OBSERVATION: BRIEF RESEARCH REPORT

Rethinking How to Measure the Appropriateness of Cervical Cancer Screening

Background: Health care systems use performance measures based on guidelines from such organizations as the American College of Obstetricians and Gynecologists to monitor the appropriateness of cervical cancer screening. According to the performance measure currently in the Healthcare Effectiveness Data and Information Set, satisfactory cervical cancer screening involves at least 1 Papanicolaou (Pap) test every 3 years for average-risk women aged 21 to 64 years or at least 1 Pap and human papillomavirus test every 5 years for average-risk women aged 30 to 64 years (1). These performance measures have notable flaws. They do not allow for brief and clinically nonsignificant delays in screening. For example, a 29-year-old woman 3 years and 1 day after her last screening is considered nonadherent. These measures also fail to recognize overscreening. For example, an average-risk woman screened 3 times in 3 years is considered adherent despite evidence showing no benefit and potential harms of overscreening due to unnecessary follow-up procedures and other treatments (2).

Objective: To show how changes in the performance measures for cervical cancer screening can address these 2 flaws.

Methods and Findings: We determined how frequently screening practices were adherent to traditional performance measures and to alternative measures that incorporated 2 changes. We accepted existing categories of underscreening and appropriate screening and added a new category for overscreening that applied when intervals between screenings were shorter than guideline-recommended ones. We also replaced the single interval for adherence with ranges (± 3 months and ± 6 months).

To calculate actual frequencies, we used Pennsylvania Medicaid administrative data for women aged 18 to 64 years between 2007 and 2013. We used 2009 American College of Obstetricians and Gynecologists guidelines, because our data did not provide enough follow-up information to use more recent guidelines. The 2009 guidelines recommended beginning Pap testing at age 21 years and screening at 2-year intervals for women younger than 30 years and at 3-year intervals for women aged 30 years or older (3).

To ensure adequate follow-up information, we required continuous enrollment of at least 3 years among women younger than 30 years and at least 4 years among women aged 30 years or older and included only women who had an initial Pap test during the 6 months after November 2009, the month that the guidelines were released. We excluded women who did not have at least 1 office visit; were dually enrolled in Medicare; and had preexisting conditions requiring different screening frequencies, such as cervical cancer, abnormal findings on cervical cytologic evaluation, total hysterectomy, HIV, and immunosuppression.

We classified 27 076 screening intervals among 14 786 women using traditional and alternative measures. According to traditional measures, 29% of intervals among women younger than 30 years and 35% of intervals among women aged 30 years or older represented underscreening (Table). Most intervals that were appropriate under traditional measures were classified as overscreening under alternative ones. After we incorporated ranges of ± 3 months and ± 6 months, underscreening declined slightly; however, most intervals still represented overscreening.

Table. Percentage of Intervals, by Category of Adherence and Type of Performance Measure*

Category of Adherence	Type of Performance Measure			
	Traditional†	Alternative‡		
		0 Mo	±3 Mo	±6 Mo
Women <30 y				
Underscreening	29	29	26	24
Appropriate screening	71	0	6	11
Overscreening	0	71	68	65
Women ≥30 y				
Underscreening	35	35	34	32
Appropriate screening	65	0	3	7
Overscreening	0	65	63	61

* Values are percentages.
† This measure has a single interval and does not recognize overscreening.
‡ This measure replaces the single interval with ranges and recognizes overscreening, which occurs when intervals between Papanicolaou tests are shorter than guideline-recommended intervals.

Discussion: We observed an up to 11% increase in appropriate cervical cancer screening when including 6-month ranges instead of a single interval in the definition of performance measures. We believe that incorporating this flexibility is reasonable and unlikely to negatively affect health. Most important, we found that most Pap screening classified as appropriate actually represented overscreening, even when adding ranges to the adherence intervals.

Current performance measures that classify overscreening as appropriate may incentivize providers to overscreen, to the detriment of patients and the health care system. We believe that changing cervical cancer screening performance measures to align better with clinical guidelines will help reduce the frequency of unnecessary procedures (4, 5) and more accurately measure the quality of women's health care.

Natasha K. Parekh, MD, MS
Julie M. Donohue, PhD
Aiju Men, MS
Jennifer Corbelli, MD, MS
Marian Jarlenski, PhD, MPH
University of Pittsburgh
Pittsburgh, Pennsylvania

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