2016). The goal was to improve or develop appropriate STI screening practices for adolescents and young adults. In the study, only 11.5% of respondents stated the individuals had been tested for STIs in the last 12 months (Cuffe et al., 2016). According to the current researchers' findings, the guidelines for testing are not always followed or known. Only one respondent stated the provider would test individuals at the recommended age of 11 years. The results also showed many providers were not asking about sexual practices nor including STD testing in routine visits. The current research correlates with the number of people who reported testing in the previous research because without questioning, offering, or screening adolescents and young adults, the STD screening numbers will not increase as seen in this study.

Stahlman et al. (2015) examined syphilis screening in men over the age of 18 years who have sex with men. The research highlighted the importance of frequent syphilis screening of individuals who participate in high-risk sexual practices (Stahlman et al., 2015). The researchers determined men who have sex with men are unlikely to reduce risky sexual behaviors. Therefore, increased syphilis screening may prove to be a promising strategy to reduce the rates of syphilis infection in men who have sex with men (Stahlman et al., 2015). According to the current study's results, providers are routinely

screening men who have sex with men for syphilis and have labeled men who have sex with men at increased risk for contracting and transmitting syphilis. Because of the knowledge the primary care providers expressed, screening protocols are assumed to be adequate for men who have sex with men.

Jichlinski et al. (2018) performed a study to examine whether adolescents who were diagnosed with pelvic inflammatory disease (PID) were also being screened for HIV and syphilis. The CDC does not specifically state that women diagnosed with PID should be screened for syphilis; however, the CDC does recommend that individuals who practice high-risk sexual behavior be screened for syphilis (Jichlinski et al., 2018). Therefore, PID may constitute a condition placing women at increased risk for contracting syphilis. The researchers found a low rate of HIV and syphilis in women with PID despite many women being diagnosed with PID (Jichlinski et al., 2018). Across all 48 hospitals studied, there was a low rate of syphilis and HIV screening, despite the increased risk of the population, and high variability in HIV and syphilis screening practices (Jichlinski et al., 2018). Although current research did not specifically include women with PID, the same conclusion was made that there is high variability in syphilis screening practices among providers.

Romo et al. (2019) performed a study to determine if an educational intervention improved provider screening for syphilis among men who have sex with men. A survey was created to increase the identification of behaviors of men who have sex with men and to prompt providers to order syphilis testing (Romo et al., 2019). The study showed 13.5% of the participants who had rapid plasma reagins collected tested positive. To increase syphilis screening among at-risk patients, the project included an educational

intervention focused on provider education regarding the screening and treatment guidelines by implementing an educational tool to assess sexual practices. The implementation resulted in a 28% increase in syphilis screening (Romo et al., 2019). Current research demonstrates sexual practices are not being discussed at primary care provider routine visits. Without questioning patients, who needs testing is difficult to determine, and as a result, the rate of syphilis testing is inadequate.

Trettin et al. (2015) used qualitative interviews to address any barriers in STD testing and understand the barriers to improve the quality of care and increase STD screening. The purpose of the study was to investigate young people at risk of contracting STDs (Trettin et al., 2015). The study sought to eliminate barriers to testing, understand discovered barriers, and increase the number of young people getting STD screening. The researchers concluded males and females of all ages preferred STD testing to be readily available and standard. The results indicated a 35% increase in STD testing (Trettin et al., 2015). The limitations seen in the current results include primary care providers not routinely screening or questioning sexual practices of patients. By implementing sexual practice questions and routine screening, the assumption is made that STD detection will increase.

## **Conclusions**

Primarily, the goal of this research study was to determine screening practices of sexually transmitted diseases, especially syphilis, by primary care providers in the state of Mississippi. Due to the persistent rise of syphilis rates within the state, the researchers assumed a deficit of knowledge regarding screening guidelines amongst PCPs throughout Mississippi. However, to determine if the assumptions were correct, a study had to be

conducted. Guidelines recommended by the Centers for Disease Control and Prevention; the Early and Periodic Screening, Diagnostic, and Treatment; and the Mississippi State Department of Health were utilized to guide the study. Pender's Health Promotion Model was also used as a guide for this study.

After obtaining IRB approval, the researchers created and distributed a survey to PCPs in the state. Primary care providers utilized in the study included nurse practitioners, physicians, and physician assistants. After data analysis from the statistician, the researchers concluded PCPs were not performing syphilis screening according to the recommended guidelines. The deficit in syphilis screening was related to the providers' lack of knowledge of the current, recommended guidelines set in place by the CDC and EPSDT.

