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Are uninsured women in a national screening program having longer intervals between cervical cancer screening tests?

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Abstract

With increased understanding of the natural history of cervical cancer, cervical cancer screening recommendations have evolved (Schiffman & Wentzensen, 2013). As research better quantified the balance of benefits and harms of screening, new recommendations called for longer intervals between screening tests. Adherence to longer screening intervals detects similar numbers of abnormalities and decreases harms associated with overscreening/overtreatment. In this descriptive study, we examined the cervical cancer screening intervals from 2010 to 2018 in the National Breast and Cervical Cancer Early Detection Program (NBCCEDP). There were 1,397,899 women aged 21–64 who were screened for cervical cancer from 2010 to 2018 and 556,743 rescreenings of average risk women were performed. The median cervical screening interval increased from 2.02 years in 2010 to 3.88 years in 2018. Providers serving uninsured women in a national screening program are following the recommendations of longer intervals between cervical cancer screenings.

Keywords

Cervical cancer; Cancer screening; Pap tests; Human Papillomavirus

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Credit authorship contribution statement

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Declaration of competing interest

None.

1. Introduction

With increased understanding of the natural history of cervical cancer, cervical cancer screening recommendations have evolved (Schiffman and Wentzensen, 2013). As research better quantified the balance of benefits and harms of screening, new recommendations called for longer intervals between screening tests (Saslow et al., 2012). In 2003, the United States Preventive Services Task Force (USPTF) recommended Pap test screening at least every 3 years; however, the American Cancer Society (ACS) and the American College of Obstetricians and Gynecologists (ACOG) recommended annual Pap test screening in 2002 and 2003, respectively. In 2012, cervical cancer screening recommendations from USPSTF, ACS, and ACOG harmonized to include (when screening tests are normal): (l)Pap test every 3 years for women aged 21–65 or 2) Pap test combined with human papillomavirus (HPV) test every 5 years for women aged 30–65 (co-testing) (Saslow et al., 2012). In 2018, the USPSTF released an updated recommendation for Pap test alone every 3 years for 21–65 or HPV testing (with or without a Pap test) every 5 years for women 30–65 years (US Preventive Services Task Force, 2018). Adherence to recommendations for longer screening intervals results in detection of similar numbers of abnormalities but with fewer harms and lower costs associated with overscreening (Saslow et al., 2012). Most studies on cervical cancer practices continue to show that providers are screening women more frequently than recommended (Corbelli et al., 2014; Roland et al., 2011). To assess consistency with current recommendations, we examined Pap test screening intervals in the National Breast and Cervical Cancer Early Detection Program (NBCCEDP), a national program for medically underserved women (US Preventive Services Task Force, 2018).

2. Methods

We analyzed data from the National Breast and Cervical Cancer Early Detection Program (NBCCEDP), which operates in 50 states, the District of Columbia, 6 territories and with 13 tribes. The NBCCEDP provides low-income, uninsured, and underserved women access to timely cervical cancer screening and diagnostic services (National Breast and Cervical Cancer Early Detection Program, 2017). NBCCEDP awardees submit a standardized record on every screening encounter provided through the program. Each record describes a screening cycle that starts with a screening test and tracks women through any follow-up of abnormal findings needed to complete diagnostic evaluation and initiate treatment (Yancy et al., 2015). From 2010 to 2018, we examined whether cervical cancer screening intervals met the 2012 recommendations of three year retesting following a negative Pap test for women aged 21–65 years and five year retesting following a negative HPV and Pap cotest for women aged 30–65 years (US Preventive Services Task Force, 2018). Co-testing in this analysis was defined as a Pap test with an HPV test within 30 days of the Pap test. To be considered rescreened in a program year, a woman had to have a Pap test with any result, as well as a preceding negative Pap test. To calculate the rescreening interval, we determined the difference (in years to two decimal places) between the date of the current (rescreening) test and the date of the most recent screening test that preceded it. There was no possibility of double counting rescreening tests as each rescreen was associated with a program year based on the date of the rescreening Pap test. If a woman was screened outside of the program, then the length of time between the two visits would be reported.

