Impact of Cervical Cancer Screening Guidelines on Screening for Chlamydia

Allison Ursu, MD[1]
Ananda Sen, PhD[1,2]
Mack Ruffin, MD, MPH[1]

[1]Department of Family Medicine, University of Michigan, Ann Arbor, Michigan

[2]Department of Biostatistics, University of Michigan, Ann Arbor, Michigan

ABSTRACT

The highest prevalence of chlamydia infection in the United States is among people aged 15 to 24 years. We assessed the impact of not doing routine cervical cancer screening on the rates of chlamydia screening in women aged 15 to 21 years. We classified visits to family medicine ambulatory clinics according to their timing relative to the 2009 guideline change that led to more restrictive cervical cancer screening. Women had higher odds of being screened for chlamydia before vs after the guideline change (odds ratio = 13.97; 95% CI, 9.17-21.29; $P < .001$). Chlamydia and cervical cancer screening need to be uncoupled and new screening opportunities should be identified.

Ann Fam Med 2015;13:361-363. doi: 10.1370/afm.1811.

INTRODUCTION

There are an estimated 2.8 million new chlamydia infections annually in the United States.[1] The highest rates of infection are among females aged 15 to 24 years.[1] The US Preventive Services Task Force recommends chlamydia screening for sexually active women aged younger than 24 years.[2] According to data from the Healthcare Effectiveness Data and Information Set, the national chlamydia screening rate in 2008 was 44.7%.[3] Clinicians who are comfortable discussing sexually transmitted infections, female, younger, and obstetrician-gynecologists are more likely to order sexually transmitted infection screening.[4]

In 2009, the American College of Obstetricians and Gynecologists recommended beginning cervical cancer screening at age 21.[5] Previously, they had recommended beginning screening 3 years after first sexual intercourse or by age 21, whichever occurred first.[6] Before 2009, chlamydia screening was more likely to be ordered if a Papanicolaou test was being done,[7] but no published data exist after that year. We assessed whether the change in cervical cancer screening guidelines altered rates of chlamydia screening among young women in primary care clinics.

METHODS

A patient population database was used to identify visits by females aged 15 to 21 years to 5 family medicine ambulatory clinics at the University of Michigan. We conducted a repeated cross-sectional study comparing women who made visits between January 1, 2008, and February 28, 2009 (ie, before the guideline change) with women who made visits between January 1, 2011, and February 28, 2012 (ie, after the guideline change). We excluded visits where Papanicolaou and chlamydia testing were likely diagnostic rather than screening, based on the billing diagnosis.

Our primary outcome was completed chlamydia screening. We measured patient age, clinic site, number of visits per patient during the time period, clinician type, and Papanicolaou test completion. Clinician type refers to resident or faculty status; fellows were considered faculty.

We used logistic regression analysis to estimate the odds ratio associ-

AJC *Annals* Journal Club selection; see inside back cover or http://www.annfammed.org/AJC/.

Conflicts of interest: authors report none.

CORRESPONDING AUTHOR

Allison Ursu, MD
1150 W Medical Center Dr
M7300 Medical Science I, SPC 5625
Ann Arbor, MI 48109-5625
awessel@med.umich.edu

Table 1. Characteristics of Study Sample

Characteristic	Pre–Guideline Change Group[a] (n = 1,626)	Post–Guideline Change Group[a] (n = 1,846)
Total visits, No.	4,847	5,005
Age, mean (SD), y	17.7 (1.6)	17.8 (1.7)
Visits per patient, mean (SD) [range], No.	3.0 (2.9) [1-28]	2.7 (2.5) [1-23]
Total Pap tests, No.	394	73
Total chlamydia screens, No.	502	37
Total chlamydia screens when Pap tested, No.	311	4

Pap = Papanicolaou.

[a] Refers to patients seen before vs after the 2009 change in cervical cancer screening guidelines.

ated with possible predictors of chlamydia and cervical cancer screening. The data were analyzed by group before and after the guideline change, as well as a single group. This approach conformed to a repeated cross-sectional design, with separate eligible groups of women analyzed at each time point. A logistic regression analysis was carried out with Papanicolaou screening as outcome and time period (before vs after guideline change) as primary covariate, controlling for age, clinician type (faculty or resident), and clinic site. A similar logistic regression model was fit with chlamydia screening as the dichotomous outcome variable, and time period as the covariate of main interest, controlling for potential confounding by age, number of visits in the 14-month time period, clinic site, clinician type, and completion of Papanicolaou testing. We used Hosmer-Lemeshow goodness of fit tests to perform model diagnostics. SPSS Statistics 21 (IBM Corp) was used for the analysis.[7]

This study was exempted from ethical review by the University of Michigan Institutional Review Board.

RESULTS

Analyses were based on 3,472 female patients aged 15 to 21 who made a total of 9,852 visits. Their characteristics, as well as their total number of Papanicolaou and chlamydia tests, are shown in Table 1.

