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Adolescent Sexual and Reproductive Health Services in Pediatric Primary Care

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Abstract

Many pediatric primary care clinics fall short in providing comprehensive sexual and reproductive health services to adolescent patients resulting in missed opportunities for pregnancy prevention, delays in sexually transmitted disease (STD) identification and treatment, poor access to evidence-based care, and increased healthcare costs. This Doctor of Nursing Practice project determined the impact of an evidence based adolescent program designed to expand existing services to comprehensive adolescent healthcare in an offsite, primary care pediatric clinic in a not for profit hospital in an urban Midwest city. The program included reproductive health and STD screening and treatment. The quasi-experimental improvement project with retrospective chart review compared volume of pre and post intervention adolescent patient visits in 2014 and 2016. Results were examined using Chi-Square statistical analysis. Sexual health visits included encounters for contraception, STD testing, and pregnancy testing. During 2016 the post intervention year there was a statistically significant increase in sexual health services compared to 2014, the pre intervention year ($p=0.003$). Total adolescent health visits increased from 106 in 2014 to 216 in 2016 ($p=0.01$). This retrospective review found that expanding adolescent sexual health services in primary care positively impacted health outcomes by increasing access to care for adolescents. Findings suggest integration of sexual health services in pediatric clinics increases adolescent healthcare visits, and reduces the number of unplanned teen pregnancies and untreated STDs in the adolescent population.

Keywords: adolescent, sexually transmitted infections, contraception, pediatric, services

Adolescent Sexual and Reproductive Health Services in Pediatric Primary Care

Adolescence is normally a time of major transitions and identity formation and adolescence can be a time for exploration with risky health behaviors. This period is critical to the development of healthy habits as unhealthy patterns can lead to future adverse health outcomes (*Adolescent Health Services*, 2009). Routine screening of adolescent sexual history can identify adolescents at risk of pregnancy and STDs (Coles, Lau, & Akers, 2016). Pediatric primary care clinics offer healthcare to adolescent patients; however, the services traditionally offered to this population are limited. Although pregnancy and STDs are preventable health issues in adolescents (Burstein, Lowry, Klein, and Santelli, 2003; Ham & Allen 2012) comprehensive reproductive health services including STD testing and treatment or contraceptive planning are not readily available (Coles et. al, 2016).

Screening and testing for STDs have been shown to be cost effective and necessary for early treatment of STDs and to reduce high-risk behaviors (Montano, Phillips, Kasprzyk, & Greek, 2008). According to American Academy of Pediatrics (AAP, 2011) and Burstein et al. (2003), pediatric and adolescent health care providers have an essential role in managing sexual health issues. Routine healthcare visits offer an opportunity to provide this care that is essential to reach optimal health.

It is beneficial for pediatric primary care providers to expand current services to offer comprehensive adolescent health care services which include reproductive health, specifically contraception education, administration, and STD screening, testing, and treatment (See appendix A for definition of terms). For health care to be adolescent friendly clinicians must build on what already exists by evaluating and modifying the provision of health care as needed (Chandra-Mouli, McCarraher, Phillips, Williamson & Hainsworth, 2014).

Significance of Topic

Adolescents consistently have the highest rates of STDs of any age group. Unfortunately, they do not routinely seek healthcare, which makes it challenging to provide timely diagnosis and treatment for STDs, thus resulting in low health care utilizations in this age group (Parrish & Kent, 2008). STDs cost the United States healthcare system almost \$16 billion in direct medical costs alone (Center for Disease Control [CDC] Fact Sheet, 2014). CDC estimates that half of all new STDs in the United States occur in youth and there are greater than 110 million STDs among men and women across the country (CDC Fact Sheet, 2014).

In 2014, almost 250,000 adolescent females ages 15 to 19 gave birth (CDC, 2016). In 2011, teen pregnancy and childbirth accounted for at least \$9.4 billion in costs to U.S. taxpayers. These costs included increased health care, foster care, and incarceration rates among children of teen parents (CDC, 2016). Financial burdens also included lost tax revenue due to lower education and income among teen mothers. Pregnancy and childbirth are significant contributors to female high school dropout rates and unemployment (CDC, 2016). Peddecord et al. (2016) reported that less than half of adolescent females and a quarter of adolescent males reported discussion of outcomes of risky sexual behavior and prevention.

Data demonstrated that primary care providers miss opportunities to provide adolescents with comprehensive sexual and pregnancy preventive services and testing. Pediatric providers who do not offer STD testing and contraceptive services to adolescents refer to outside clinics for these services (Brindis et al, 2005; Halpern-Felsher, 2000). According to Victor et al. (2014), a routine sexual health screening could lower the number of missed opportunities to address sexual health needs of adolescents due to incomplete or inaccurate reporting by adolescents to health care providers. The window of opportunity may be small as half of young women report

having vaginal sexual intercourse by age 17, but pediatric clinic visits decrease by 15 to 16 years of age as (Hoover et al., 2010).

Sexual risk screening should be considered at all healthcare visits especially the primary care health supervision visit which offers an opportunity to provide counseling, contraception management and HIV and other STD screening to sexually active patients (Burstein et al., 2003). Availability of providers directly influences access to care (Parrish & Kent, 2008).

Local Issue

In Jackson County, Missouri in 2014, there were 5,071 reported cases of chlamydia, 1,757 reported cases of gonorrhea, and 278 reported cases of syphilis (Missouri Department of Health and Senior Services, 2014). Each year, nearly half of the approximately 19 million new STDs are among the ages of 15 to 24 (National Center of STD Directors, 2013). In Jackson County, Missouri in 2015, there were 52 births per 1,000 females ages 15 to 19 which is more than double the national rate of 24.2 per 1,000 ("Teen births in Missouri | County Health Rankings & Roadmaps," 2016).

Diversity Considerations

The demographics at the intervention site childcare center and clinic indicate a primarily minority population that traditionally suffers from health care disparities and challenges in accessing care. Over 95% are African American and Missouri Medicaid eligible (18% below federal poverty level) (Missouri Medicaid, 2015). Eighty seven percent of families enrolled in the childcare center are below the federal poverty guidelines, with the average family income of enrolled children at \$12,898 (Operation Breakthrough, n.d.). These factors contribute to access to care and STD disparities in African American communities (Parrish & Kent, 2008). One approach to improving access to care and reducing STD disparities is to provide sexual health

services in non-traditional venues such as schools and churches to increase healthcare utilization in this age group (Parrish & Kent, 2008). Poverty rates are higher among African Americans compared to Caucasians, and poverty has been found to be a significant determinant to health care utilization among African Americans (Parrish & Kent, 2008).

Transportation and means of communication have also been shown to be a significant barrier to care. Economically disadvantaged people may lack working phones and means of transportation to schedule and meet appointments (Parrish & Kent, 2008). Distance of health care facilities is key to access, and adolescents have reported that ease of getting to a healthcare facility by walking or bus access is essential (Parrish & Kent, 2008). The clinic setting of this intervention is located in the urban core of the community, accessible by public transportation with a public bus stop conveniently located within 20 meters from the main entrance.

Problem, Purpose

Problem Statement

The incidence of adolescents with STDs and unintended pregnancies continues to be a major health burden in the United States. Despite these health concerns many pediatric primary care clinics do not provide evidence-based sexual and reproductive health services to adolescent patients. This results in missed diagnostic and counseling opportunities, delays in treatment, and poor access to care.

Intended Improvement

A goal of Healthy People 2020 is to encourage healthy sexual behaviors, strengthen community capacity, and improve access to services to prevent STDs and the complications of STDs (Department of Health and Human Services, 2011). Nearly half of U.S. high school students report having sexual intercourse. Each year, 750,000 adolescents become pregnant in

which 80% are unplanned, indicating an unmet need for contraception in this group (Ott and Sucato, 2014). In the US, prevalence of STDs is highest among adolescents (Workowski, Bolan, & Centers for Disease Control and Prevention, 2015). Despite these statistics, primary care clinicians do not routinely document sexual histories and perform STD and HIV testing on adolescent patients (Goyal et al., 2014). This project intends to increase reproductive and sexual health services among adolescents in a primary care pediatric clinic.

Purpose Statement

This Doctor of Nursing Practice project determined the impact of expanding existing services to offer comprehensive adolescent healthcare in an offsite pediatric primary care clinic in a not for profit hospital in an urban Midwest city. The aim of the proposed project was to evaluate if expanding care to offer reproductive and sexual health services in adolescent patients, ages 12 to 21, increased adolescent reproductive health visits and adolescent patient visits in a pediatric primary care clinic.

Facilitators and Barriers

For the successful implementation of the project, there are several facilitators and barriers. The setting of the practice change is in a primary care clinic part of a local children's hospital system within an urban community. The clinic is located at an early education center that also provides childcare before and after school for children through 13 years of age. Healthcare services are available to both children in the childcare setting as well as patients from newborn through 21 years from the surrounding community.

While the clinic has been serving patients for over 20 years, no initiative to make the clinic adolescent friendly had been attempted. In fact, most physicians and nurses lacked experience, expertise, and comfort with providing general and sexual health care to adolescents.

Specifically, providers and nurses needed training in confidentiality laws, communicating to parents and process for STD testing and specimen handling. Costs were also a barrier, including ordering additional laboratory supplies needed for STD testing, an additional expense added to the clinic's budget.

Although there are barriers, there are also facilitators. Facilitators include the director of the clinic who is responsible for the budget and clinic management, the chief of adolescent medicine, the adolescent medicine department, which assisted in staff training, and the ambulatory director of nursing of outpatient clinics. Other facilitators of the expansion of services were the education center's staff, owner, and chief executive officer (CEO). A positive partnership between the clinic and education center's staff promoted referrals to the clinic and helped facilitate sustainability of the intervention.

PICOTS

In the adolescent, ages 12 to 21 does expanding care to offer comprehensive sexual and reproductive health services compared to no adolescent sexual and reproductive services offered increase overall adolescent health visits and adolescent reproductive and sexual health visits in a pediatric primary care clinic?

Literature Search Strategies

To discover current evidence regarding sexual and reproductive health services offered in pediatric primary care settings, an extensive search was undertaken. The databases used were Cumulative Index to Nursing and Allied Health Literature (CINAHL), Medline, Cochrane, Ovid search databases. In addition, Google Scholar search engine was explored. The following search

terms were used: adolescent, sexually transmitted, reproductive, primary care, and services. Quantitative and qualitative research study designs were included in addition to evidence based practice guidelines. Twenty-three studies were identified and provided evidence for this project. The research study designs included four level I, eleven level II, two level III, one level IV, and five level VI articles. Five of these were qualitative and 14 were quantitative. Exclusion criteria included studies deemed not valid or reliable, articles published prior to the year 2003 conducted outside of United States, and studies with a large portion of participants past 21 years of age (see Appendix B for Synthesis of Evidence Table).

