University of Cincinnati

Date: 2/14/2017

I, Jennifer L Reed M.D., hereby submit this original work as part of the requirements for the degree of Master of Science in Clinical and Translational Research.

It is entitled:
A qualitative analysis of adolescent and caregiver acceptability of universally offered gonorrhea and chlamydia screening in the pediatric emergency department

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This work and its defense approved by:

Committee chair: Erin Haynes, Dr.P.H.
Committee member: Evaline Alessandrini, M.D.
Committee member: Jessica Kahn

UNIVERSITY OF CINCINNATI
A qualitative analysis of adolescent and caregiver acceptability of universally offered gonorrhea and chlamydia screening in the pediatric emergency department

A thesis submitted to the
Graduate School
of the University of Cincinnati
in partial fulfillment of the
requirements for the degree of

Master of Science
in Clinical & Translational Research

In the Department of Environmental Health
Division of Epidemiology
of the College of Medicine
April, 2017
by

Jennifer Reed

BA, Miami University, 1993
MD, University of Cincinnati College of Medicine, 1998

Committee Chair: Erin Haynes, PhD
ABSTRACT

Objective: To qualitatively explore adolescent and parent/guardian attitudes about benefits and barriers to universally offered gonorrhea (GC) and chlamydia (CT) screening and modalities for assessing interest in screening in the pediatric ED.

Methods: A convenience sample of forty 14-21 year-olds and parents/guardians of adolescents presenting to an urban and community pediatric ED with any chief complaint, participated in individual, semi-structured, confidential interviews. Topics included support of universally offered GC/CT screening, barriers and benefits to screening, and modalities for assessing interest in screening. Data were analyzed using framework analysis.

Results: Almost all adolescents (37/40, 93%) and parents (39/40, 98%) support offering ED GC/CT screening. Benefits include earlier diagnosis/treatment, convenience and transmission prevention (cited by both groups) and improved education and long-term health (cited by parents/guardians). Barriers include concerns about confidentiality and cost (cited by both groups), embarrassment (cited by adolescents), and nondisclosure to parents/guardians (cited by parents/guardians). Adolescents prefer that the request for GC/CT screening be presented in a private room using tablet technology. Both note that the advantages to tablets included confidentiality and adolescents' familiarity with technology. Adolescents note that tablet use would address concerns about bringing up GC/CT screening with clinicians, while parents/guardians note that tablets may increase screening but expressed concern about the lack of personal interaction.

Conclusions: Universally offered GC/CT screening in a pediatric ED is acceptable to the adolescents and parents/guardians in this study. Offering a tablet-based method to assess interest in screening may increase participation.
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1. **Adolescents (n=40)**

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### Parents/Guardians (n=40)

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2. **Adolescents (n=12)**

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Table 1: Adolescent and parent/guardian study sample demographics of participants

Table 2: Demographics of adolescents and parents/guardians who refused participation in the study
### THEMES