Every interval of time between screening tests was included in the analysis. A woman could have multiple tests during the study period. We calculated the median number of years to rescreening for each program year from 2010 to 2018. For all Pap tests and non co-test Paps, the longest rescreen interval is just under 19 years, while for co-tests the longest interval is just under 6 years. We also calculated quartiles to present a range of values around the median number of years. We created a product-limit failure curve using Kaplan-Meier methods to measure time to rescreening for program years 2010–2018 (Kuhfeld and Ying, 2013). All analyses were performed using Proc LIFETEST with SAS 9.4 (TS1M4) (SAS Institute Inc., Cary, NC).

3. Results

In the National Breast and Cervical Cancer Early Detection Program (NBCCEDP), 1,397,899 women had cervical cancer screening from 2010 to 2018. During this period, 1,375,476 Pap tests were performed for women at average risk, including 566,743 rescreens. Pap tests preceded 550,503 of these rescreens, while co-tests preceded 16,240. From 2010 to 2018, the median number of years since the previous cervical cancer screening (Pap tests and co-tests combined) steadily increased from 2.02 to 3.88 years (Fig. 1). The failure curve shows that over time, later program years continue to have lower screening percentages implying that intervals are increasing over time (Fig. 1). From 2010 to 2018, Pap test only intervals increased from 2.02 to 4.06 while co-testing intervals increased from 1.16 to 3.09. (data not shown).

4. Discussion

We found that cervical cancer rescreening intervals in the NBCCEDP have increased from 2010 to 2018, generally aligning with current Pap test screening recommendations. Median intervals were generally stable from 2010 to 2012 and then increased steadily from 2013 to 2018 which could indicate that cervical screening recommendations were being followed after the alignment of recommended screening intervals from national organizations. This is important because rescreening after longer intervals decreases the potential for adverse outcomes such as false positives as well as overdiagnosis and potentially costly or harmful work ups that follow. Rescreening after longer intervals also increases the program's efficiency, allowing it to screen more women without increasing resource use. A limitation of this study is some women may have been tested outside of the program or may not have returned for screening at all. The NBCCEDP does not have information on how often this may occur. Additionally, we found that later program years had median intervals longer than three years. Co-testing intervals increased to 3.09 by 2018 but did not increase as quickly as Pap test intervals. Pap test only intervals did increase to exceed the three year recommendation, while co-test intervals increased but did not meet the five year recommendation. However, co-testing intervals started out lower and the time period is limiting for our data. Almost 60% of Pap tests during the study period are first-time Paps for a woman. Of those that are co-tests, 85% are from 2014 and later. It is possible that given more time some of these women would eventually have rescreens, which would help lengthen intervals much closer to the target.

The NBCCEDP has provided extensive educational opportunities, created policies to improve the use of evidence-based recommendations and will continue to monitor changes in cervical cancer screening practices using data from the program. Our analysis using NBCCEDP mirrors the trends found in self-reported Pap tests showing increased intervals over time (Watson et al., 2017). With USPSTF cervical screening recommendations now including HPV testing alone as one of the test options, NBCCEDP should be able to track if providers are screening women with this testing method. The NBCCEDP's long-standing goal is to provide high quality care consistent with current USPSTF recommendations to avoid under- or over-testing. Attaining and maintaining this goal could contribute to the continuing decline in cervical cancer incidence, morbidity, and mortality (Centers for Disease Control and Prevention, 2019).