Synthesis of Evidence

Pediatric Primary Care Providers Role

Healthcare clinics are not routinely discussing sexual health topics or offering contraception. In a study done by Brown (2009) only 29% of providers discussed sexual needs, although Peddecord et al. (2015) concluded that 75% of adolescents found time spent alone with the provider important. Brindis et al., (2005) found that seven of the ten clinical programs evaluated had the capability to provide sexual and reproductive health services to adolescent patients. Only two routinely offered STD, HIV, and family planning services and three did not actively assess clients' needs for these services. Goyal, McCutcheon, Hayes, & Mollen, (2011) had similar results, 21% of adolescents studied had a documented sexual history. Of those with a sexual history documented Goyal et. al. (2011) reported approximately 20% were sexually active. Dempsey, Singer, Clark, & Davis, (2009) reported that half of parents surveyed felt providers discussing STDs with their adolescent during well child exams was important.

Health supervision visits are a practical strategy for reaching adolescents. According to the American Academy of Pediatrics (AAP), an initial reproductive health visit is recommended for adolescents 13 through 15 years of age. Pediatric healthcare providers have an important role in reducing incidence of STDs and other negative sexual health outcomes by testing for and treating STDs as well as providing counseling on risk reduction (Victor, Chung, & Thompson et al., 2015). However pediatric primary care providers are infrequently documenting testing adolescents for STDs and HIV (Goyal et al., 2014). Despite the opportunities providers have to engage this population, the number of adolescents seeking care in a pediatric office or clinic begins to decrease by the age 15 to 16. This also happens to be the same age range which young women become sexually active and begin to seek reproductive healthcare (Hoover, Tao, Berman, and Kent (2010). The majority of outpatient visits made by adolescents for chlamydial testing are at Obstetrician-Gynecologists and family clinics, which demonstrates that their pediatric clinic may not have had these services available (Hoover et al., 2010).

Despite availability of routine healthcare services, adolescents still acquire STDs and become pregnant due to the lack of sexual health services (Burstein et al., 2003. Study results by Forhan et al. (2009) recommend that all adolescents have access to sexual healthcare and education before initiating sexual intercourse. According to the AAP recommendations, the first adolescent reproductive health visit is recommended before sexual activity begins at 13 to 15 years of age (Hoover et al., 2010). This visit allows the health care provider to address the sexual health of the adolescent to offer screening and guidance on issues including pregnancy prevention and STDs (Hoover et al., 2010). While general pediatricians are capable of providing this specialized care, many cite barriers to providing this care including lack of expertise, time, and comfort.

Sexually Transmitted Diseases in Adolescents

Sexually transmitted diseases are consistently a significant burden and source of morbidity among adolescents (Forhan et al., 2009; O'Connor & Shubkin, 2012). Forhan et al. (2009) found that approximately 25% of female adolescents were infected with an STD. Nearly 3 million females between the ages of 14 and 19 are infected with gonorrhea, chlamydia, trichomoniasis, herpes simplex virus 2 or human papilloma virus (HPV) (Forhan et al., 2009). The most common STDs begin to be acquired soon after sexual initiation (Forhan et al., 2009; Workowski, Bolan, & Centers for Disease Control and Prevention, 2015).

Routine STD screening is indicated for all sexually active adolescents. Screening for chlamydia and gonorrhea is recommended annually for sexually active females under 25 years of age, and for males under age 25 in settings with high prevalence of chlamydia (Workowski et al., 2015). HIV education and screening should be offered to all adolescents (Workowski et al., 2015).

The CDC (2016) reports that HPV remains the most common STD, and chlamydia is the most common reportable STD in the United States among adolescents. The prevalence rate of chlamydia among adolescents is 6.8%, however only 38% of sexually active young women were screened in 2011 (O'Connor & Shubkin, 2012; Workowski et al., 2015). Data reported by Wiehe, Rosenman, Wang, Katz, and Fortenberry (2011) was similar reflecting 42% of sexually active adolescents females were screened for chlamydia despite recommendations. Furthermore, Forhan et al. (2009) determined that STDs are acquired soon after sexual initiation with HPV the most prominent (Forhan et al., 2009). Despite the high rates of infection in the adolescent population, providers still fail to inquire about sexual behaviors and STD risks and to screen for asymptomatic infections during clinical encounters (Workowski et al., 2015).

Contraception for Adolescents

According to AAP (2014) pediatric providers have an important role in adolescent pregnancy prevention and contraceptive delivery. AAP (2014) recommend that pediatric providers should provide education and access to a wide range of contraceptive services for their adolescent patients. Studies consistently demonstrated that adolescents have a desire to obtain information on pregnancy prevention. Miller et al. (2015) reported most adolescents presenting to the pediatric emergency department were interested in some form of hormonal contraception. Sixty six percent of the adolescent pediatric emergency department patients were interested in same day initiation, and 29% were interested in long acting reversible contraception (LARC). Condoms are the most frequently used form of contraception with 52% of females reporting condom use at last sexual intercourse. Combined oral contraception use was 31% and usage rates of highly effective LARC methods were even lower (Ott and Sucato, 2014).

Staff knowledge and billing and coding have been a consistent barrier with initiating LARC methods in settings providing services to adolescents (Hallum-Montes, 2016). Contraception cost was a common concern among adolescents. Furthermore, females without recent health visits were more interested in LARC (Miller et al. 2013). Although contraception has been inconsistently covered as part of insurance plans the Institute of Medicine recommends contraception as an essential component of adolescent preventive care (Ott and Sucato, 2014).

Barriers to Adolescent Sexual Health Services in Pediatrics

There are several barriers that can hinder practical implementation of contraception initiation and STD screening. There are provider and system barriers to care, including lack of interest and expertise by providers and stakeholders, time constraints, and reimbursement issues

(Hallum-Montes et al., 2016; Miller et al., 2015). Brindis et al. (2005) explained that time constraints of providers to spend adequate time with each patient hinders development of rapport and the ability to discuss sexual and reproductive health topics during a routine visit. In addition to practitioners citing a lack of time in a routine clinic visit, there is also concern that the adolescent will be uncomfortable about questions regarding their sexual health (Martyn & Martin, 2003; Brindis et al., 2005, Cuffe, 2016).

A consistent barrier faced by providers was maintaining confidentiality in the electronic medical record and billing the insurance provider (Hallum-Montes et. al, 2016; Miller et al., 2015; O'Connor & Shubkin, 2012). Some clinical staff are reluctant to counsel on LARC methods due to concerns for reimbursement and lack of Title X funding (Hallum-Montes et al., 2016). Lack of training in LARC, contraceptive counseling and STD screening has also been cited as a consistent barrier (Hallum-Montes et. al, 2016).

Offering reproductive and sexual health services requires buy in from leadership and staff. Staff attitudes and beliefs can also be a barrier to providing sexual health counseling and reproductive care (Hallum-Montes et. al, 2016). Although there are perceived barriers and health insurance hurdles confidentiality laws exist to help minors receive care. All 50 states in the United States allow minors to consent for their own health services for STDs, individual state laws vary for age requirements (Workowski et al., 2015). Time alone with the clinician allows for the provision of confidential services (Edman et al, 2014).

Theory of Deliberative Nursing Practice

The Theory of Deliberative Nursing Action was developed by Ida Jean Orlando. This theory focuses on the interaction between the nurse and the patient (Khanna et al., 2009). The

theory explains that the nurse can act in two ways, automatic or deliberate. A nurse can follow standard action based on hospital or facility protocol or change action therefore making action deliberate based on individual patient needs (Orlando, 1961). The deliberative nursing action theory was selected for this project because it guides practice. The theory describes and explains how nurses should interact with patients to make appropriate decisions to assist a patient in need or distress (Schmieding, 1990).

In the adolescent patient population, often the patient's needs are undefined (Huppert et al., 2007). It is important for the nurse or provider to effectively determine the patients' true needs especially when assessing sexual risk (Monroe, 2007). The adolescent patient may need assistance with communicating their needs and may be uncomfortable or secretive (Pai, Lee, & Yen, 2012, Orlando, 1961). This theory will serve as a foundation to guide the nurse to improve observation of patient behavior and identify cues to further identify patient needs and assist with accurate diagnosis of illness. The use of the deliberative nursing practice theory aligns with the goals of this project which includes identifying more sexually active adolescent patients with a need for STD testing and treatment (see Appendix C for theory to application diagram).

Methods

IRB Approval

This retrospective quasi-experimental chart review gained IRB approval by the study site's Institutional Review Board (IRB). Privacy was maintained and the evidence was obtained by de-identified data from an electronic chart review. The student investigator does not have any conflicts of interest.

Ethical Issues

Staff attitudes and beliefs can be a barrier to providing sexual health counseling and reproductive care (Hallum-Montes, Middleton, Schlanger, & Romero, 2016). Confidentiality will be maintained on clinical information of patients 14 years and older. The data from the electronic health records was de-identified, however the student investigator was the provider of the expanded services and a pediatric nurse practitioner in the clinic, which could have posed an internal validity threat and a limitation of the project outcomes.

All teens can benefit from time alone with their health care provider to allow for the delivery of confidential services (Edman, Adams, Park, & Irwin Jr., 2010). Even though most parents agree adolescents should be allowed to have time alone with the provider, a large percentage of parents still wanted to be privy to the confidential information disclosed during these visits (Dempsey, Singer, Clark, & Davis, 2009). Adolescents may feel threatened that others will find out about their visit (Bender & Fulbright, 2013). This requires creativity by providers and staff in the health care setting to maintain confidentiality.

Site Approval

This student investigator, who is an employee of the project clinic site and a provider in the clinic gained approval from the director of this clinic to offer sexual and reproductive health services to adolescent patients and perform a retrospective chart review.

Funding and Sustainability

There were potential grant opportunities to support this program due to the educational component and need for sexual health services and access to care in the urban setting. However, the clinical services are billable and the initial funding came from the department's yearly fiscal budget. These initial set up costs were eventually offset by services rendered. The services offered are reimbursable by submitting claims through insurers. If needed, the location can apply

for Title X funding to cover contraception for the non-insured. The program hours may be expanded based on demand. Direct costs included lab supplies and pharmaceuticals within the clinic. A three-month supply was budgeted at \$2,333.00 (see Appendix D for a detailed cost table).