<table>
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<tr>
<td>Barriers to GC/CT testing Reported by Adolescents</td>
</tr>
<tr>
<td>Embarrassment</td>
</tr>
<tr>
<td>“It’s a lot about embarrassment, they don’t want to make themselves look bad just because they have an STD.” (adolescent)</td>
</tr>
<tr>
<td>“The only thing I can think of is embarrassment, but hopefully most people are logical enough to overcome that.” (adolescent)</td>
</tr>
<tr>
<td>Barriers to GC/CT testing Reported by Parents/Guardians</td>
</tr>
<tr>
<td>Nondisclosure to parent/guardian</td>
</tr>
<tr>
<td>“I know the information is kept confidential and that’s to get teens out there more to do it, but you know, as a parent, I also want to know if my child has something.” (parent/guardian)</td>
</tr>
<tr>
<td>“…I think the parents should know so the parent can be looking out and be aware and probably help that child so… I know confidentiality means a lot, but when it comes to their adolescent, then the parent should know.” (parent/guardian)</td>
</tr>
<tr>
<td>Barriers to GC/CT testing Reported by Both Adolescents and Parents/Guardians</td>
</tr>
<tr>
<td>Maintaining confidentiality</td>
</tr>
<tr>
<td>“I just think as long as their parents don’t find out or it’s just confidential with them, they would answer.” (adolescent)</td>
</tr>
<tr>
<td>“They would have thoughts like if they have it, they don’t want to do it (be screened), they might get scared of it going out and people knowing.” (adolescent)</td>
</tr>
<tr>
<td>“As long as it’s OK with the adolescent, I don’t think there’s any problem…it should be confidential for them and their parents didn’t know about it.” (parent/guardian)</td>
</tr>
<tr>
<td>“I think that if you have a program, it needs to be private so that children are protected, but that yet the children need somebody to be able to go to.” (parent/guardian)</td>
</tr>
<tr>
<td>BENEFITS OF UNIVERSAL STI SCREENING</td>
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<tr>
<td>Benefits to GC/CT Testing Reported by Parents/Guardians</td>
</tr>
<tr>
<td>Improved Education</td>
</tr>
<tr>
<td>“Education… anytime you can grab a kid and say listen, this is your choice, we are big on, own it… it’s your choice and it’s your consequence.” (parent/guardian)</td>
</tr>
<tr>
<td>“It might be good talking points for kids and their parents, maybe even if they don’t get screened but they got some information or if they questioned about if they could get it in the futures so it might not necessarily happened that day but it might help in the long run.” (parent/guardian)</td>
</tr>
<tr>
<td>Improved long term health</td>
</tr>
<tr>
<td>“That way kids who do have sex and have an STD will find out instead of waiting a year down the road and hiding something from the parents forever.” (parent/guardian)</td>
</tr>
<tr>
<td>“Just to prevent long-term effects if a child does have an STD… if they’re tested then it can be addressed, if not, it can really impact their health.” (parent/guardian)</td>
</tr>
<tr>
<td>Standardization of screening</td>
</tr>
<tr>
<td>“For the parents, not singling it out so you don’t think it’s just your kid that’s being tested, and [saying] we offer this to everybody.” (parent/guardian)</td>
</tr>
<tr>
<td>“…if they think people are looking down on them or they look lower class or something, they would probably think that you’re trying to call them dirty or something like that, but in all reality you are just offering them something that’s going to benefit them and their kids in the long run.” (parent/guardian)</td>
</tr>
<tr>
<td>Benefits to GC/CT testing reported by Both Adolescents and Parents/Guardians</td>
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</tbody>
</table>
| Earlier diagnosis and treatment                                                                 | “It’s a major thing and it causes major consequences if you don’t do anything about it so I think trying to prevent it and doing everything you can to prevent it is a really good idea.” (adolescent)  
“…people knowing for sure and if they don’t know, then they’ll find out while they’re here so they can get treated for it right away.” (adolescent)  
“Catch it in time before it gets worse or before they can infect someone else.” (parent/guardian)  
“You could possibly know prior to maybe having symptoms.” (parent/guardian) |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Convenience                                                                                      | “Everybody uses this (ED) as a normal doctor.” (adolescent)  
“It’s available if someone needs it and didn’t know how to get it.” (adolescent)  
“Making it easy and convenient, you're already there and some people might not actually go to the doctor for that.” (parent/guardian)  
“Just getting it all done at once…getting it done if it’s offered, why not?” (parent/guardian) |
| Prevention of transmission                                                                         | “Just making sure that stuff doesn’t go untreated and cause other problems or they’re spreading it around.” (adolescent)  
“I think that could prevent a lot of spread of STDs as well as maybe like secondary things that could affect people later on in life.” (adolescent)  
“It benefits everybody all the way around, especially the kids that don’t know cause there’re a lot of kids that don’t know they have something and they’re running around spreading it….” (parent/guardian)  
“I think if it can stop the spread of STDs, I think that’s a good idea. I mean these kids are having sex, it’s just the way it is you know, burying our heads in the sand is not going to fix it…we have to be able to fix it.” (parent/guardian) |

I think you need some sort of heading TECHNOLOGY USE

Preference for tablet-based GC/CT screening by Adolescents

| Screening should be offered in a private room using tablets | “I feel like no one needs to know outside, so I think being in a private room would be very important.” (adolescent)  
“I feel here in the treatment rooms would probably be better than triage. I think….also depending on the condition or what they’re here for, I feel like triage can be kind of chaotic and people are kind of frazzled. Once you get here, it’s quiet, it’s calm and I think it’s a better environment for something like that.” (adolescent) |
|----------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Tablets would address concerns about broaching STI topic with clinicians                           | “I think it would be good because it gives the teenager, if they are embarrassed talking to doctors sometimes, you could just answer things on the iPad and then turn it in. It doesn’t actually have to come out of your mouth.” (adolescent)  
“I think that would help kids a lot …it’s definitely between them and the doctor, but they also really identify with technology and they almost feel safer so I think that’s a really good idea.” (adolescent) |

