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# Compliance with cervical cancer screening guidelines in young female patients: rates and trends of screening in New Haven County, CT



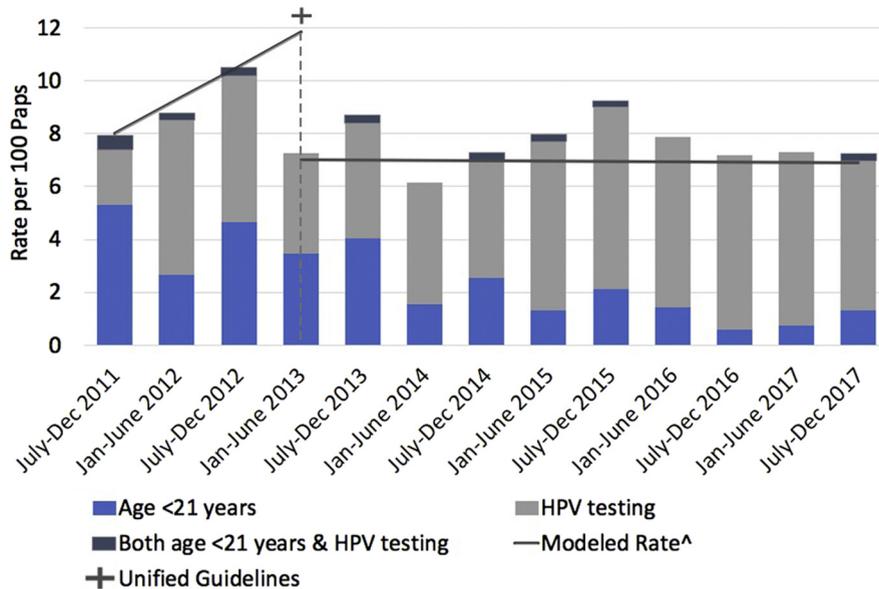
**OBJECTIVE:** In 2012, updated guidelines on the prevention and early detection of cervical cancer were released after a collaborative consensus process that involved 25 professional societies.<sup>1</sup> These guidelines maintained that cervical cancer screening with cytologic testing (known as Papanicolaou [Pap] test) in women <21 years of age and human papillomavirus (HPV) testing for high-risk genotypes in women <30 years of age provided a marginal to no net benefit.<sup>2</sup> Although individual organizations previously had released guidelines

based largely off of the same body of evidence, concordance did not exist between the recommendations before 2012.<sup>3</sup> The objective of the current analysis was to investigate how the rates of unindicated cervical cancer screening for adolescents and young adults changed in response to the release of the 2012 consensus guidelines.

**STUDY DESIGN:** Results of cervical cancer screening were reviewed from 2 large outpatient gynecology practices

## FIGURE

## Rate of unindicated screening over time in women 18–24 years of age



This model fits the biannual rate of unindicated screening to a generalized least-squares regression model that included time series variables (pre-guidelines slope, level change on the date of introduction, and change in slope in the post-guidelines period), serially correlated standard errors, and a first-order autoregressive function. The post-guidelines period was defined as any date after January 1, 2013 (6 months after introduction), and the pre-guideline period was defined as any date before January 1, 2013.

HPV, human papillomavirus; Paps, Papanicolaou test results.

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(1 academic and 1 community practice) in New Haven County, CT. Reports were included if the specimens were collected from female patients aged 18–24 years between July 1, 2011 and December 30, 2017. A computer algorithm was used to extract the primary diagnosis of each specimen with a series of if-then rules, word libraries, and negation terms, as previously described.<sup>4</sup> Each Pap test result was further categorized as indicated vs unindicated based on the consensus guidelines (unindicated by age: patient <21 years of age and HIV-negative [Pap tests were appropriate if there was an abnormal antecedent Pap or biopsy] or unindicated by HPV test: HPV test was ordered and cytologic evidence not atypical squamous cells of undetermined significance). The rate of unindicated screening was calculated as the ratio of unindicated screening tests to the total number of screening tests performed every 6 months. The impact of the consensus guidelines on the rate of unindicated screening was estimated with the use of an interrupted time-series model.<sup>5</sup>

**RESULTS:** A total of 4635 screening results were reviewed between the 2 practices (academic, 2374; community, 2261). Of which, 8% (n=368) were unindicated by either age (n=110), HPV test (n=249), or both (n=9). Most of the women who were screened were identified as either Hispanic (23%), white

(34%), black (29%), or other (14%). The median age was 22 years (range, 18–24 years). Ordering providers were more likely to have been gynecology physicians in the academic practice than in the community practice (31% vs 18%, respectively;  $P<.05$ ). During the pre-guidelines period, 97 of 1077 screening tests were unindicated (51% of which were unindicated by age). During the pre-guidelines period, the rate of unindicated screening had an upward trend (+1.28 every 6 months;  $P<.01$ ). In the post-guidelines period, there was a significant trend reversal, mostly because of a lower proportion of unindicated screening in women <21 years old (Figure). The rate of decline in post-guidelines period was 4.8 times higher in the community practice compared with academic (−3.2 vs −0.7;  $P=.02$ ). Unindicated HPV testing did not significantly decrease over time. Relative to the pre-guidelines period, the rate of unindicated screening of women <21 years old was 78% lower in the last year of observation. Most unindicated Pap test results (64%) were negative for intraepithelial lesions. Between the 2 practices, 182 biopsies were performed, of which, 33 (18.1%) followed an unindicated Pap test.

**CONCLUSION:** These data suggest that the rate of unindicated screening of women <21 years old declined after the consensus guidelines were published in 2012, especially among community-

based providers. It is unclear why these trends were seen, perhaps it is due to the guideline's broader dissemination or due to the harmonization of recommendations between multiple professional societies. Although unindicated screening of women <21 years old substantially decreased, there is still much room for improvement concerning the over-use of HPV testing. As the incorporation of HPV-based testing and other technologies for cervical cancer screening increases, efforts to ensure evidence-based usage of tests remains critical. ■

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