Expansion of hours also offered more opportunities to increase patient encounters and revenue. As the demand increases for adolescents' health visits there will be an expected increase in overall patient visits including follow up appointments and yearly well exams. It was expected that there would be an increase in revenue with the addition of these services, which will aid in sustainability. The student investigator is the primary provider in this clinic offering sexual health services, therefore if the student investigator leaves this setting there is a risk the program will not be sustainable long term.

Setting and Participants

The project clinic site is located in the urban core in a large Midwest city. The clinic is a full service primary care/school based health clinic located inside of a large early education childcare center. This clinic is a part of a large children's hospital system. The center provides care to over 500 children, including infants and children 6 weeks to 5 years of age, and offers before and after school care and summer childcare for children 5 through 13 years of age. The primary demographics of this education center and clinic are greater than 95% African American, low income, and Medicaid eligible families.

The clinic offers services for children within this education center as well as children in the community who do not attend the education center. During the study time frame this primary care clinic was staffed by: one full time nurse practitioner, one part time nurse practitioner, two part time physicians, three nurses, and one medical assistant. The clinic offered onsite

immunizations, an onsite laboratory for point of care testing, and lab courier pick up for microbiology labs and hematology specimens. There was also a full time social worker during the post intervention period. The clinic serves an average of 100 patients per week, over 5,000 per year. The clinic provides primary care services to pediatric patients ages 0 to 21 years of age. The proposed expansion of services offered additional services to adolescent patients ages 12 to 21 years. All patients in this age range will be included in the review who were seen in the clinic during the study time period. All adolescent health maintenance, ill/follow up visits, and nurse only visits were included.

EBP Intervention

Intervention implemented. The comprehensive health care services were initiated during November 2015. The clinic offered adolescent appointments throughout the clinic schedule to address comprehensive adolescent health needs. Services included physical and gynecological examinations; contraception education, initiation, and management; STD screening and treatment; and pregnancy testing. Contraceptive offerings included oral contraceptive pills, Nuva Ring, Depo Provera, and Ortho Evra patch. STD testing via vaginal, cervical, and urethral swabs were obtained, as well as urine amplification tests. Emergency contraception, pregnancy tests, and condoms are available.

The student investigator was responsible for implementing and delivering the majority of these services. Before integrating these new services, special staff training was needed. It was necessary for current staff and new staff hired to spend time in the Adolescent Medicine Clinic of the associated hospital for additional training on confidentiality, communicating with teens, and specimen collection. For newly hired staff, this training occurred as part of their orientation process. After the student investigator met with key stakeholders during December 2014 through

March 2015, approval by the ambulatory steering committee was granted on July 2015. An initial marketing activity was informing families during patient visits that expanded services for adolescents would soon be available. Supplies were ordered, and three months later, flyers announcing the services were posted in the childcare center and clinic. By November 2015, staff received training, brochures were distributed to families, and clinic scheduling began. Initially clinic scheduling was limited to once weekly half-day appointments for adolescent visits. However, the need was determined for more flexible time slots to meet demands of family's schedules and the available appointment times were expanded to daily appointments by January 2016.

The student investigator established community partnerships by visiting agencies and schools in the area and distributing brochures. Forty-minute time slots for each adolescent sexual health visit and physical was allotted to allow sufficient time to address all needs. Nursing staff asked adolescents pertinent questions during check in, including date of last menstrual period and obtained a confidential password and cell phone number of the adolescent. This was primarily used to facilitate confidential reporting of lab results to adolescent patients. If a parent was present, the parent was made aware of confidentiality laws and the importance of allowing their adolescent to speak with a provider as they transition to being independent healthcare stewards. In Missouri, adolescents must be 14 years of age and older to consent to sex; however, there are no age restrictions for confidential contraception and STD testing (Culp & Caucci, 2013). A social worker was available for any social or crisis needs (see Appendices E and F for project timeline and intervention flow diagram).

Retrospective review. Early 2017 a chart review was completed to identify adolescent patients seen in the clinic 12 months prior to project implementation compared to adolescent

visits 12 months after project implementation of January 2016 to December 2016. The student investigator obtained direct retrospective comparison of 12 months of data from 2014 to 2016. The review included all adolescent patients in the identified age group.

Change Process/EBP Model

Kotter and Cohen's Model of Change, an eight-step change process, was used in the implementation of this project. Kotter and Cohen proposed that for successful organizational change individuals are more apt to change their behavior when their feelings are influenced (Melnik & Finout-Overhout, 2015). The student investigator recognized a need for sexual and reproductive services when adolescent patients presented to the clinic during ill visits and yearly well exams and were found to need STD testing or contraception. These patients needed to be referred to other clinics offering these services. Consequently, the opportunity was missed when these patients did not show up for their delayed referral appointment.

These missed opportunities established a sense of urgency; step one in the change process, and the behavior that needed to be changed (Melnik & Fineout-Overhout, 2015). The second step was finding a group to guide the change. Due to the limited provider support within the clinic, support was obtained from the director of nursing and the adolescent clinic of the hospital, as well as from key stakeholders. In step three, meetings were set up to devise a plan for successful change. Step four involved enlisting others to *buy in* which was accomplished by the student investigator providing current research and literature to support the need for services. A business plan was developed and presented during planning meetings, and the plan was presented to the ambulatory steering committee of the hospital. Step five, addressed removal of knowledge barriers, and nurses were provided education and necessary training. The option for other providers to receive training was available. Step six, consisted of key stakeholders who met

to assist with planning, and approval was obtained from the ambulatory steering committee to offer additional services in the clinic. Step seven entailed marketing and offering of the expanded clinic services. *The vision is fulfilled* (Melnik & Fineout-Overhout, 2015, p. 321). The eighth and final phase to make the change a lasting change by promoting continuity of care will be addressed in the future (see Appendix G logic model).

The evidence based practice (EBP) model being used to implement the project was the Model for Evidence Based Practice Change originally designed by Rosswurm and Larrabee in 1999 (Melnik & Fineout-Overhout, 2015). There are six steps in this model: assess the need for change in practice, locate the best evidence, critically analyze the evidence, design the practice change, implement and evaluate the change in practice, and integrate and maintain the change in practice. This EBP model aligns with the steps of the Kotter and Cohen change model. The model for evidenced based practice change focuses more on identifying and analyzing the best evidence.

Study Design

The study design is quasi-experimental. To evaluate the effects of this intervention, a retrospective review of the electronic medical record was obtained. Quantity of adolescent patient visits in the clinic prior to project implementation was compared to quantity of adolescent visits after project implementation. The major anticipated findings include an overall increase in the number of adolescent patients seen in this clinic and an increase in adolescent females started on contraception methods.

Validity

Data was measured by extraction from electronic medical records. This data was obtained from a query performed by the hospital information system specialists. The data consisted of age

and gender of patients, and type of visit. Data included visits for contraception, pregnancy testing, and STD testing rendered after inclusion of these services. The data collection method aided in validity and reliability without introduction of bias and subjectivity. The methods of this project support external reliability due to the ability of the intervention to be replicated. Other clinics could repeat this intervention by measuring the number of adolescent patients seen in primary care before and after integration of sexual health services.

Measurable Outcomes/Instruments

The primary outcomes were the number of adolescent patients seen for contraception, STD screening and testing, and pregnancy testing in the pre and post intervention groups. The secondary outcomes are the number of adolescent patients seen in the clinic for all visit types including well exams in the pre and post intervention groups. The outcome data was derived from the electronic health record by an informatics professional. The data was de-identified prior to viewing by the student investigator.

Quality of Data

A larger, comparable study performed by Hallum-Montes et al. (2016) evaluated the efforts of 30 health centers across the United States efforts to implement adolescent sexual and reproductive health evidenced based practice. Although the Hallum-Montes et al. (2016) research study fails to exactly match the proposed project, the study can be used as a benchmark for the current project findings. Hallum-Montes et al. (2016) used an approach that analyzed several clinics with similar initiatives and addressed facilitators and barriers for implementing sexual and reproductive health services in a variety of settings. This assisted the student investigator in generalizing the interventions and outcomes of the proposed project. Unlike the large number of participants in the Hallum-Montes et al. (2016) study, the number of participants

was about 322. Therefore a power analysis was conducted during project implementation using a power of .8, medium effect, and alpha 0.5.

Analysis Plan

Demographics included age, gender, race, zip code, and insurance status of the patients in both the pre and post intervention groups. A Chi-Square statistical test was used to evaluate comparison of group outcome measures in the retrospective data (see Appendix H for data collection template).

Results

Setting and Participants

In this small Midwest urban pediatric primary care clinic the year of 2014 yielded 106 adolescent clinic visits between the ages of 12 to 21. In 2016 there were 216 adolescent visits, a 103% increase. The majority of the adolescents utilizing this clinic were female with 53% female visits in 2014 and 65% in 2016. There was a greater proportion of female visits after initiation of sexual health services however, the increase was not statistically significant. African American patients frequented the clinic more than other ethnic groups with 77% of visits in 2014 and 69% in 2016. Patients seen during the study period resided primarily in the urban core of the city primarily in the 64130, 64127, and 64109 zip codes (see Appendix I for study participants zip codes). The majority of the patient population was low income, Medicaid eligible (see Appendix J for demographics).

Intervention Course, Actual

The process of the intervention and analysis went according to design. The student investigator anticipated 100 patients in the retrospective analysis. The number of adolescent

patients seen in the post intervention group more than doubled from 2014 to 2016. The student investigator remained the primary clinician offering sexual health services during the post intervention time frame. There was a change in nursing staff during the post intervention time frame. With change in nursing staff, redundant training and education was needed. Adolescent visits peaked in May, August, and October with the largest peak in August respectively each year (see Appendix K, monthly visits). This coincided with the time of year for back to school physicals. After the integration of sexual health services, adolescent patient visits increased for all providers coinciding with the increase in the total adolescent patient population.

Outcome Data by Sub-Topic

Adolescent visits. There was an increase of all adolescent visit types from 106 to 216 which was statistically significant $p=0.001$. Females sought out health services more frequently than males in both the pre-intervention group and the post intervention group. The average of female clinic visits was 59% compared to 41% males (see Appendix J, demographics table, gender comparisons). There was not a statistically significant difference in the pre and post intervention group for gender comparisons.