Acceptability of tablet-based GC/CT screening by Parents/Guardians

| Concern for lack of personal interaction | “I think somebody of authority would still need to just say: ‘Do you have questions, does everything make sense?’” (parent/guardian)  
“…whereas if you have a personal interaction sometimes you can read a key if somebody is nervous or they may be avoiding something that maybe a nurse of a doctor could say, hmmm, maybe I can ask this question whereas the tablets are not going to see their reaction and they wouldn’t be probed a little bit deeper …” (parent/guardian)  
“This iPad stuff is killing me. I always think you need to talk to a person live.” (parent/guardian) |
|------------------------------------------|-------------------------------------------------------------------------------------------------|
| Acceptability of tablet-based GC/CT screening by both Adolescents and Parents/Guardians         | “Maybe have them on the computer or something where they don’t have to talk about it, they can just enter it.” (parent/guardian)  
“Some people like to do it on the computer and be alone.” (parent/guardian) |
| Confidentiality                          | “The people getting tested would probably be more comfortable with technology rather than a pen and paper. It just feels more familiar.” (adolescent)  
“I think they would like that because every time you look, they are permanently attached anyway so that would be easy.” (parent/guardian) |

Table 3: Themes and representative quotations related to acceptability of GC/CT testing in the Emergency Department among adolescents and parents/guardians
INTRODUCTION

Background

More than 19 million new sexually transmitted infections (STIs) are diagnosed annually in the U.S., with nearly half occurring in those 15 to 24 years of age.¹ Untreated STIs may have serious long-term consequences including pelvic inflammatory disease, chronic pelvic pain and infertility. This epidemic in adolescents and young adults contributes to patient recidivism (repeat infections), healthcare costs relating to morbidity and mortality associated with these diagnoses, and increased HIV and other STI transmission within the community.² ³ ⁴ Therefore, interventions such as improved screening and treatment programs are urgently needed to more effectively decrease STI rates among adolescents and young adults.⁵ ⁶ ⁷

Importance

The Centers for Disease Control and Prevention (CDC) recommends annual Chlamydia (CT) and gonorrhea (GC) screening for all sexually active adolescent females and males in high risk settings.⁸ However, many adolescents lack a medical home and thus are one of the most difficult populations to reach for screening.⁹ The emergency department (ED) setting is frequented by this high-risk population, many of whom would not otherwise obtain healthcare.¹⁰⁻¹³ In our institution’s pediatric emergency department (PED), adolescents comprise approximately 20% of the visits in the urban PED. Up to 10% of all adolescents receive GC/CT testing because they are symptomatic and approximately 30% are positive for at least one STI, but asymptomatic adolescents are not routinely screened for GC/CT. A previous study at our institution demonstrated that almost 10% of those who were asymptomatic but screened for GC/CT in the PED setting were positive for GC, CT or both infections.¹⁴ Therefore, it is likely that there are more asymptomatic GC/CT cases coming through the ED that are missed than
symptomatic cases, and suggests that there are missed opportunities to prevent GC/CT in this high-risk population by screening asymptomatic individuals.15-17 18

Expert consensus indicates that research addressing the effectiveness, sustainability and integration of innovative STI screening programs in the ED is warranted.19,20 Essential components of a confidential, universally offered GC and CT screening process in the ED include acceptance by ED staff, patients and parents/guardians; reliable follow up and treatment methods for the patient and his/her partners; and excellent communication of GC/CT results to ED patients.21-23 Although a previous quantitative study has shown a high percentage of GC/CT screening acceptance among adolescents in a research setting, a significant remaining gap in the literature is qualitative information regarding adolescent and parent/guardian acceptance of confidential, universally offered GC/CT screening and their beliefs about the feasibility of this process implemented in routine clinical care in ED settings.24

Adolescents cite concerns for confidentiality and privacy as a potential barrier to disclosing sensitive health information in the clinical setting.25 Obtaining consent/assent confidentially in the ED for GC/CT screening can be challenging due to space and privacy issues, difficulty separating a patient from the parent/guardian in an acute setting, and time constraints. Tablet-based interventions may address some of these barriers as adolescents report a preference for sharing sensitive health information electronically rather than in face-to-face interviews.26,27

Goals of this Investigation

The objective of this study is to qualitatively explore adolescent and parent/guardian attitudes about benefits and barriers of offering GC/CT screening to all adolescents in the pediatric ED as well as the modality of testing; specifically, the acceptability of using a tablet to collect confidential information about risk factors and agreement to screening.
METHODS

Study Design and Setting

This is a qualitatively designed study that was conducted in two of our institution’s PEDs. The first is the main ED which is an urban, tertiary care PED with 87,000 ED visits per year; approximately 20% of the visits are adolescents 14-21 years of age. The second is the satellite PED which is located in a northern suburb and has 34,000 annual visits; approximately 13% of the visits are adolescents 14-21 years of age.

