Spring 5-27-2017

Opportunistic Diagnosis of STIs in High-Risk Populations

Kathleen W. Fitzgerald
University of San Diego, kate.w.boylan@gmail.com

Manuscript

Opportunisitic Diagnosis of STIs in High-Risk Populations

Kathleen W. Fitzgerald, BSN, RN

University of San Diego

Hahn School of Nursing and Health Science

Beyester Institute for Nursing Research

Email: kboylan@sandiego.edu

Jonathan Mack, PhD, RN, APN-BC

University of San Diego

Hahn School of Nursing and Health Science

Beyester Institute for Nursing Research

Introduction

Chlamydia and Gonorrhea are two sexually transmitted infections (STIs) that are extremely common in the United States as well as elsewhere in the world. Chlamydia, specifically, is the number one most reported bacterial infection with 2.8 million new cases every year.[1] This is a conservative estimate considering that most people are asymptomatic and males are less likely to get screened. There are over 20 million people diagnosed with an STI each year, and the direct healthcare costs add up to over 16 billion dollars annually.[1]

While most women over 18 are screened for STIs during routine Pap smears, many women still fall through the cracks. In 2014, the National Center for Health Statistics found that only 69.4% of women over 18 in the US had a Pap within the last three years.[2] Also, adolescents under the age of 21 who are sexually active are at high risk for STIs and are not likely to get routine screening. Approximately 42% of adolescents aged 15-19 have been sexually active and are not routinely screened.[2]

Chlamydia and gonorrhea are not benign and can have long-lasting negative health effects if left untreated. The consequences of untreated STIs in women can be severe and permanent. Therefore, it is important to utilize every opportunity for screening that is available. Specifically, untreated or recurrent Chlamydia is the number one cause of ectopic pregnancy, tubal infertility, and pelvic inflammatory disease (PID).[3] Recurrent infections and subsequent PID can also lead to chronic abdominal and pelvic pain.[4] The average lifetime cost of treatment for patients with PID is $6,840.00 per patient.[5] Additionally, preventative screening for Chlamydia in women under the age of 25 is considered one of the top public health priorities as far as economic and health benefits are concerned.[6]

The opportunity for testing should be better utilized in acute care settings with patients that are high-risk and symptomatic. One complaint that is commonly seen in this setting is painful urination, also known as dysuria. Urinary tract infections (UTI) and STIs share concomitant risk factors including new sexual partners, sexual activity, and lack of contraceptive use.[7] UTIs in women are a very common ailment seen throughout all levels of care including the emergency department (ED), urgent care clinics, and primary care. While many of these women have typical UTIs and are diagnosed as such, symptoms of a UTI can also be caused by STIs including, but not limited to, Chlamydia and gonorrhea.[7] Many women who are diagnosed and treated for a UTI may actually have an STI in place of, or in addition to, a UTI. In one study 9.8% of patients presenting with typical UTI symptoms were positive for Chlamydia, with another 7.6% positive for trichomoniasis.[8]

Women with complaints of dysuria, urinary frequency, suprapubic discomfort, urinary urgency, and hematuria are typically tested for UTI with a simple urine dipstick or laboratory urinalysis with a differential. Frequently the result is inconclusive, but patients are typically treated with antibiotics and a urine culture may or may not be ordered depending on their age, pregnancy status, and urologic history. For some patients who voice a concern about STIs but are asymptomatic, a urine gonorrhea and Chlamydia test may be ordered. The urine that is provided for this test is supposed to be a "dirty-catch;" whereas the urine provided for urinalysis should be a "clean-catch." At this particular setting a single urine sample is used for all tests, and it is not indicated whether it is clean or dirty catch on the label. Many nurses teach the patients how to provide a clean-catch urine, but many do not. And so, it is unknown whether the patients end up providing a clean or dirty-catch urine.

These inconsistencies can easily be prevented with the implementation of vaginal self-swabbing for GC/chlamydia in addition to a clean-catch urine sample to rule out GC/Chlamydia in female patients under the age of 25. Places like Planned Parenthood are already using this technique for STI testing, and there is strong data showing that self-swabbing is just as accurate as pelvic exam swabs taken by a provider.[9-11] Additionally, research has shown that patients in this age range prefer vaginal self-swabbing to pelvic examination, and do not have any difficulty in following directions for self-swabbing.[12-14]

Lastly, active duty military service members historically have higher rates of Chlamydia and gonorrhea infections than the general population.[15] Currently there are not any kind of preventative programs in place to address this besides routine Pap smears, which are enforced for all active duty service members, but not necessarily their family members or other dependents. There is data that is being monitored through The Healthcare Data and Information Set (HEDIS) measures, which include diagnosis of Chlamydia in all age groups. This is a national healthcare quality improvement initiative that has been adopted at many military hospitals.