The retrospective analysis showed the mean age of adolescent visits in 2014 was 13.85, with the addition of sexual health services the mean age increased to 14.26, although not statistically significant $p=0.1824$ (see Appendix J, demographics table, age). Hoover et. al. (2010) explained that adolescent clinic visits decrease by 15 to 16 years of age (Hoover et al., 2010). As more risky behaviors occur, this is the least ideal time for pediatric clinic visits to decrease. This phenomena further demonstrated the need for pediatric providers to offer the services adolescents need for health maintenance. The student investigator is anticipating the age of adolescent visits will continue to increase with continuity of care and natural age progression.

As more pediatric clinics begin offering sexual health services it is anticipated that adolescents will continue care in pediatric clinics until age 21.

Adolescent Sexual Health Visits. In the pre-intervention year of 2014 8% of adolescent patients received STD testing compared to 19% in 2016 which was statistically significant, $p=0.019$ (see Appendix L, appointment types). The student investigator, the provider responsible for implementing these services saw 72% of the sexual health visits in 2016 (see Appendix M, visits by provider). In 2014 a mere 3% of adolescent patients seen in this clinic were prescribed contraception. In 2016, with the addition of pregnancy testing, contraception education, and injectable contraception onsite administration, contraception administration increased to 16% $p<0.001$ (see Appendix M, appointment types).

Discussion

Successes, Most Important

This intervention was successful. There was a substantial increase in the volume of adolescent patients since the addition of sexual health services. The most important outcome measurement to increase adolescent sexual health services was achieved. The increase from 106 to 216 of all adolescent visit types was statistically significant $p=0.001$. There was also a statistically significant increase ($p=0.003$) in the proportion of adolescent patients seen for sexual health visits from years 2014 to 2016 (8% in 2014 to 22% in 2016) (see Appendix N, sexual health visits). Most providers and all nurses received additional training in the adolescent medicine clinic of the affiliated children's hospital. Facilitators and staff were supportive of the intervention and adolescent confidentiality was maintained throughout the intervention year.

Lack of training in LARC, contraceptive counseling and STD screening was cited as a consistent barrier (Hallum-Montes et. al, 2016). This study site was supportive, although the lack

of all providers offering services continued to be a barrier. In this study there was one provider, the student investigator who took ownership of seeing the majority of the adolescent patients. The results were consistent with literature reviewed deeming provider knowledge and comfort level as an essential aspect of offering adolescent sexual health in primary care. Issues arose including age of adolescent patients seen in clinic as well as continued knowledge of confidentiality laws by all staff. It was noted that a social worker's presence is not required but recommended. If the inclusion of a social worker to the clinic is not feasible, it is important for the providers to be aware of when to refer to mental health providers for continued screening of depression and high-risk behaviors.

There are also legal issues to consider. The age at which sexual activity is reportable in each state varies. In Missouri, if a patient is sexually active younger than 14 years of age that is reportable by law to the state children's division. Although taking a sexual history is pertinent and can become complicated by some of these barriers, this student investigator has found it beneficial to meet the adolescent where they are by offering comprehensive health services catered to the adolescent patient.

Study Strengths

A major strength of this study is the generalizability. The sample is representative of many pediatric clinics in an urban setting. The intervention is feasible and the study can be easily replicated. As the study was retrospective, the data was reliable by use of the EMR by a data analysis. This method of obtaining data limited potential for error. The location of the intervention was ideal in the urban core and simple marketing measures were successful in reaching adolescent patients. Continuity of care was important, many adolescent patients had more than one clinic visit in the post intervention year.

Results Compared to Evidence in the Literature

Cuffe (2016) reported that the most common reason for an adolescent not receiving an STD test is the provider not offering testing during the visit. Other evidence in the literature indicates there is a higher rate of testing for females than males, also consistent with this study. The national CDC guidelines do not recommend annual STD testing in males unless high risk (Cuffe, 2016). Results of this retrospective analysis showed that in 2014, about 43% of all adolescent visits were male and 57% were female, compared to 39% male visits in 2016 and 61% female. Although not statistically significant, there was a wider margin of female visits after sexual health services were added. According to Cuffe (2016) 16.6% of adolescent and young adult females were more likely to have reported receiving an STD test in the last 12 months compared to 6.1% of males. This could be a result of fewer males frequenting health clinics, also consistent with the outcomes of this analysis.

The age of 15 to 16 in which Hoover et. al. (2010) determined pediatric visits decrease was consistent with the results of this retrospective analysis. Although the mean age of adolescent visits in this study was between 13 and 14 years of age, the slight increase in mean age between the pre and post groups demonstrate that offering sexual health services may increase the age of adolescent patients seen in pediatrics.

Limitations

Internal Validity Effects

There was a potential risk of the student investigator's participation being a confounding factor for bias in the data analysis. Although the student investigator was the primary provider offering sexual health services in this clinic the data was de-identified with masked patient

identifiers reducing the risk of the student investigator's involvement affecting the validity. Additionally the volume of adolescents evaluated and varied ages of the study population reduced risk of identification of the participants in the study population. To further ensure validity the data was attained by a data analyst outside of the study department.

This study only measured services rendered for sexual health and did not account for sexual health discussion or counseling during a visit unless a specific service was rendered. The data was measured by; visit types and orders placed for STD testing, contraception prescribed, and pregnancy testing done in the clinic. In the pre-group, it was difficult to obtain the number of patients inquiring about sexual health services referred to outside providers.

External Validity Effects

Participants in the pre-group may have largely been current patients and prior students of the onsite childcare center as well as family members of children in the childcare center. However, with onset of the intervention there was outside marketing associated done which could have brought in a new subset of adolescent patients from the community and neighboring schools.

The data reflects a much larger number of total encounters, compared to unique patient encounters. This indicates there were several adolescent patients who had repeat visits in one year for sexual health services, although the total number of patients also significantly increased. Also to be considered, if there was an isolated HIV test done without other STD testing particularly in the pre-group this may not have been relative to at risk sexual behavior, as the reason for the testing was not obtained in this study.

The zip codes with the most utilization of these clinic services are in an urban core of the city near the clinic location. This area is at higher risk for health disparities. At risk populations

tend to have lower access to care, increased teen pregnancy, and higher infant mortality.

According to Missouri Mother and Child Health Coalition, 7 out of every 1000 infants die of infant mortality with the highest risk zip codes for maternal and infant health disparities 64106, 64108, 64109, 64110, 64124, 64127, 64128, 64130, and 64132 (KCMO Community Health Assessment, 2011). These high-risk zip codes accounted for more than 70% of adolescent patient encounters in this clinic (see Appendix I).

The primary outcome measures of this study were statistically significant. This clinic was located in an at risk area with a higher percentage of minority, African American patients. This intervention was especially beneficial in higher risk populations but also needed in any community. Replicating this study in a primary care clinic with a pre-existing larger number of adolescent patients could deem a greater impact to the overall greater population.

Sustainability of Effects and Plans to Maintain Effects

At project initiation there was concern that if there is a change in providers due to attrition that the program would not be sustainable. More providers have slowly begun offering sexual health services, so the concern for sustainability has lessened. There is support for the expanded adolescent services by stakeholders. Furthermore, in 2017, the clinic further expanded adolescent services in addition to sexual health services by offering depression screening by the clinic social worker as well as psychology appointments and group therapy for adolescent patients with mental health concerns. Additional adolescent tailored services will support sustainability of sexual health services in the adolescent population.

Efforts to Minimize the Study Limitations

To minimize the concern for a decrease in sexual health services due to potential change in providers, it will be important when hiring new staff that all staff and providers have an

interest in adolescent health and are trained to offer these services. The results demonstrate a steady improvement in the number of adolescents seen month to month respectively each year (see Appendix K, monthly data). The student investigator expects the volume of patients to continue to increase; however, the yield of increase may begin to narrow as patient appointment times are filled. This study has a small sample size, with one provider responsible for the majority of adolescent health visits. The limitations of this study did not significantly impact the interpretation and application of the findings, and this study can be reproduced in other settings with larger number of providers and patient volume.

Interpretation

Expected and Actual Outcomes

An increase in adolescent patient visits with expansion of services was expected. Another anticipated outcome was an increase in well visits with the overall increase in patient visits. Total adolescent health visits (all visit types) increased from 106 in 2014 to 216 in 2016 (103%). This increase was statistically significant, $p=0.001$. In the post intervention group, of the total of 216 visits 36% received well exams, while 21% received sexual health services. Although there was an increase in well visits from 2014 to 2016 from 42 to 78 visits, a 46% increase, this was not statistically significant.

The primary expected outcome to increase sexual health visits was met. There was a total of 47 visits for sexual health services out of the 216 total adolescent visits. Compared to sexual health visits in the pre-group, this represented an increase of 81% which was statistically significant, $p=0.003$.

Intervention's Effectiveness (Inferences)

The site is atypical, as it is located in an early childhood center. The clinic serves patients

from the community up to the age of 21, although the majority of the patients seen in this clinic are below 5 years of age. The location and primary age of patients frequenting the clinic could have posed a barrier to offering sexual health care, but the clinic had the capacity and the audience of children growing into adolescence needing a medical home and comprehensive services. The clinic is located in an urban high-risk neighborhood, caring for families with increased social determinants of health and limited resources. Low health care utilization may be a barrier and contribute to increased attendance for appointments. However, the location of the clinic and vicinity to bus lines deemed the site very accessible for these families, which was ideal for sexual health services for adolescent patients seeking healthcare independently.

Although the clinic is small and in an atypical location there was an existing patient panel which aided in marketing of the expansion of services. A pre-existing pediatric clinic with the capacity for more patient visits is an optimal setting to integrate adolescent sexual health. This is an ideal intervention in school-based clinics, hospital based clinics, or private practices. Inclusion of service initiation costs in the budget was not a major burden in this hospital based clinic however, there may be grant funding available in school based clinics to support expansion of services.

Intervention Revision

There are no current or anticipated revisions to this study. A further statistical analysis with a linear regression will be completed prior to manuscript submission to evaluate each variable in greater detail with each patient encounter.