Selection of Participants

Male and female adolescents 14-21 years of age who presented to the ED with any chief complaint and parents or guardians of 14-21 year-olds were eligible to participate. Despite the 18-21 year old population being considered adults, most adolescent subspecialists and many pediatric EDs care for patients who are ≥ 18 years of age. At our institution, this 18 -21 year old population comprises 20% of our total adolescent/young adult population, thus it is important to include this age group in our sample. Because this age group often visits the ED in the presence of his/her parent(s), and they are often still covered under their parent’s insurance, we included parents of ≥ 18 year olds as well. The parent was assigned to the subgroup according to the age of the child he/she accompanied to the ED during that visit. We did not collect information from dyads; thus, a parent and his/her child did not have to participate as a pair. In our institutions’ EDs, patients are triaged as per the validated Emergency Severity Index.28 Patients are triaged from level 1 to 5, 1 being “critical” and 5 being in need of few or no resources and “non-urgent”. To avoid interfering with ED care, we did not approach patients triaged as critical (level 1) or their parents/guardians. We excluded those patients who were severely developmentally delayed or otherwise unable to consent.
Methods and Measurements

A trained clinical research coordinator (CRC) or a research/clinical nurse identified eligible patients and/or parents/guardians and approached them during their ED visit. For adolescents presenting to the ED with a parent present, parental permission and informed assent was obtained. For those adolescents who presented to the ED without a parent present, informed assent was obtained from the adolescent participating in the study; a waiver of parental permission was granted by the hospital’s Institutional Review Board. Among all participants 18 years of age and older (adolescents and parents/guardians), informed consent was obtained. This study was reviewed and approved by the Institutional Review Board.

We used purposeful sampling to enroll participants with specific characteristics to allow for a diverse representation. It was our intention to enroll 25% of participants at the Satellite ED as this is representative of the relative ED volumes when combining the sites. We attempted to enroll relatively equal proportions of adolescents and parents/guardians of each age group (i.e. 14-15 years, 16-17 years and 18-21 years) and within each age group, we aimed to enroll relatively equal proportions of each demographic factor (i.e. race, insurance status and gender). All interviews were conducted by either an experienced CRC (RT) or a research nurse who also had clinical ED responsibilities (BP). Both used a semi-structured interview guide including open-ended questions (Appendix). Each potential participant was approached in his/her private exam room, and the interview was conducted in this setting or another private room if the participant’s clinical visit was completed before the end of the study visit. The participant and the parent/guardian were interviewed separately in private rooms to protect confidentiality and ensure validity of responses. Participants were offered a small monetary compensation for their participation. We asked adolescent participants whether or not they had been tested previously for an STI as well as whether they and their parents/guardians thought STI testing was something that should be offered during the PED visit. Those who were indifferent were grouped with those who answered negatively. Additionally, we assessed the benefits and
barriers to adolescent and parent/guardian acceptability of confidential, universally offered GC/CT screening in the pediatric ED by asking participants and parents/guardians what problems teens would have or what would worry them about being offered testing in the PED as well as asking them to report the benefits of screening teens for GC/CT in the PED. Finally, we explored the preferred modality for assessing interest in STI screening by asking adolescents and parents/guardians if they would prefer that an adolescent’s interest was assessed using a tablet vs. on paper vs. being asked by a healthcare provider, as well as reasons for their preference. The exact process of the potential mode of screening was not detailed in the questioning.

The age-appropriate, semi-structured interview guide is grounded in two relevant theories of health related behavior: the Behavioral Model of Health Services Use and the Health Belief Model. The Behavioral Model of Health Services Use provides a framework for explaining the interactions between multiple factors related to access of medical care including the contextual and individual characteristics (predisposing, enabling and need) as well as various health behaviors. The Health Belief Model uses key concepts including perceived susceptibility, severity, benefits and barriers as well as cues to action and self-efficacy that assesses a participant’s “readiness” and ability to take action.