The unadjusted proportion of patients having a Papanicolaou test was significantly higher (P <.001) before the guideline change (394/1,626 = 24.2%) than after (73/1,846 = 3.9%). Adjusting for age, clinician type, and clinic site, the odds of having this test remained sharply higher before the guideline change (odds ratio = 7.13; 95% CI, 5.38-9.43; P <.001). Similarly, the odds of having a chlamydia screen were significantly higher before vs after the guideline change (odds ratio = 13.97; 95% CI, 9.17-21.29; P <.001). Before the guideline change, 61.9% (311/502) of the chlamydia screens were concurrent with Papanicolaou testing, but after the guideline change, only 10.8% (4/37) were (Table 1). The main results are summarized in Table 2, for both groups combined and stratified by group.

DISCUSSION

After the change in cervical cancer screening guidelines in 2009, there was a significant decrease in chlamydia screening for females aged 15 to 21 years without a decrease in office visits, which others have suggested may lead to less screening.[7] This unintended decrease occurred despite recommendations promoting chlamydia screening and access to noninvasive testing. Our findings are consistent with past research[8] and add to what is known about predictors of chlamydia screening.

This study suggests that we cannot rely on pelvic examinations or cervical cancer screenings as opportunities for chlamydia screening as has been suggested in the past.[9] Chlamydia screening needs to be unlinked from the pelvic examination and cervical cancer screening. The American College of Physicians recently recommended against performing a screening pelvic examination in nonpregnant, asymptomatic women.[10] This recommendation may affect chlamydia

Table 2. Predictors of Chlamydia Screening

Predictor	Both Groups		Pre–Guideline Change Group[a]		Post–Guideline Change Group[a]	
	Odds Ratio (95% CI)	*P* Value	Odds Ratio (95% CI)	*P* Value	Odds Ratio (95% CI)	*P* Value
Number of visits	1.25 (1.20-1.29)	<.001	1.30 (1.24-1.35)	<.001	1.06 (0.94-1.19)	.37
Concurrent Pap test	73.43 (54.27-99.36)	<.001	90.83 (65.09-126.73)	<.001	12.25 (3.78-39.66)	<.001

Pap = Papanicolaou.

[a] Refers to patients seen before vs after the 2009 change in cervical cancer screening guidelines.

screening rates in a way similar to that of the change in cervical cancer guidelines.

This study had several limitations. It was conducted in a single department at a single academic center, we did not have access to patient demographic information or clinician sex, and the data contained only completed tests, not all the tests that were ordered.

We need to identify new opportunities for screening and put into place standard workflows that will maximize screening in this population. Current efforts to improve rates of chlamydia screening are promising,[11] but more needs to be done to improve this quality measure.

To read or post commentaries in response to this article, see it online at http://www.annfammed.org/content/13/4/361.

Key words: chlamydia screening; cervical cancer screening; sexually transmitted infection screening; Papanicolaou test; primary care

Submitted November 20, 2014; submitted, revised, April 6, 2015; accepted April 21, 2015.

Previous presentations: Michigan Family Medicine Research Day, May 22, 2014, Cleary University, Howell, Michigan; Department of Family Medicine Research Day, May 15, 2014, University of Michigan, Ann Arbor, Michigan.

Acknowledgments: We would like to acknowledge Lee A. Green, MD, MPH of the University of Alberta whose aid in retrieving the data for this project was invaluable.

References

1. Centers for Disease Control and Prevention. *Incidence, Prevalence, and Cost of Sexually Transmitted Infections in the United States*. Atlanta, GA: US Department of Health and Human Services; 2013.
2. LeFevre ML; U.S. Preventive Services Task Force. Screening for chlamydia and gonorrhea: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med*. 2014;161(12):902-910.
3. Centers for Disease Control and Prevention. *Chlamydia Screening Percentages Reported by Commercial and Medicaid Plans by State and Year*. Atlanta, GA: US Department of Health and Human Services; 2011.
4. Skala SL, Secura GM, Peipert JF. Factors associated with screening for sexually transmitted infections. *Am J Obstet Gynecol*. 2012;206(4):324.e1-6.
5. ACOG Committee on Practice Bulletins—Gynecology. ACOG Practice Bulletin no. 109: cervical cytology screening. *Obstet Gynecol*. 2009;114(6):1409-1420.
6. American College of Obstetricians and Gynecologists Committee on Adolescent Health Care. ACOG Committee Opinion #300: Cervical cancer screening in adolescents. *Obstet Gynecol*. 2004;104(4):885-889.
7. Tao G, Hoover KW, Kent CK. 2009 cervical cytology guidelines and chlamydia testing among sexually active young women. *Obstet Gynecol*. 2010;116(6):1319-1323.
8. *IBM SPSS Statistics for Windows* [computer program]. Armonk, NY: IBM Corp; 2012.
9. Oakeshott P, Kerry S, Hay S, Hay P. Opportunistic screening for chlamydial infection at time of cervical smear testing in general practice: prevalence study. *BMJ*. 1998;316(7128):351-352.
10. Qaseem A, Humphrey LL, Harris R, Starkey M, Denberg TD; Clinical Guidelines Committee of the American College of Physicians. Screening pelvic examination in adult women: a clinical practice guideline from the American College of Physicians. *Ann Intern Med*. 2014;161(1):67-72.
11. Kettinger LD. A practice improvement intervention increases chlamydia screening among young women at a women's health practice. *J Obstet Gynecol Neonatal Nurs*. 2013;42(1):81-90.