Expected and Actual Impact to Health System, Costs, and Policy

In 2014 in the United States, 249,078 infants were born to adolescent females aged 15 to 19 (CDC, 2016). Teen pregnancy is a significant factor in school dropout rates among young

girls. Only 50% of teen mothers receive a high school diploma. The lower education levels reached and the later health disparities associated with teen pregnancy are also costly, totaling over \$9 billion dollars per year in tax dollars. In Jackson County, Missouri in 2016, there were 5,585 cases of chlamydia, 2,480 cases of gonorrhea, and 281 cases of syphilis (Missouri Department of Health and Senior Services, 2017). With the inclusion of sexual health services the provider was able to reach more adolescents to discuss sexual health. In addition to STD testing, abstinence and safe sex were discussed during these visits, and condoms were distributed to help reduce the spread of STDs. Any impact in reducing unplanned teen pregnancy and STDs is much needed to support local and national initiatives.

Opportunities

There is ample opportunity to offer increased access to sexual healthcare services to adolescents. Many pediatric and family practice clinics do not readily offer STD testing and contraception. This intervention demonstrates that it is feasible for clinics to offer these services. There are barriers, including staff comfort and lack of training as well as confidentiality issues, but those can be overcome with planning and support. The results of this intervention demonstrate that the benefits outweigh the risks. Adolescents need comprehensive health services and will seek these services when they are offered.

Conclusions

Practical Usefulness of Intervention

In primary care pediatrics, hospital based, community clinics, and private practice there is an opportunity to integrate sexual health services into practice. The evidence reviewed and this project intervention can be applied in any clinic setting that offers healthcare to adolescents. It is

especially applicable in pediatric primary care where healthcare is already established and the opportunity for continuity of care from childhood through adolescence exists. This is especially relevant for clinics located in regions where access to care is especially difficult.

It is important to be transparent when considering barriers to inclusion of sexual and reproductive health services in practice. These potential barriers include; provider comfort level, ethical issues, confidentiality, and financial/insurance reimbursement constraints. With advocacy for this patient group, provider training, and availability of resources provision of these services is attainable. Relevant training and tools are necessary to implement these services in practice. Furthermore, it is essential for staff and stakeholders to be supportive for successful implementation of reproductive health services. If there are funding constraints issues to offer these services, the providers can use approaches such as applying for grants.

Further Study or Implementation of Intervention

The need for reproductive and sexual health services in the adolescence group is consistently supported in published studies, and the findings are applicable to pediatric primary care settings. Future intervention implementation could include evaluating successful implementation of expanding adolescent sexual and reproductive services in several pediatric primary care clinics. Additional research would be useful in exploring overcoming barriers such as provider training and comfort level in integrating these services. The second phase planned for the proposed project are adolescent educational programs using evidenced based curriculum, and research to evaluate toxic stress exposure related to high-risk sexual behavior in the adolescent population.

Dissemination

The goal of this project was not only to expand adolescent healthcare in one setting, but

to provide information for other providers to successfully replicate this intervention. To disseminate the information obtained from the development and implementation of this intervention, abstracts were submitted and accepted for poster presentations for local and national healthcare. A synthesis of evidence poster was presented at the UMKC Health Sciences Research Summit and the Children's Mercy Hospital Advanced Practice Conference in Kansas City, Missouri. A project poster was presented at the National Association of Pediatrics Nurse Practitioners Conference in Denver, Colorado. The student investigator will also share findings with UMKC faculty and peers, and Children's Mercy Hospital clinic providers and staff.

Nursing and healthcare publication in pediatric or adolescent health journals will be sought to disseminate the project intervention findings to a wider audience. Disseminating information to other healthcare professionals spreads knowledge and awareness of the importance of integrating sexual and reproductive health services to adolescents. Presentations describe methods sexual health service expansion in pediatric practices based on information gained from this current project including successes, difficulties encountered, and lessons learned. Integrating adolescent sexual health services is a necessary component of adolescent health maintenance and prevention and should be explored in all pediatric primary care settings.

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Appendix A Definition of Terms

Adolescent: The period from puberty to adulthood maturity

Reproductive: Relating to reproduction

Contraception: Deliberate prevention of pregnancy

Health care: The maintenance and restoration of health by prevention and treatment of disease by licensed professionals

LARC: Long Acting Reversible Contraception

Pediatrics: The medical care of children

Primary care: Healthcare provided by a healthcare professional for initial services

Sexually transmitted disease: A disease or infection transmitted by direct sexual contact

Retrospective: Data collected from past history to explain present condition of a group or population

Prospective: Data collected from the present condition that follows them into the future

Appendix B
Synthesis of Evidence Table

First author, Year, Title, Journal	Purpose	Research Design¹, Evidence Level²	Sample & Sampling, Setting	Measures & Reliability (if reported)	Intervention & Results	Limitations & Usefulness
Pediatric Primary Care Providers Role						
Goyal et. al. (2014) Clinician adherence to recommendations for screening of adolescents for sexual activity and sexually transmitted infection/human deficiency virus	To assess provider adherence to sexual history and STD/HIV screening and documentation during routine adolescent well visits	Retrospective, cross-sectional study Level II	1000 randomly selected 13 to 19 year old routine physicals in pediatric primary care clinics.		21% of patient visits reviewed had a documented sexual history, 2.6% of encounters with documented sexual activity were tested for GC/CT, 1.6% was tested for HIV.	Pediatric primary care providers do not frequently document sexual histories and test for STD and HIV adolescent patients.
Bender (2013) Content analysis, a review of perceived barriers to	Exploration of barriers to sexual and reproductive health perceived by	Review of both quantitative and qualitative by inductive	Seventeen studies analyzed Ages 10 to 25	4 Categories: Service access Service entry Quality of services Personal factors	Access and quality of service. Young people need to feel empowered and confident in the	Large age range of 10 to 25. Majority from UK Recommends intentional planning to improve

<p>sexual and reproductive health services by young people.</p>	<p>youth.</p>	<p>content analysis. Level I</p>			<p>services provided and at ease accessing and utilizing these services.</p>	<p>adolescent comfort to reduce adolescent anxiety towards seeking these services. Guaranteed confidentiality, and a provider who is attentive listens, accepting, and non-judgmental.</p>
<p>Burstein (2003) Missed opportunities for sexually transmitted diseases, hiv, and pregnancy prevention services during adolescent health supervision visits</p>	<p>To evaluate association between preventive counseling and sexual risk behaviors.</p>	<p>Quantitative Cross Sectional Study Analyzed data (questionnaire) from the Youth Risk Behavior Surveillance (YRBS) Level II</p>	<p>187 high schools selected with total of 15, 349 students completed questionnaire in 1999.</p>	<p>Used series of logistic regression models to evaluate the independent connection between sexual risk behaviors and preventive healthcare, and pregnancy prevention discussion. Also assessed the relationship between sexual behaviors and preventive health care visits in the past 12 months for sexually active adolescents. Used SUDAAN statistical</p>	<p>Sexual risk behaviors are preventative. Primary care providers miss opportunities to offer adolescents with STD, HIV, and pregnancy preventive care services.</p>	<p>Data relied on students self-report which due to confidentiality may not accurately reflect care delivered and timing of health care visits particularly due to recall of visits. Data only applies to adolescents who attend high school. Recommended that all primary care providers discuss STDs, HIV, and pregnancy with all</p>

				analysis software. CI 95% P<0.05		adolescent patients.
Victor (2015) Identifying adolescent patients at risk for sexually transmitted infections: Development of a brief sexual health screening survey	To develop a brief sexual health screening survey to examine the association between health behaviors, personality/psychosocial factors, and self-reported STDs	Quantitative Study using surveys Level II	Data collected from 200 adolescents patients ages 14 to 18 from a pediatric primary care clinic in an academic Medical center in Southeastern metropolitan area. Administered before or after healthcare visit by researcher.	Decision tree analysis to determine participant risk of contracting STD Items measured: Sexual Behavior Personality and Psychosocial Items: Self-Control Sexual self-efficacy Sexual knowledge Peer norms Religiosity Moral Identity T test, OR (95% CI)	A brief screening measure (BSHS) was created based on results of the decision tree analysis. Results indicated a large volume of discrepancies between what adolescents reported on the verbally administered screening survey and what they disclosed directly to their physician.	Unable to include longitudinal data, which would help, determine whether self-report questionnaire by research assistant may have resulted in bias. Due to time and financial constraints STD testing and results. Interviewing adolescents with a screening tool such as BSHS would improve detection of sexual risk.
Miller et. al. (2013) Acceptability of sexual health discussion and testing in the pediatric acute	To evaluate acceptability of sexual health discussion and testing among health care providers, adolescents,	Cross sectional study qualitative study Level VI	127 adolescents ages 14 to 19 in a pediatric ED or UCC	4 point scale to measure reliability	Adolescents and parents were more accepting of sexual health discussion and testing than the health care providers	

care setting	and their parents.					
Sexually Transmitted Infections						
Forhan et. al. (2009) Prevalence of Sexually Transmitted Infections Among Female Adolescents Aged 14 to 19	To evaluate the prevalence of STDs in female adolescents.	Level II Analysis of data from a national examination survey	838 females, ages 14 to 19	Use of a complex, stratified, multistage probability random design. In the NHANES survey 2003-2004, self-collected vaginal swabs, serum, or urine was collected to evaluate STDs, using	Overall prevalence of STDs 37%. Overall Results indicated most common STD, HPV. 98% of participants were examined, 96% had at least 1 lab results for STD.	STD prevalence may have been underestimated. Need for sex education and prevention
Wiehe et al, (2011). Chlamydia Screening Among Young Women: Individual- and Provider-Level	To determine differences in rates of chlamydia screening according to demographic data, prior std or pregnancy	Level IV Retrospective longitudinal cohort study	Authors evaluated EMR and billing data in female patients ages 14 to 25 in 30 clinics in Indiana 2002-2007 to assess chlamydia testing and sexually active females.	Used HEDIS criteria Individual level data and Provider level model Bivariate analysis used Odds ratio 95%	Providers screened differently according to age and race. Black and Hispanic women screened more frequently for chlamydia. Younger females ages 14 to 15 screened less often.	Study's determination and definition of sexually active could have excluded some young women. All females on contraception are not sexually active, thus would not have been screened for chlamydia.
Workowski, K. A., Bolan, G. A., & Centers for Disease	CDC STD screening guidelines	Level 1				