Data Analysis

All interviews were audiotaped with the participants’ permission, and were transcribed by an independent transcriptionist. The interview guide was modified as needed after the interview process began. Transcripts and any notes taken were cleaned and edited. Framework analysis was used to analyze the survey data. Framework analysis is a qualitative method of analysis that is often referred to as thematic analysis or qualitative content analysis and is frequently used to analyze semi-structured interview transcripts. The goal of framework analysis is to use a systematic approach to generate themes. In this study we used an inductive approach using
thematic coding and a subsequent iterative process for further clarification of themes. Using this methodology, the intention is not to represent a vast population or produce generalizable results but instead to systematically identify themes around a specific area of interest.

During familiarization or Phase 1, the investigators (JR, BP, RT) independently reviewed the transcripts and then together reached consensus regarding important themes and ideas. During Phase 2 (identification of a thematic framework), the investigators met to develop a thematic, organizational model. In Phase 3 (indexing), the data was consistently labeled according to the previously developed thematic framework. During Phase 4 (charting), direct quotations from the interviews were compiled with headings and subheadings. All differences were reviewed until consensus was reached. In Phase 5 (mapping and interpretation), the investigators used any existing literature to support concepts underlying adolescents’ and parents'/guardians' perceived benefits and barriers to universally offered adolescent GC/CT screening in the pediatric ED as well as the acceptability of using a tablet to collect confidential information about the desire for screening. We enrolled participants until we achieved informational redundancy which is a standard method for estimating sample size in qualitative studies.

RESULTS

Characteristics of Study Subjects

Table 1 displays study sample characteristics among adolescents and parent/guardians. Relatively equal proportions of adolescents and parents/guardians within each age group were enrolled and within each age group, relatively equal proportions of demographic factors of race, insurance status and gender were also enrolled except for gender among parents/guardians. There was a much larger proportion of female parents/guardians participating than male parents/guardians. Among adolescents, 77% (40/52) who were approached agreed to participate, and 93% (40/43) of parents/guardians approached agreed to participate. Table 2
display the demographics of those who refused participation in the study. Most of the adolescents who refused participation did so because they did not feel well secondary to the acute illness that necessitated the ED visit.

**Main Results**

Most adolescents (26/40, 65%) had never been tested for STIs, but almost all adolescents (37/40, 93%) and parents (39/40, 98%) support offering ED GC/CT screening to all teens in the PED setting. Two adolescents who were not supportive gave no reason for their response, and the third adolescent stated, “I mean it’s something personal”. The one parent/guardian who did not support GC/CT screening stated, “No, I think you would have some parents who would have a hard time with it.”

**Benefits to STI screening in a PED setting**

Both adolescents and parent/guardians cite that the benefits to GC/CT screening include earlier diagnosis and treatment of infection, convenience of getting tested in the PED setting and prevention of transmission of infection (Table 3). Additionally, themes that were identified specifically among parents/guardians include improved reproductive health education, improved long term adolescent health and the fact that screening would be offered to every teen instead of targeting specific teens. Many parents expressed concern regarding “targeting” specific adolescents based on demographic factors or preconceived assumptions. There were no specific age or racial concerns in this theme.

**Barriers to STI Screening in a PED setting**

Both adolescents and parents/guardians identify the ability to maintain confidentiality and patient cost of GC/CT screening as barriers. A majority of adolescents express no concerns. However, the most common adolescent concern identified involved the embarrassment of being tested and the stigma associated with potentially positive results. Parents/guardians report that
the most significant barriers to GC/CT screening from their perspective were nondisclosure to parents/guardians (e.g. not informing the parent/guardian of the testing) and the fear that adolescents may have regarding receiving punishment for their sexual behavior or disappointing the parent.

**Preferred modality for assessing interest in STI screening in a PED setting**

Adolescents and parents/guardians note that the advantages to using tablets to assess interest in GC/CT screening include confidentiality and adolescents' familiarity with technology. Adolescents prefer that information presenting GC/CT screening tests and the request to agree to GC/CT screening be offered in a private room using tablets, and they note that tablet use would address their concerns and/or embarrassment about broaching the topic of GC/CT screening with clinicians. Parents/guardians note that using tablets may increase the number of adolescents who agree to GC/CT screening, but also express concern about the lack of personal interaction with a healthcare provider.