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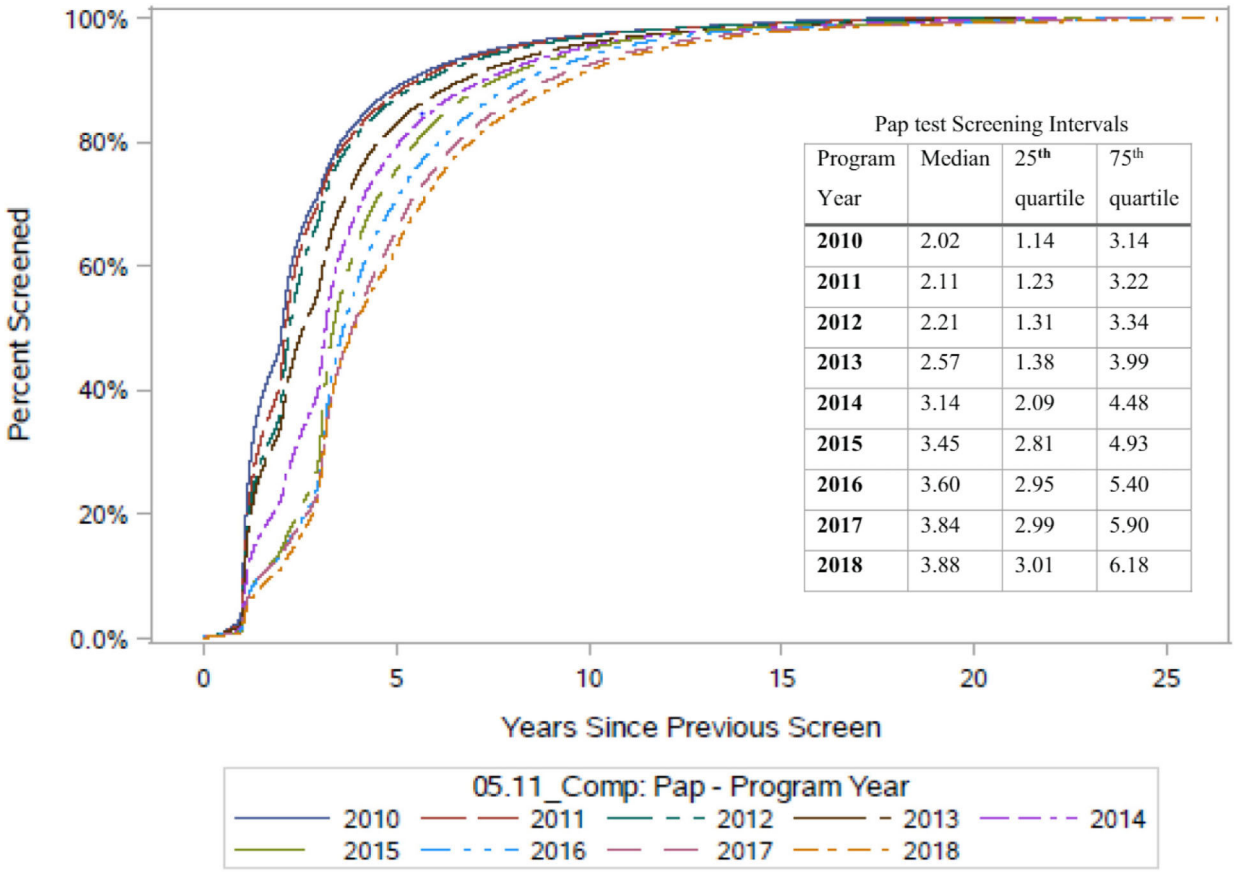

Pap test Screening Intervals

Program Year	Median	25th quartile	75th quartile
2010	2.02	1.14	3.14
2011	2.11	1.23	3.22
2012	2.21	1.31	3.34
2013	2.57	1.38	3.99
2014	3.14	2.09	4.48
2015	3.45	2.81	4.93
2016	3.60	2.95	5.40
2017	3.84	2.99	5.90
2018	3.88	3.01	6.18

Fig. 1.

Kaplan-Meier screening percentage estimates for time since previous cervical cancer screening, National Breast and Cervical Cancer Early Detection Program, Program Year (PY) 2010–2018 *Should be used in color.