Control and Prevention. (2015). Sexually transmitted diseases treatment guidelines, 2015						
Sexual Health Discussion and STD Testing						
Brown (2009) Discussion of Sensitive Health Topics with Youth During Primary Care Visits: Relationship to Youth Perceptions of Care.	To address topics pertinent to youth such as drugs and sex during primary care visits. To examine youth's perception of the provider in discussing this topics.	Cross sectional data analysis Level II	Examined results of Young Adult Health Care Survey 4000 youth given survey	Multivariate random effects logistic regression 95% confidence interval and 95% OR Stata 9 software used for analyses	Physician belief scale and likert scale used Strengths and difficulties questionnaire Provider confidence scale Only 29% of providers discussed sexual needs	
Dempsey, A. F., Singer, D. D., Clark, S. J., & Davis, M. M. (2009). Adolescent Preventive Health Care: What Do	To assess opinions of parents regarding importance of topics discussed during adolescent visits and	Cross sectional web based survey Level II	2907 knowledge panel members were randomly surveyed	Bivariate associations and demographic data analyzed using Pearson X2 tests STATA 8 statistical software used 2 tailed alpha level <= 0.05 statistically Signiant	Parents suggest parent's value anticipatory guidance but preferred confidential information is shared with parent.	There may be bias in survey results

Parents Want?	confidentiality					
Teen Pregnancy and Contraception						
Miller et al. (2015) Factors Associated with Interest in Same Day Contraception initiation among females in the pediatric emergency department	To evaluate hormonal contraception use in adolescent females in the ED and to assess intimate partner violence and pregnancy risk	Quantitative Cross Sectional study Convenience sample Level II	Computerized survey of 168 female adolescents	Assessment tool developed by multidisciplinary team Tool not validated, reliability not reported.	70% concerned about beginning contraception, 43% were currently using hormonal contraception, 29% were interested in LARC Lack of well care, cost and privacy concerns were associated with contraception interest.	The majority of sexually active adolescent females were interested in same day start of hormonal contraception. Limitations were one single hospital for recruitment, and study evaluated intent or interest.
Edman (2010) Who Gets Confidential Care? Disparities in a national sample of adolescents	To evaluate confidential care and time spent alone with providers	Quantitative survey Level II	Survey of 4302 parents of adolescents ages 12-17	Bivariate regression and multivariate regression for age and gender SAS and SUDAAN software CI 95%	Time alone spent was low especially among younger teens	It is important for all teens to have time alone to discuss sensitive topics and for confidential care to occur
Missed Opportunities						

<p>Peddecord et. al. (2015) Adolescents' Self-Reported Recall of Anticipatory Guidance Provided During Well-Visits at Nine Medical Clinics in San Diego, California, 2009-2011.</p>	<p>To assess factors influencing adolescent anticipatory guidance given during well visits</p>	<p>Level II Quantitative</p>	<p>Convenience sample of 872 adolescents 11 to 17 years Surveys by phone, in person, and online in San Diego, CA</p>	<p>Multivariate analysis Chi-square test Results significant</p>	<p>Anticipatory guidance was directly linked with adolescents having time alone with providers</p>	<p>Providers should incorporate private time with adolescents</p>
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<p>Halpern-Felsher (2000) Preventive services in a HMO Organization. How well do pediatricians screen and educate adolescent patients?</p>	<p>To assess if pediatricians in managed care follow preventive care guidelines to adolescents</p>	<p>Quantitative Level II</p>	<p>Data collected from 200 adolescents patients ages 14 to 18 from a pediatric primary care clinic in an academic Medical center</p>	<p>Bivariate correlations</p>	<p>Pediatricians do not meet recommendations in screening for adolescent high risk behavior</p>	<p>Improvement is needed in this area to screen to prevent high risk behavior.</p>
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<p>Brindis (2005) Service integration and teen friendliness in practice: A program assessment of sexual and reproductive health services for adolescents.</p>	<p>To examine service implementation and integration of adolescents services and teen friendliness in a practice setting to improve adolescent sexual and reproductive health.</p>	<p>Qualitative, semi-structured interviews, non-experimental Level VI</p>	<p>10 clinics Alameda, CA. Semi-structured interviews with administrators, providers, and adolescent clients.</p>	<p>Plot of integration score ranks against teen friendliness ranks. $R=-0.45$, $p=.19$</p>	<p>Table demonstrating site specific integration scores and teen friendliness rating.</p>	<p>Small convenience sample size, biased sample of sites. Suggests the value of integration as a primary service delivery strategy. Reliability of 0.45 and $p>0.05$</p>
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Barriers to Adolescent Sexual Health Services in Pediatrics

<p>Hoopes et. al. (2015) A Qualitative Study of Factors Influencing Contraceptive Choice Among Adolescent School Based Health Center Patients</p>	<p>To evaluate adolescent females attitudes and beliefs with LARC methods</p>	<p>Qualitative Interviews Level III</p>	<p>1:1 interviews 30 adolescent females ages 14 to 18 Voluntary, non-random</p>		<p>Responses may have been biased based on social expectancy</p>	<p>Assists in developing LARC implementation and counseling strategies</p>
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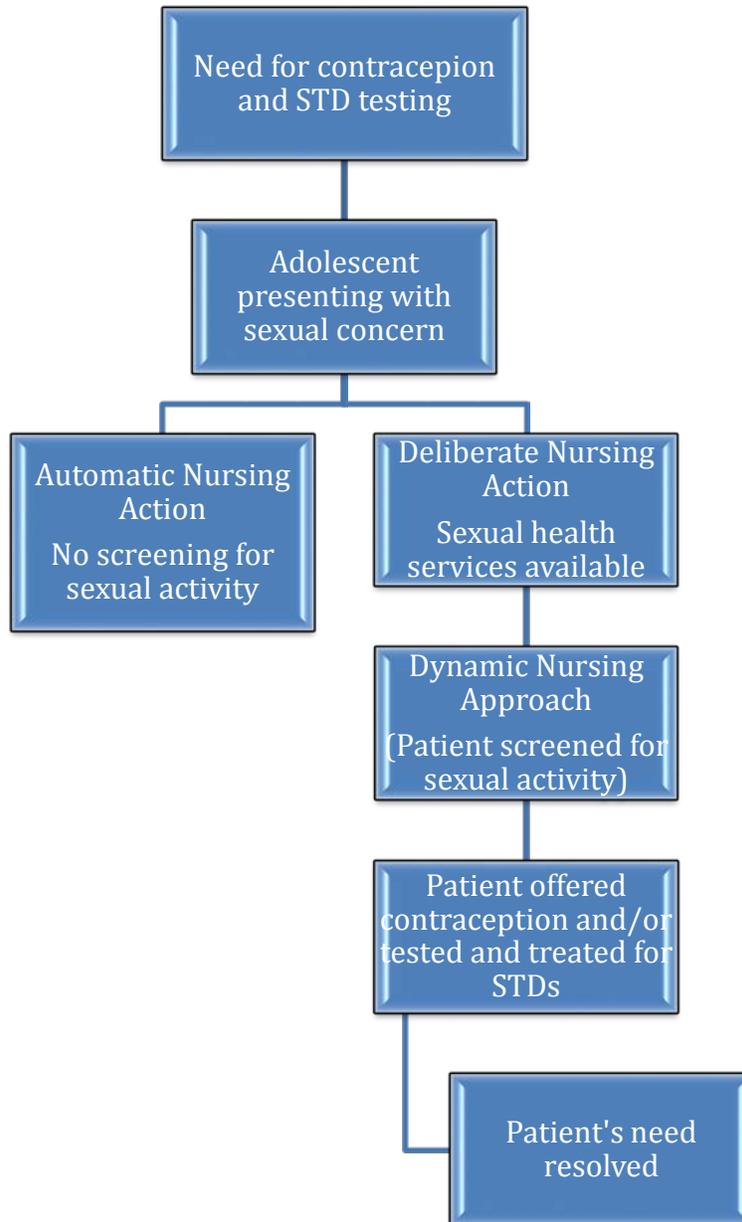
<p>Hallum-Montes et al. (2016) Barriers and Facilitators to Health Center Implementation of Evidence-Based Clinical Practices in Adolescent Reproductive Health Services</p>	<p>Examines barriers and facilitators to health center implementation of in adolescent reproductive</p>	<p>Qualitative Level II</p>	<p>Semi-structured interviews of 85 staff and leaders in 7 states</p>	<p>Plot of integration score ranks against teen friendliness ranks. $R=-0.45$, $p=.19$</p>	<p>Readiness for implementation of adolescent reproductive health requires buy in from leadership, funding, and overcoming restrictive state laws.</p>	<p>Research was exploratory however useful in understanding the process of adapting new practices for adolescent sexual and reproductive health.</p>
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<p>Goesling (2013) Programs to reduce teen pregnancy, sexually transmitted infections, and associated sexual risk behaviors: A systematic review.</p>	<p>A systematic review providing an updated assessment of effectiveness with reduction of STDs, teen pregnancies, and other sexual risk behavior.</p>	<p>Quantitative systemic review. Level I</p>	<p>Literature search strategies used to identify and analyze a total of 200 studies with 88 studies selected between 1989 to 2011. 31 effective STD and teen pregnancy prevention programs identified. Majority randomized controlled trials.</p>	<p>Program impact findings used to identify have statistically significant positive impact on sexual activity, pregnancy, STDs, or contraceptive use.</p>	<p>Broad range of programs delivered in diverse settings. Programs ranged from individualized clinic based services, to schools, and curriculum based abstinence and sexual education</p>	<p>Few studies showed impact on long-term outcomes such as pregnancy and STDs. Majority RCTs Individual program outcomes with similar approaches have varied. Diversity of programs not identical to target population</p>
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<p>Irwin (2009) Preventive care for adolescents: Few get visits and fewer get services</p>	<p>To examine receipt of preventive services to adolescents.</p>	<p>Quantitative randomized control test, Level II</p>	<p>The study used Medical Expenditure Panel Survey (MEPS), which measures healthcare for children. The subsample included 3038 that attended a preventive well child visit in the past 12 months.</p>	<p>Statistical weights used to provide estimates to reflect the national population. Results from bivariate and multivariate analyses. All variables assessed, included gender, race, and income had significant results $p < 0.005$ with CI 95%</p>	<p>38% of adolescents' ages 12 to 17 received preventive visits in the past 12 months despite recommendations for annual preventive visits for adolescents. Only 1/10 received anticipatory guidance in all areas measured. Adolescents who are poor or insured are less likely to receive annual preventive care. Only 40% of parents reported the adolescent spent time alone with the provider.</p>	<p>The rate of adolescents who received preventive well visits was much lower than in other studies. However, the MEPS used in this study are based on medical records and not by provider report. Did not measure time alone with provider as a variable.</p>
<p>O'Connor (2012) Adolescent STIs for Primary Care Providers</p>	<p>To evaluate recommendations for STIs among adolescents. To assist</p>	<p>Systematic review Level I</p>	<p>Recommendations published by AAP, United States Preventive Services Task</p>		<p>STDs are a significant health burden causing morbidity in adolescent.</p>	<p>Primary care providers are in a unique position to educate and endorse healthy sexual behaviors</p>

	providers. In appropriate screenings.		Force, and CDC the past 5 years			and choices and screen for STDs
Hoover (2009) Utilization of health services in physician offices and outpatient clinics by adolescents and young women in the United States: Implications for improving access to reproductive health services.	To examine utilization patterns of adolescents and young women seeking reproductive health services in outpatient physician offices and clinics.	Quantitative retrospective study. Analysis of data from the National Ambulatory Care Survey and the National Hospital Ambulatory Care Survey. Level III	Primary care physician offices and outpatient clinic visits ages 9 to 26, broken down in 2 year interval increments	Estimates from the surveys used a multistage probability design. Estimates of ≥ 30 visits with a relative standard error $\leq 30\%$ were considered reliable and reportable. $P < 0.001$ in each age increment.	By age 15 to 16 years fewer than half of all primary care visits were made to pediatricians	Under reporting of reproductive healthcare services if not documented in medical record. The trend of fewer visits to pediatricians could implicate the need for reproductive health services. Reproductive health services increased with age starting at 13 to 14 years of age.