**LIMITATIONS**

There are several limitations to this study. Adolescent patients often present to the ED without their parent/guardian present, making it difficult to obtain parental permission for all adolescents approached for enrollment. Under Ohio law, in a clinical setting, healthcare providers are able to discuss and treat adolescent patients for STI related issues without parental consent. Thus, for those who presented without parents, the research team was able to obtain information regarding the adolescent’s thoughts about GC/CT screening without parental permission. However, for those with parents/guardians present, parental permission was required which may bias the sample because those adolescents who do not require parental permission may be more willing to participate than those whom parental permission is required. However, to protect confidentiality and obtain the most honest responses, interviews were conducted without
parental presence. This study is limited in that participants included only adolescents and parents/guardians who visited an urban or suburban pediatric emergency department, and it is unclear if these patients reside in the surrounding urban community or are from other settings including rural areas. Additionally, this population included patients who have variable access to primary care which may be a factor that contributes to participant attitudes towards universally offered ED GC/CT screening.

DISCUSSION

In this qualitative study involving a diverse sample of adolescents and parents/guardians presenting to a PED, we found a very high rate of acceptance (93% and 98% respectively) for universally offered adolescent GC/CT screening if offered routinely to all adolescents in the ED as part of clinical care. Other quantitative studies that have implemented universally offered screening in a PED research environment also report high acceptability (59-80%) among participants agreeing to GC/CT testing; however, these were done in a research setting and measured the participation among subjects in a research study using quantitative methodology. Our rates of acceptability are much higher using qualitative methods, but we were focusing on the acceptability of offering GC/CT screening in a PED setting versus agreeing to participate in GC/CT screening. While it is very likely that a smaller proportion of patients would actually agree to GC/CT screening due reasons including not being sexually active, it is extremely important to know that there was a very high patient and parent/guardian acceptance in offering screening in routine ED clinical care. To our knowledge, this study is the first to utilize qualitative methods to assess not only adolescent views on universally offered ED GC/CT screening in the ED, but also the views of their parents/guardians. Even though STI screening can be offered and executed in all states without parental consent, having the support of parents/guardians reassures healthcare providers that parents/guardians understand the importance of this public health intervention among adolescents. Acceptability of offering
screening is the first step in assessing whether a PED GC/CT screening program is going to be embraced by the population it is meant to benefit.

The adolescents and parents/guardians in this study readily identify the numerous benefits of GC/CT screening including earlier diagnosis and treatment, prevention of the transmission of infection as well as improved long term health benefits. Many cite that a major benefit of offering GC/CT testing in the PED setting is the convenience of getting tested. One teen stated that “everybody uses this (ED) as a normal doctor” further reinforcing literature that suggests teens often do not use primary care and instead often seek care only for acute illnesses and injury.9 That care is often sought in an emergency department.10,11 Our data supports that the PED is an acceptable setting in which to engage high risk adolescents for CT/GC for screening and supplement testing in primary care medical homes.

Parents/guardians report that one of the significant benefits to universal GC/CT screening is the fact that screening would be standardized and offered to everyone. Many parents express concern regarding “targeting” specific adolescents based on demographic factors or preconceived assumptions. Racial disparity in testing for STIs in the PED setting has been reported by Goyal, et. al. thus supporting the parent/guardian concerns found in this study.37 Although targeting adolescents in the PED for GC/CT screening based on their sexual risk profile has been reported as a feasible method of ED screening,38 our study suggests that parents/guardians may prefer screening be offered universally to all adolescents in order to destigmatize testing and promote screening as a standard, routine option.

The most common barriers to GC/CT screening identified by participants in our study includes the cost of the testing and confidentiality. Screening women < 25 years of age for CT is considered to be beneficial and a cost-effective preventive service, but it is vastly underutilized.16 Because screening is recommended yearly among females <25 years of age
and among high risk males, public and private insurance will often reimburse the cost of screening as it is a well-established preventive care test. However, in the current climate of high deductible payment plans, the cost of the screening may be a barrier and may need to be addressed when offering screening. Confidentiality is a theme that was repeated by adolescents as well as parents/guardians. This concern has been reported in previous literature with data suggesting that 92% of teens and young adults would agree to STI testing if their parents would not find out. In order to implement a successful screening program, it is imperative to assure adolescent confidentiality and make adolescents aware of any possibility of a breach of that confidentiality which would potentially include third party payer explanation of benefits and hospital billing documents. However, most explanation of benefits documents only list generic lab testing and specific testing is only indicated on itemized bills that usually have to be requested by the insured. Therefore, the breach of confidentiality due to billing is low albeit still possible. Interestingly, none of the participants identified time for testing and results notification as a barrier. Results are not immediately available in our institution and would be given to the patient by phone in follow up within 1-2 days of testing. Since the screening would occur on a urine sample, the process of obtaining the urine sample in the ED would be the only ED time related concern.