Methods

The setting for this project is a large military medical treatment facility emergency department in an urban setting. This particular ED is divided into two sections: the main ED and Fast Track (FT), which functions as an urgent care clinic. Nurse practitioners (NPs) currently staff and run the FT, where this project was focused. All patients are active duty military, their immediate families, or retired military. Institutional Review Board (IRB) approval was received before implementation of this project. Once obtained, the 8 NP staff members were educated on the protocol and how to instruct patients on vaginal self-swabbing.

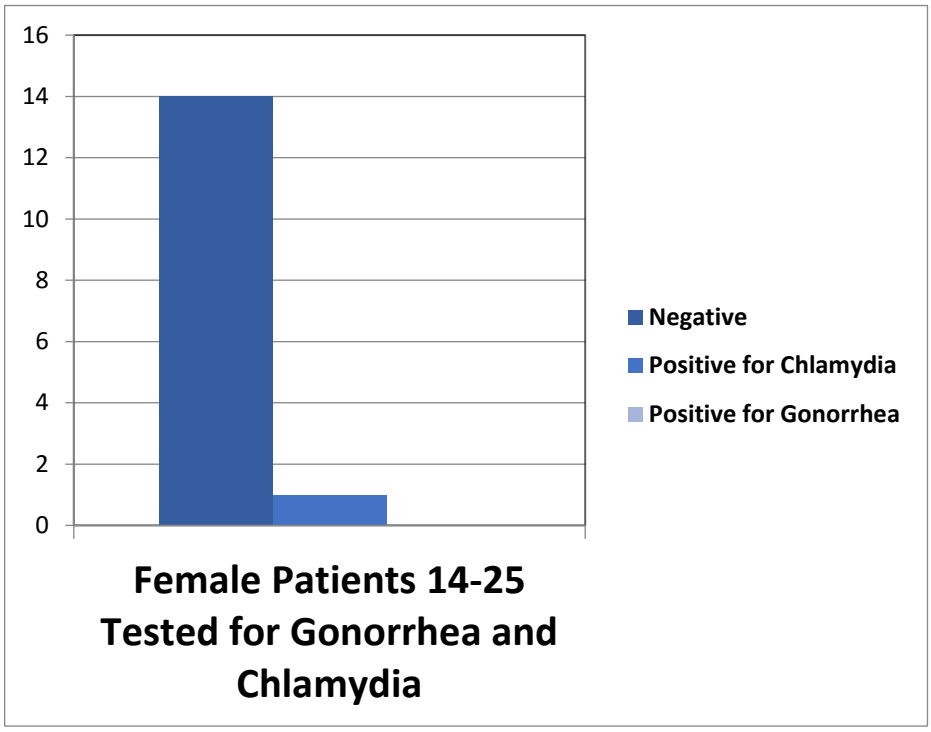
Over the course of one month all female patients between the ages of 14 and 25 who presented to the FT with urinary complaints were offered additional testing for Chlamydia and Gonorrhea. Urinary complaints included any of the following: dysuria, urinary urgency, urinary frequency, malodorous urine, and post-void suprapubic pressure or pain. Patients were then offered to supply a sample using one of three methods of their choice: vaginal self-swabbing, provider-obtained swab via pelvic exam, or a dirty-catch urine as long as it had been over one hour since the clean-catch urine was provided.

The Aptima® swab was utilized in both the vaginal self-swabs and pelvic exam swabs. The lab utilized a similar polymerase chain reaction (PCR) testing for urine specimens. Results for all testing methods take up to three days, wherein the lab informs the Fast Track staff of any positive results. The NPs then call the patients and place prescriptions in the pharmacy for them to pick up at whatever time they choose, while also providing important patient education over the phone. The results from the lab tests are then recorded in the patient's electronic medical record by the laboratory staff.