Appendix C
Theory to Application Diagram



**Appendix D
Cost Table**

Expenses for Initiation of Services 3 month supply

Table 1

Direct Expenses (Supplies)

Supplies	3 month cost
Potassium chloride	\$22.42
Microsoft slides and covers	\$42.43
pH strips	\$12.94
Saline bullets	\$5.50
Wet mount vials	\$185.87
Urine pregnancy tests	\$58.90
Microscope	\$398
Condoms	\$117.99
Total	\$844.05

Note. Information obtained from hospital purchasing program (Infor)

Table 2

Direct Expenses (Pharmaceuticals)

Medication	Unit cost	Total cost
Ceftriaxone 250mg vial	(0.63 per vial)	\$7.56
Azithromycin 250mg tablets	\$1.54 per tablet	\$36.96
Fluconazole 100mg tablets	\$1.63 per tablet	\$39.12

Levonorgestrel 1.5mg tablets	\$29.24 per tablet	\$116.96
Depo Provera 150mg vial	\$140.31 per vial	\$2104.65
Metronidazole 500mg tablets	\$1.06 per tablet	\$25.44
Total		\$2330.69

Note. Information obtained from hospital pharmacy

Table 3

Marketing materials and educational handouts

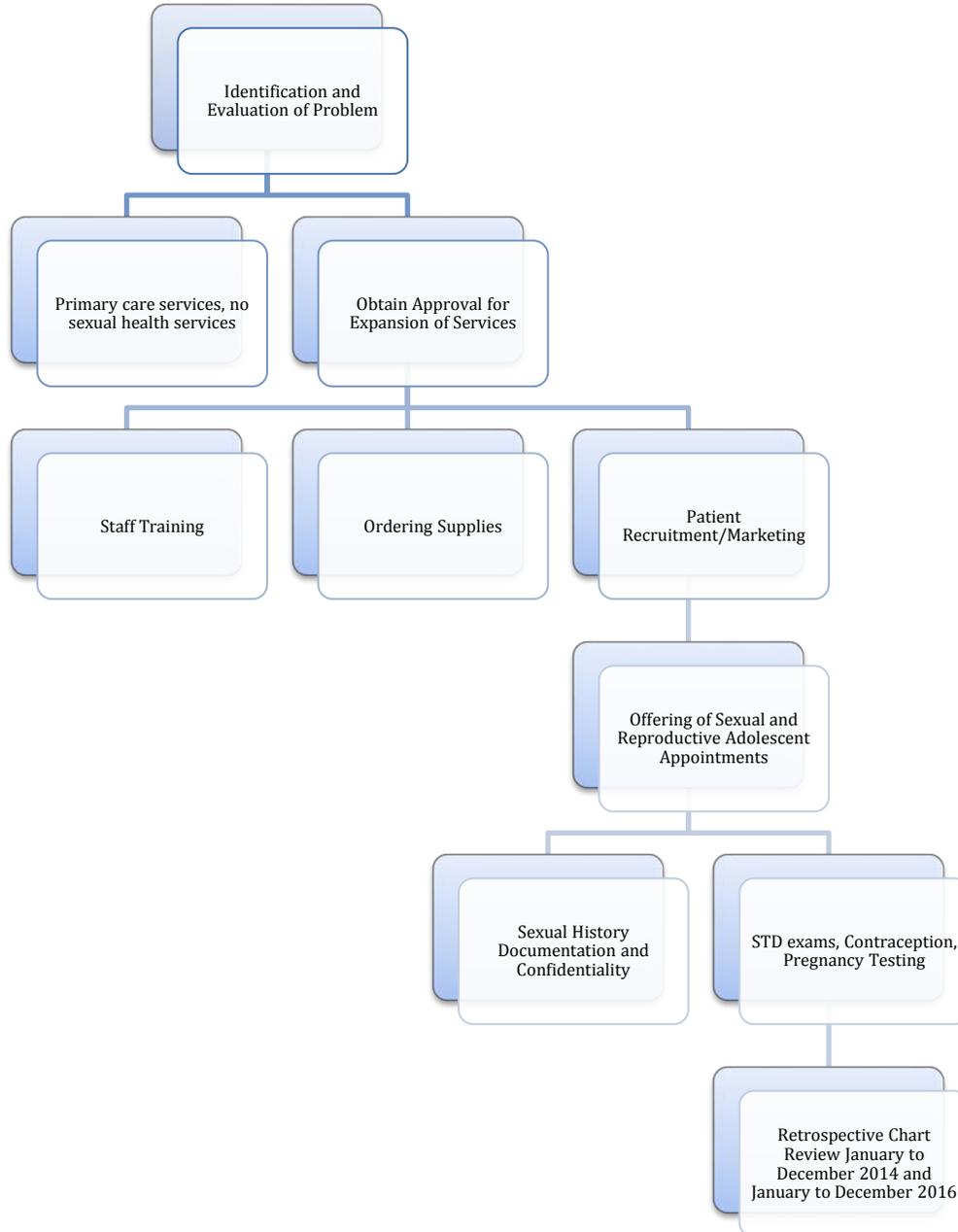
Color Ink (4 cartridges)	\$267.96
Paper (10 reams)	\$53.99

Appendix E

Project Timeline



Appendix F Intervention Diagram



**Appendix G
Logic Model**

Input	Interventions-Output		Outcomes -Impact		
<p>Evidence, sub-topics Pediatric Primary Care Provider Role</p> <p>Sexually Transmitted Infections</p> <p>Sexual Health Discussion and STD Testing</p> <p>Contraception</p> <p>Missed Opportunities</p> <p>Barriers to Adolescent Reproductive Services</p> <p>Major Facilitators or Contributors Chief of adolescent medicine Other providers in clinic Director of clinic Nursing staff Administrative staff</p> <p>Major Barriers or Challenges Provider buy in Lack of training of staff Misperceptions of need</p>	<p>EBP intervention which is supported by the evidence in the Input column Sexual and reproductive health services. STD screening and testing Contraception education and administration.</p> <p>Major steps of the intervention Approval and support of stakeholders. Additional staff training. Purchasing of clinic laboratory supplies and medication for treatment. Advertisement of new services</p>	<p>The participants (subjects) Adolescent males and females ages 12 to 21.</p> <p>Site Children’s Mercy Clinic at Operation Breakthrough</p> <p>Time Frame 12 to 24 months</p> <p>Consent Needed or other Consent for examination and treatment authorized by minor 14 and older in state of MO</p> <p>Person(s) collecting data Gladesia Tolbert (SI) And Information Systems data analyst</p> <p>Others directly</p>	<p>Completed as student Outcome(s) to be measured with valid & reliable tool(s)</p> <p>Numbers of patients scheduled and seen in clinic for sexual and reproductive health visits.</p> <p>Number of adolescent patient visits compared to number prior to expansion of services.</p> <p>Increase in number of adolescent patients on hormonal contraceptive method seen in clinic.</p> <p>Statistical analysis to be used Chi Square</p>	<p>(after student DNP) Outcomes to be measured</p> <p>Decrease in number of adolescent patients referred to outside clinics for sexual and reproductive services.</p>	<p>(after student DNP) Outcomes that are potentials</p> <p>Impact of intervention, decrease in STDs and unintended pregnancy. Difficult to measure.</p> <p>Impact of HIV prevention education program on high risk sexual behaviors.</p>

for services in clinic Cost of supplies Confidentiality concerns		involved Nursing staff			
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**Appendix I
Zip Codes**

zip	Freq.	Percent	Cum.
64014	1	0.40	0.40
64030	7	2.80	3.20
64050	2	0.80	4.00
64053	2	0.80	4.80
64055	6	2.40	7.20
64056	1	0.40	7.60
64063	2	0.80	8.40
64079	2	0.80	9.20
64081	4	1.60	10.80
64083	2	0.80	11.60
64086	9	3.60	15.20
64102	1	0.40	15.60
*64106	7	2.80	18.40
*64108	2	0.80	19.20
*64109	27	10.80	30.00
*64110	12	4.80	34.80
64111	5	2.00	36.80
64114	3	1.20	38.00
64117	4	1.60	39.60
64118	3	1.20	40.80
64123	5	2.00	42.80
*64124	10	4.00	46.80
*64127	31	12.40	59.20
*64128	17	6.80	66.00
64129	8	3.20	69.20
*64130	36	14.40	83.60
64131	1	0.40	84.00
*64132	7	2.80	86.80
64133	5	2.00	88.80
64134	13	5.20	94.00
64138	8	3.20	97.20
64151	2	0.80	98.00
66104	1	0.40	98.40
66106	4	1.60	100.00
Total	250	100.00	

*Denotes Jackson County, MO high risk zip codes for infant mortality and other health disparities