Adolescents identify embarrassment and stigma as two important barriers to being screened for GC/CT. Adolescents report two sources of embarrassment: agreeing to screening in front of the healthcare provider, and others' finding out about positive results. A study by Balfe, et al. similarly demonstrated that women, especially those who were young and of low socioeconomic status, reported that stigma was a barrier to accepting STI screening. By offering screening universally and making it a routine part of adolescent healthcare as opposed to targeting specific patients for screening, we can work towards destigmatizing testing thus improving acceptance rates of screening among this population.
Adolescents in our study report that a tablet/computerized screening approach would improve confidentiality among adolescents when asked to be screened, and this approach would address adolescent concerns about broaching the topic of STI screening face to face, a finding supported by previous literature.\textsuperscript{43-45} It has been previously cited in the literature that adolescents’ familiarity with technology and improved confidentiality would make this approach preferable over paper or a face to face approach.\textsuperscript{36} However, this study differs in that it also demonstrates that parents/guardians have similar preferences and would also prefer a computerized approach to screening. The use of technology may not only address some confidentiality issues, but will also allow integration into the patient’s electronic health record.

Parents/guardians note that tablets may increase the number of adolescents who agree to GC/CT screening, but many were concerned about the lack of personal interaction. This concern was not reported by adolescents in this study, thus it is possible that this is a generational difference in the acceptance of technology among these two groups and the importance of personal interaction. Patients who test positive for STIs in our institution do receive personal interaction in follow up through phone calls using confidential phone numbers that the patients provide. The adolescents were informed that only they would be notified of positive test results, and parents would only be notified if the adolescent gave permission for healthcare providers to do so. The nurses who make these calls discuss treatment, prevention and referrals to primary care settings. This interaction gives the adolescent a chance to confidentially receive test results, treatment and ask further questions.

There is controversy as to whether public health interventions and in particular, preventative screening is appropriate to pursue in an emergency department setting. However, the emergency department (ED) functions as the primary source of health care access for over 1.5 million adolescents\textsuperscript{10}, and even when adolescents do access primary care, only 12% of sexually active females 15-24 years of age receive annual testing for GC/CT.\textsuperscript{46} The Centers for
Disease Control and Infections recognize the opportunity for the ED to serve as a strategic safety net site to reach vulnerable populations, and thus recommends that HIV and other STI screening expand into the ED setting. In failing to address population health in an emergency department setting is a missed opportunity.

In summary, this qualitative study demonstrates that universally offered STI screening in a pediatric ED is generally acceptable to adolescents and parents/guardians. Adolescents and parent/guardians believe that using a discreet, tablet-based method to offer GC/CT screening is likely to increase participation but needs to be balanced by personal interaction with the provider. This information will drive the development of a universally offered gonorrhea and chlamydia screening program that will be implemented and tested using a quality improvement approach. It will be important to examine the proportion of patients agreeing to GC/CT testing and reasons for refusal. Other future inquiries may include considering potential benefits and barriers among adolescents and parents/guardians in screening for other STIs in the ED including HIV and syphilis.
REFERENCES


APPENDIX - Semi structured interview guide

This is a draft of the information that will be included in the interview. The interviewer will use this as a guide for the interview however, the specific questions will be adapted based upon the responses of the participant.

Draft Qualitative Interview Guide: Aim 1 & Aim 2

We are in the process of developing a sexually transmitted disease (STD) screening program (specifically gonorrhea and chlamydia screening) in the emergency department to be offered to all adolescent patients that visit to the emergency department for any reason. Before we begin to offer this testing, we would like to get some opinions from parents and teens. The information that we collect during these interviews will help us to design a gonorrhea and chlamydia screening program that meets the needs of both teens and their parents.

The questions below will serve as a guide and will be tailored to the specific subject being interviewed.

<table>
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<tr>
<th>Participant #:</th>
<th>MRN:</th>
<th>Date of Visit:</th>
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**INTERVIEW QUESTIONS**

**PARENTS/GUARDIANS**

1. How old are you?

2. What is your race?

3. What is your gender?

4. What type of insurance do you have?

5. How old is your child?

6. What is your child’s gender?

7. What is your child’s race?
8. As far as you know, has your child ever been tested for STDs before? If yes, where does your child typically go for STD testing?

9. Do you feel that your child needs STD testing during a future ED visit? Why or why not?

10. What concerns would you have regarding an STD screening program? Payment/insurance coverage, confidentiality, other?

11. What problems do you see with developing a process in the ED aimed at screening all teens 14 to 21 years of age for gonorrhea and chlamydia if they agree to the screening?