Results

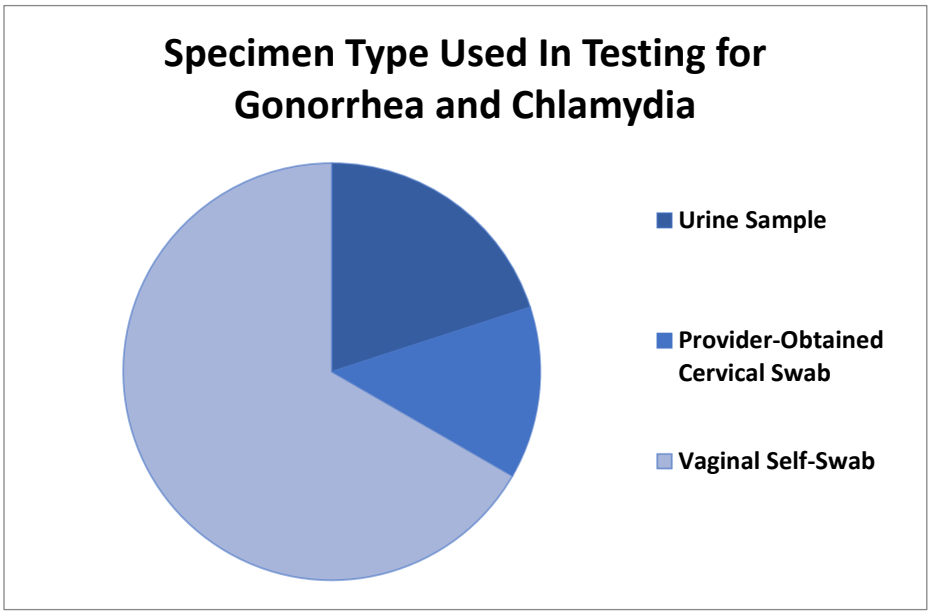
Over the course of one month 15 volunteer female patients were tested for gonorrhea and Chlamydia. One patient was postive for Chlamydia and treated appropriately with antiobiotics after a call back by the NP three days later. No patients tested positive for gonorrhea. Table 1 illustrates the patients results.

Table 1. Female Patients 14-25 Tested for Gonorrhea and Chlamydia



11 of 15 patients had a diagnosis of urinary tract infection and would not have been tested for gonorrhea or Chlamydia using previous protocol. 75% of patients chose to do the vaginal self-swab in lieu of a repeat urine sample or pelvic exam. Table 2 shows the percentages of patients that chose each of the methods. The single positive Chlamydia patient was initially diagnosed with a UTI based on urinalysis results and treated accordingly.

Table 2. Specimen Tyle Used in Testing for Gonorrhea and Chlamydia



Discussion

The goal of this project was achieved in that testing was increased among high-risk patients. Due to the limited amount of data, though, it cannot be said whether there was an increase in diagnosis rates compared to before. The one patient who did test positive for Chlamydia would likely not have been tested using previous protocols since she was positive for UTI. This can be seen as a benefit to that one patient. Testing in itself is a benefit to the hospital because it helps increase compliance with HEDIS initiatives, whether there are positive results or not.

What was most interesting regarding the results was how many patients opted for vaginal self-swabbing. Prior to instituting this project only one of the nurse practitioners was using self-swabbing for STI testing. None of the other NPs had ever utilitzed it. Many of them were skeptical that patients would want to do self-swabbing in lieu of a repeat urine sample. Out of 15 patients, 10 opted for self-swabbing. This shows that self-swabbing is likely a more patient-

friendly method of testing. Patients did not want to wait to provide another urine sample. Of note, the NPs also stated that no patients declined the testing when they were offered it.

Limitations included confusion among NP staff about criteria for selecting patients, therefore there were three known missed opportunities. It is likely that there were other missed opportunites, but with only one project leader and a site mentor, it was impossible to be on site continuously to monitor Fast Track patient complaints. There was also confusion about having to send a separate specimen since prior to the initiation of this project testing was being done on clean-catch urine samples. Another limitation was the short timeframe available to gather data and the limited number of patients who met criteria that presented during this 30 day period. Lastly, due to concerns over data-sharing, it was not possible to gather pre-data from the Fast Track for comparison. This data would have included the number of patients presenting with urinary complaints and what percentage of them were tested and diagnosed with gonorrhea and chlamydia. It also would have included the methods of testing for each patient. The HEDIS data, which was readily available, was not specific enough for this project goal.

Conclusions

This project examined the effectiveness of instituting a protocol of automatic gonorrhea and Chlamydia testing on high-risk female patients that presented to an urgent care setting with urinary complaints. The overall purpose was to increase testing and that was achieved, albeit in a small way. This project would ideally be carried on by another student to determine effectiveness with a larger number of patients. The project is easily sustainable and the NPs in Fast Track state they will continue to offer testing to patients in this age group. Ideally, the most sustainable route for continuing this protocol would be adding a flag into the electronic ordering system that would alert the provider to order STI testing when a UA was being ordered on patients in high-

risk age groups. The current ordering system is very outdated and would be difficult to change at this time, but could be considered in the future as the system is updated.

Diagnosing and treating even a small number of patients could prevent long term complications and save healthcare dollars. Any patient left untreated could go on to develop PID, infertility issues, and chronic pain. Not to mention, they would possibly continue the cycle of infection to other people. Until Chlamydia and gonorrhea are a thing of the past, this protocol could greatly benefit patients and healthcare institutions alike.