### **Implications**

The CDC, EPSDT, and MSDH have recommendations regarding screening for STIs such as syphilis. This study concluded that PCPs in Mississippi are screening patients for syphilis; however, the providers are not screening according to the guidelines recommended. Consequently, a knowledge deficit is present amongst PCPs in Mississippi regarding screening guidelines. Primary care providers in Mississippi require additional education regarding syphilis screening guidelines. With further education, providers can recognize current gaps in knowledge regarding the syphilis screening guidelines and begin to implement the recommendations into practice. Pender's HPM was selected to guide this research because the model aims to promote optimal health in individuals by identifying factors that influence health. Therefore, Mississippi PCPs should promote and

implement the syphilis screening guidelines to help lead to and maintain optimal health in the patient population.

### **Recommendations**

Recommendations for further research on this topic are several and primarily focus on the limitations of this study. All of the following are recommendations based on the study:

- Providers should create a visual display promoting the need for adequate screening of syphilis and educating about detrimental effects that can occur with prolonged infection.
- Future studies would benefit from data collected from more licensed physicians and physician assistants in addition to certified nurse practitioners.
- Future researchers should expand the geographical region in which data is collected. Sending survey participation requests via email to clinics across Mississippi could allow for a more comprehensive analysis of syphilis testing by providers within the state.
- A qualitative study would benefit future research by assessing providers' confidence in identifying the age group at which syphilis screening should begin. If providers are unsure of what age syphilis screening should begin, this could lead to many patients with syphilis being omitted.

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## Appendix A

### Institutional Review Board Letter



May 5, 2021

Dr. Lindsay Kemp  
[lnkemp@muw.edu](mailto:lnkemp@muw.edu)

Dear Dr. Kemp:

I am pleased to inform you that the members of the Institutional Review Board (IRB) have reviewed the following proposed research and have approved it as submitted:

<b>Name of Study:</b>	Syphilis screening practices among primary care providers
<b>Research Faculty/Advisor:</b>	Lindsay Kemp DNP Project
<b>Investigators:</b>	MSN Research group

I wish you much success in your research.

Sincerely,

Scott Tollison, Ph.D.  
 Provost and Vice President for Academic Affairs

SI/tc

pc: Irene Pintado, Institutional Review Board Chairman

## Appendix B

### Syphilis Survey

I've invited you to fill out a form: Syphilis Survey

Please answer the following questions to the best of your knowledge. No prize or compensation will be awarded. This survey is strictly for research purposes. Your identity will remain anonymous. You can withdraw participation at any time and your results will not be submitted or accessible by researchers.

#### Demographics

**How long have you been practicing as a licensed health-care provider? \***

- < 5 years
- 6-10 years
- 11-20 years
- > 20 years

**What is your specialty? \***

- Pediatrics
- Urgent Care
- Primary Care
- Hospital/ER
- Women's Health

**What type of health-care provider are you? \***

- Nurse Practitioner
- Medical Doctor
- Doctor of Osteopathy
- Physician's Assistant
- Other:

**What is your majority patient age group? Can select more than one. \***

- Pediatrics
- Adolescents
- Adult

- Geriatrics

**Where do you practice? Can select more than one. \***

- Hospital
- Rural Health Clinic
- Community Clinic/Urgent Care
- Health Department
- Other

**Knowledge**

**What agencies currently have specific screening guidelines for Syphilis? \***

- EPSDT and CDC
- OSHA and HHS
- CMS
- None of the above

**At what age do you think the Mississippi State Health Department recommends starting routine screening for Syphilis? \***

- 18
- 15
- 11
- 21

**What groups are at risk for contracting Syphilis? \***

- Men who have sex with men (MSM)
- People currently infected with HIV
- People with high risk sexual behaviors
- All of the above

**What patient group do you think has the highest recommendations by the CDC to be tested for Syphilis? \***

- Men who have sex with men (MSM)
- Infants
- Adolescents 15-21

- Pregnant women

**How frequently does the CDC say providers can test at risk individuals for Syphilis?**

- 12 months
- 9-11 months
- 3-6 months
- Monthly

**Personal Practice**

Please answer these questions based on what you normally do in your practice, not what you think the correct answer is.

**When performing wellness exams, do you routinely screen patients for sexually-transmitted diseases? \***

- Rarely
- Sometimes
- Often
- Almost always

**When screening for sexually-transmitted diseases do you include Syphilis in testing? \***

- Rarely
- Sometimes
- Often
- Almost always

**Do you routinely question patients about their sexual history/practices/protection? \***

- Rarely
- Sometimes
- Often
- Almost always

**At what age do you start screening patients for sexually-transmitted diseases? \***

- <12 years
- 12-15 years

- 16-20 years
- >20 years

**Do you stay up to date on the Mississippi State Health Department's sexually-transmitted disease screening recommendations? \***

- Rarely
- Sometimes
- Often
- Almost always

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