12. What would prevent your child from agreeing to STD screening? Pain or discomfort, time, embarrassment, stigma, confidentiality?

13. How likely is it that your teen has an STD or may have an STD in the future?

14. How serious would it be if your teen had an STD?

15. How serious would it be if your teen has an STD and didn’t know it?

16. What are the benefits of having an STD screening program in the ED? Easier access to care, convenience, early detection of infection?

17. What would motivate your teen to agree to STD testing in the ED?

18. Do you think that your teen would agree to STD testing in the ED if an ED doctor or nurse recommended testing? What if the recommendation for testing was on an iPad that your teen was given and they could participate through a click on the iPad (or
paper) instead of direct interaction with a doctor or nurse? Would your teen feel comfortable using an iPad?

19. Would your interest in STD screening change based upon the reason for your child’s visit? If it was a serious injury or illness versus a minor injury or illness?

20. Ohio state law states that teens can be tested for STDs without a parent’s permission and any positive results can only be shared with the parent if the teen agrees. Knowing this, what kind of follow-up care would you like if your child did test positive for an STD?

21. Who would be the best person to approach your child to ask if your child would like STD testing? Doctor, nurse, other? Would you prefer a person (MD or RN) approached your child about testing or if your child was asked about testing though a computer or iPad?

22. When would be the best time during your child’s ED visit to approach your child? In triage, in a private exam room? Would it differ based on the approach? For example, a live person discussing the testing vs. a question on a computer screen?

23. Would you prefer that a written pamphlet be available to your child to review the process prior to being approached for testing?

24. As a parent, would you be comfortable if asked to leave the room so that your child can be approached confidentiality? If so, how would you suggest keeping this information confidential if a parent is with the teen in the ER?

25. Is there anything else that we should consider before offering STD testing to teens?

**TEENS**

1. How old are you?

2. What is your race?
3. What is your gender?

4. What type of insurance do you have?

5. Have you ever been screened for STDs before? If yes, where do you typically go for STD testing?

6. Do you feel that you need STD testing?

7. Would you want STD testing during a future ED visit? Why or why not?

8. What concerns would you have regarding an STD testing program? Payment/insurance coverage, confidentiality, other?

9. What problems do you see with developing a process in the ED aimed at screening all teens 14 to 21 years of age for gonorrhea and chlamydia if they agree to the screening?

10. What would prevent you from agreeing to STD screening? Pain or discomfort, time, embarrassment, stigma, confidentiality?

11. How likely is it that you may have an STD right now?

12. How likely is it that you may have an STD in the future?

13. How serious would it be if you had an STD?
14. How serious would it be if you had an STD and didn’t know it?

15. What are the benefits of having an STD screening program in the ED? Easier access to care, convenience, early detection of infection?

16. What would motivate you to get STD testing in the ED?

17. Do you think that you would agree to STD testing in the ED if an ED doctor or nurse recommended testing? What if the recommendation for testing was on an iPad (or paper) that you could agree to participate through a click on the iPad rather than direct interaction with a MD or RN?

18. Do you think your friends would be more likely to agree to screening if we asked the question on an iPad/computer? Why or why not?

19. Would your interest in STD screening change based upon the reason for your visit? If it was a more serious illness or injury versus a minor injury or illness?

20. Ohio state law states that teens can be tested for STDs without a parent’s permission and any positive results can only be shared with the parent if the teen agrees. Knowing this, if you tested positive, you would need treatment. Where would you like to go for treatment? Would you be able to pick up a prescription at a pharmacy without your parent knowing? What other kind of follow-up care would you want?

21. Who would be the best person to approach you to ask if you would like STD testing? Doctor, nurse, other? Would you prefer a person (MD or RN) approached you or if you were asked about testing through a computer or iPad?

22. When would be the best time during your ED visit to approach you? In triage, in the private exam room? Would it differ based on the approach? For example, a live person discussing the testing vs. a question on a computer screen?
23. Would you prefer that a written pamphlet be available for you to review the process before being approached for testing? Would you think that if you received this pamphlet that your parent would then know that you were asked and possibly agreed to STI testing? Would this be a problem and prevent you from agreeing to testing?

24. Would you like if we asked your parent to leave the room so that you could be approached privately (confidentially)? What other ways could we approach you privately? If you answered the questions on an iPad/computer, would you still prefer that your parent leave the room?

25. Is there anything else we should consider before offering STD testing to teens?