References

1. Centers for Disease Control and Prevention. (2015). Health, United States, 2014. Retrieved from http://www.cdc.gov/nchs/data/hus/hus14.pdf#077

2. Centers for Disease Control and Prevention. (2013). Incidence, Prevalence, and Cost of Sexually Transmitted Infections in the United States. Retrieved from http://www.cdc.gov/std/stats/sti-estimates-fact-sheet-feb-2013.pdf
3. Stewart R. (2005). Opportunistic chlamydia testing: improving nursing practice through self-audit and reflection. *Nursing Praxis in New Zealand*, *21*(1), 43–52 10p.
4. Eissa, M. A. H., & Cromwell, P. F. (2003). Diagnosis and management of pelvic inflammatory disease in adolescents. *Journal of Pediatric Health Care*, *17*(3), 145–147. http://doi.org/10.1067/mph.2003.47
5. Yeh, J. M. M., Hook, E. W. I., & Goldie, S. J. M. (2003). A Refined Estimate of the Average Lifetime Cost of Pelvic Inflammatory Disease. *Sexually Transmitted Diseases*, *30*(5), 369–378.
6. Maciosek, M. V., Coffield, A. B., Edwards, N. M., Flottemesch, T. J., & Solberg, L. I. (2009). Prioritizing Clinical Preventive Services: A Review and Framework with Implications for Community Preventive Services. *Annual Review of Public Health*, *30*(1), 341–355. http://doi.org/10.1146/annurev.publhealth.031308.100253
7. Huppert, J. S., Biro, F., Lan, D., Mortensen, J. E., Reed, J., & Slap, G. B. (2007). Urinary Symptoms in Adolescent Females: STI or UTI? *Journal of Adolescent Health*, *40*(5), 418–424. http://doi.org/10.1016/j.jadohealth.2006.12.010
8. Shapiro T, Dalton M, Hammock J, Lavery R, Matjucha J, & Salo DF. (2005). The prevalence of urinary tract infections and sexually transmitted disease in women with symptoms of a simple urinary tract infection stratified by low colony count criteria. *Academic Emergency Medicine*, *12*(1), 38–44 7p.

9. Schoeman, S. A., Stewart, C. M. W., Booth, R. A., Smith, S. D., Wilcox, M. H., & Wilson, J. D. (2012). Assessment of best single sample for finding chlamydia in women with and without symptoms: a diagnostic test study. *BMJ*, *345*, e8013. http://doi.org/10.1136/bmj.e8013
10. Stewart, C. M. W., Schoeman, S. A., Booth, R. A., Smith, S. D., Wilcox, M. H., & Wilson, J. D. (2012). Assessment of self taken swabs versus clinician taken swab cultures for diagnosing gonorrhoea in women: single centre, diagnostic accuracy study. *BMJ*, *345*, e8107. http://doi.org/10.1136/bmj.e8107
11. Van Dommelen, L., Dukers-Muijrers, N., van Tiel, F. H., Brouwers, E. E. H. G., & Hoebe, C. J. P. A. (2011). Evaluation of One-Sample Testing of Self-Obtained Vaginal Swabs and First Catch Urine Samples Separately and in Combination for the Detection of Chlamydia trachomatis by Two Amplified DNA Assays in Women Visiting an Sexually Transmitted Disease Clinic: *Sexually Transmitted Diseases*, 1. http://doi.org/10.1097/OLQ.0b013e318205e435
12. Fielder, R. L., Carey, K. B., & Carey, M. P. (2013). Acceptability of Sexually Transmitted Infection Testing Using Self-collected Vaginal Swabs Among College Women. *Journal of American College Health*, *61*(1), 46–53 8p. http://doi.org/10.1080/07448481.2012.750610
13. Berwald, N., Cheng, S., Augenbraun, M., Abu-Lawi, K., Lucchesi, M., & Zehtabchi, S. (2009). Self-administered Vaginal Swabs Are a Feasible Alternative to Physician-assisted Cervical Swabs for Sexually Transmitted Infection Screening in the Emergency Department. *Academic Emergency Medicine*, *16*(4), 360–363. http://doi.org/10.1111/j.1553-2712.2009.00359.x
14. Serlin M, Shafer M, Tebb K, & et al. (2002). What sexually transmitted disease screening method does the adolescent prefer?: Adolescents' attitudes toward first-void urine, self-

collected vaginal swab, and pelvic examination. *Archives of Pediatrics & Adolescent Medicine, 156*(6), 588–591. http://doi.org/10.1001/archpedi.156.6.588

15. Jordan NN, Lee SE, Nowak G, Johns NM, & Gaydos JC. (2011). Chlamydia trachomatis reported among U.S. active duty service members, 2000-2008. *Military Medicine, 176*(3), 312–319 8p.