**Appendix J
Demographics Table**

Demographics Table

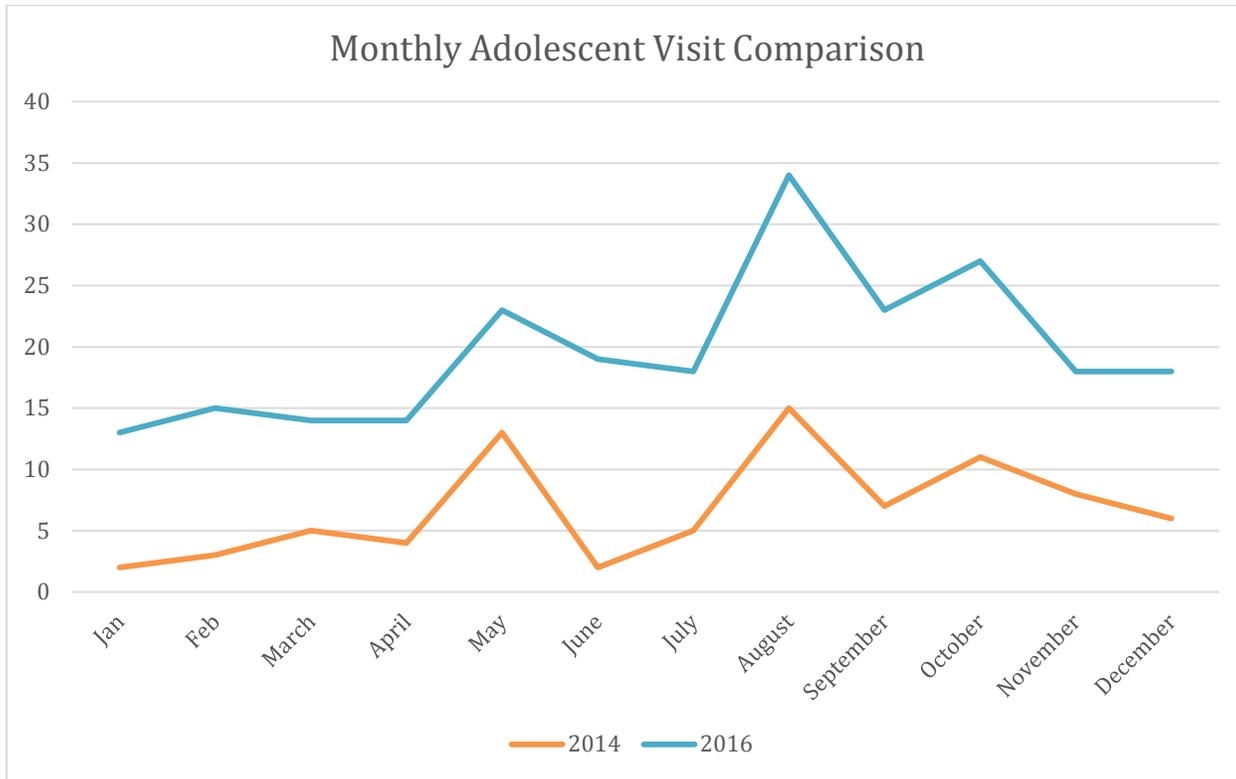
	Overall (n=322)	2014 (n=106)	2016 (n=216)	p-value ^{a)}
	Frequency (%)	Frequency (%)	Frequency (%)	
Gender				
Female	191 (59%)	60 (57%)	131 (61%)	0.488
Male	131 (41%)	46 (43%)	85 (39%)	
Race	(n=322)	(n=105)	(n=216)	
Black or African American	213 (66%)	76 (72%)	137 (63%)	0.107
White	38 (12%)	15 (14%)	23 (11%)	
Multiracial	35 (11%)	8 (8%)	27 (13%)	
Hispanic	30 (9%)	6 (6%)	24 (11%)	
Other	5 (2%)	0 (0%)	5 (2%)	
Insurance	(n=321)	(n=106)	(n=215)	
Medicaid	296 (92%)	103 (97%)	193 (90%)	0.025
Private/Commercial/Self-Pay	25 (8%)	3 (3%)	22 (10%)	

Age Table

	Mean±SD	Range	Median (IQR)	p-value ^{a)}
Age (n=322)	14.13±2.03	12,21	14 (13,15)	
2014 (n=106)	13.85±1.75	12,20	14 (12,15)	0.1824
2016 (n=216)	14.26±2.15	12,21	14 (13,16)	

^{a)}p-values (two-sided) generated via Two-sample Wilcoxon rank-sum (Mann-Whitney) test comparing years 2014 and 2016.

Appendix K
Monthly Visits Comparisons 2014 to 2016

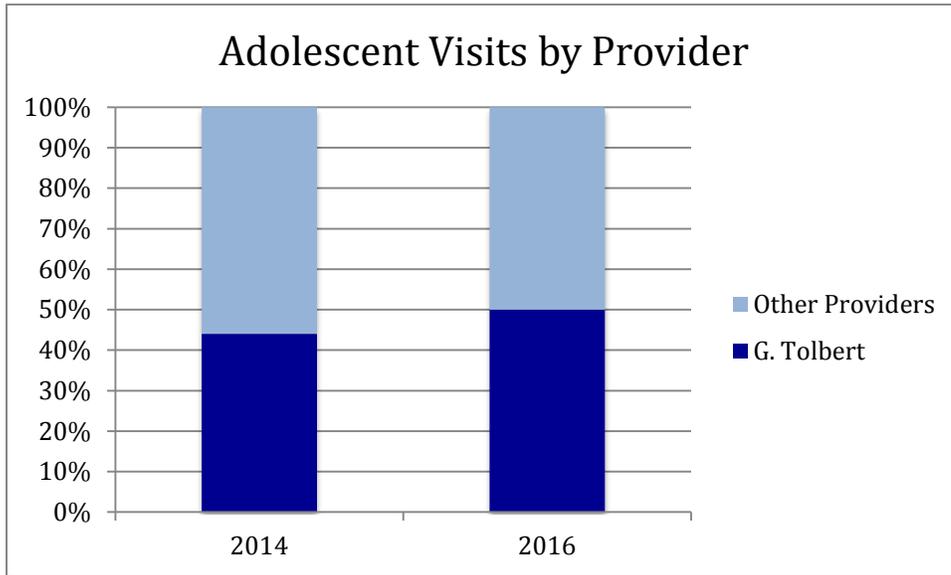


**Appendix L
Appointment Types**

Appointment Type	(n=322)	(n=106)	(n=216)	p-value
Well child checks	120 (37%)	42 (42%)	78 (36%)	0.330
Follow up or ILL	202 (62%)	64 (58%)	137 (64%)	
STD Testing	49 (15%)	9 (8%)	40 (19%)	0.019
Contraception	38 (12%)	3 (3%)	35 (16%)	<0.001
HCG (Pregnancy) Testing	44 (14%)	3 (3%)	41 (19%)	<0.001

p-values (two-sided) generated via X^2 or Fisher's Exact tests comparing years 2014 and 2016.

Appendix M
Visits by Provider



Appendix N
Visits for Sexual Health

Sexual Health Visit	year		Total
	2014	2016	
No	97 91.51	169 78.24	266 82.61
Yes	9 8.49	47 21.76	56 17.39
Total	106 100.00	216 100.00	322 100.00

Pearson chi2(1) = 8.7137 Pr = 0.003
 Fisher's exact = 0.003
 1-sided Fisher's exact = 0.002

Frequency and percentages for “Yes” responses provided. There were a total of 56/322 (17%) visits that involved sexual health concerns (i.e., Contraception visits and prescribed and administered contraception forms; STD screening, testing, and results; and/or Pregnancy testing).



Children's Mercy Hospital Pediatric Institutional Review Board

NOTIFICATION OF INITIAL APPROVAL

12/19/2016

From: Office of Research Integrity
 To: [Gladesia Tolbert](#) , Principal Investigator
 CC: [Melissa Miller](#)
 IRB#: [16110813](#)
 Study Title: Retrospective Analysis of Expansion of Adolescent Sexual Health Services in a Pediatric Primary Care Clinic
 General Pediatrics

Funding:
 The Children's Mercy Hospital

Protocol Name/#: Adolescent Sexual Primary Care

Dear Tolbert ,

On 12/16/2016 , the CMH Pediatric IRB reviewed the above-titled new study by **expedited review** under 45 CFR 46.110 category 5 for research involving materials (data, documents, records, or specimens) that have been collected, or will be collected solely for nonresearch purposes . The IRB approved the submission from **12/16/2016** to **12/15/2017** .

The IRB approved the MARS application as of 12/16/2016 which included the following study documents:

Name	Modified	Version
Tolbert-Research Protocol History	11/30/2016 2:24 PM	0.02
Tolbert-Excel data collection History	12/14/2016 2:17 PM	0.02

Approved Permission/Assent/Consent Process(es):

Waivers.

Approved HIPAA Authorization Process(es):

NONE: Study does not record PHI.

Additional Determinations:

- Gladesia is not allowed to conduct research on this study until an approved UMKC Request to Rely is submitted.

Reminder of Principal Investigator Responsibilities:

- You are required to submit a continuing review report within MARS *30 days prior to your expiration date*. If continuing review approval is not granted before the expiration date of **12/15/2017** approval of this protocol expires on that date.
- Notify the IRB immediately upon termination of the project and/or departure of the Principal Investigator from the institution or project.
- **Report any changes or deviations** in the protocol to the IRB **prior to implementation**.
- Report any unexpected significant adverse events or problems related to your study promptly to the IRB.
- Maintain copies of all pertinent information related to research activities, including copies of all signed informed consent agreements obtained from participants (if applicable).

Sincerely,

Doug Swanson, M.D.

Co-Chair, CMH Pediatric Institutional Review Board

Dane Sommer, D.Min.

Co-Chair, CMH Pediatric Institutional Review Board

Ryan McDowell, M.S., P.M.P., C.I.P.

Director, Office of Research Integrity

Office of Research Integrity

Children's Mercy Hospitals & Clinics

Phone: (816) 701-4358

Fax: (816) 701-4357

Email: MARSAdmin@cmh.edu



August 3, 2016

Members of the Institutional Review Board

IRB,

This letter serves to provide documentation regarding Gladesia Tolbert's Doctor of Nursing Practice (DNP) Project proposal. Ms. Tolbert obtained approval for her project proposal, Adolescent Sexual and Reproductive Health Services in Pediatric Primary Care, from the School of Nursing DNP faculty committee on August 3, 2016.

If I can provide any further information, please feel free to contact me.

Sincerely,

A rectangular box containing a handwritten signature in cursive script that reads "Susan J. Kimble".

Susan J. Kimble, DNP, RN, ANP-BC, FAANP
Clinical Associate Professor
DNP Programs Director
UMKC School of Nursing and Health Studies
816-235-5962
kimbles@umkc.edu