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Trends in the use of cervical cancer screening tests in a large medical claims database, United States, 2013–2019

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Abstract

Objective.—To examine trends in the use of cervical cancer screening tests during 2013–2019 among commercially insured women.

Methods.—The study population included women of all ages with continuous enrollment each year in the IBM MarketScan commercial or Medicare supplemental databases and without known history of cervical cancer or precancer (range = 6.9–9.8 million women per year). Annual cervical cancer screening test use was examined by three modalities: cytology alone, cytology plus HPV testing (cotesting), and HPV testing alone. Trends were assessed using 2-sided Poisson regression.

Results.—Use of cytology alone decreased from 34.2% in 2013 to 26.4% in 2019 among women aged 21–29 years ($P<.0001$). Among women aged 30–64 years, use of cytology alone decreased from 18.9% in 2013 to 8.6% in 2019 ($P<.0001$), whereas cotesting use increased from 14.9% in 2013 to 19.3% in 2019 ($P<.0001$). Annual test use for HPV testing alone was below 0.5% in all age groups throughout the study period. Annually, 8.7%–13.6% of women aged 18–20 years received cervical cancer screening. There were persistent differences in screening test use by metropolitan residence and census regions despite similar temporal trends.

Conclusions.—Temporal changes in the use of cervical cancer screening tests among commercially insured women track changes in clinical guidelines. Screening test use among

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Disclaimers

The findings and conclusions in this article are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ygyno.2021.08.023.

individuals younger than 21 years shows that many young women are inappropriately screened for cervical cancer.

Keywords

Cervical cancer screening; Cytology; HPV test; Trends; Screening guidelines

1. Introduction

During the past two decades, guidelines and recommendations for cervical cancer screening have evolved considerably, influenced by a better understanding of the causal role of infection with high-risk human papillomavirus (HPV) types and improvements in screening test technology. Major changes have included lengthening the screening intervals, inclusion of HPV testing in screening protocols, and raising the age to begin screening. The recommended screening methods and intervals depend on age and risk level. For average-risk women, the recommended screening strategies have changed from cytology alone (Papanicolaou, or Pap test) in earlier years to cytology plus HPV testing (cotesting) as an added option in 2012, and then to HPV testing alone (primary HPV testing) in more recent years (Fig. 1) [1-8].

To add complexity, guidelines and recommendations issued by various professional organizations are not always consistent. For example, the 2012 US Preventive Services Task Force (USPSTF) recommendation endorsed cotesting in addition to cytology alone among women aged 30–65 years; however, the recommendation made no statement about whether one should be preferred over another [3]. The guidelines published by the American College of Obstetricians and Gynecologists (ACOG) [2] and the American Cancer Society (ACS) [4] in the same year stated that cotesting was preferred to cytology alone. In 2018, the USPSTF endorsed HPV testing alone every 5 years among women aged 30–65 years stating that it is equally preferred to cytology alone every 3 years; cotesting every 5 years was deemed an alternate screening strategy among women aged 30–65 years [7]. It is unknown whether and how these guidelines and recommendations have affected screening test use during this period.

Monitoring changes in the approach to cancer screening can provide important insights into the effect of guidelines on clinical practice. In the absence of a national or state medical database of cancer screening, surveillance of cervical cancer screening in the United States mainly relies on health surveys such as the National Health Interview Survey (NHIS) and the Behavioral Risk Factor Surveillance System (BRFSS). These surveys have served as valuable tools for estimating cervical cancer screening coverage at the national and state levels; however, the self-reported survey data can be inaccurate [9,10]. In addition, multiple testing options for cervical cancer screening have posed cognitive challenges by using survey questions. For example, about 1 in 5 women (18%) in 2019 NHIS reported not knowing whether they had an HPV test at their most recent cervical cancer screening [11], and nearly 1 in 4 women (23%) in 2018 BRFSS reported not knowing or not sure if they ever had an HPV test [12]. Alternative data sources such as medical claims or electronic health records can circumvent limitations of self-reported data and provide another method

of monitoring changes in the use of various screening tests. However, information for cervical cancer screening in the United States from objective data sources is limited to earlier years, local data, or certain age group [13-17].

We examined the use of cervical cancer screening tests in the years following publication of more recent screening guidelines and recommendations by various professional organizations. Using medical claims data, we analyzed cervical cancer annual screening trends from 2013 to 2019 by age group and screening modality and examined geographic variations in screening test use.

2. Methods

We analyzed medical claims data from the IBM Watson MarketScan® commercial database and the MarketScan Medicare supplemental database from January 1, 2013 through December 31, 2019, encompassing 7.3 to 10.4 million women with continuous enrollment in each calendar year during this period. The MarketScan commercial database is a nationwide convenience sample of employer-sponsored private health insurance plans from more than 160 contributing employers and 40 contributing health plans, which includes enrolled employees and their covered spouses and dependents [18]. Enrollees are covered under a variety of fee-for-service and fully and partially capitated health plans. The MarketScan Medicare supplemental database includes Medicare beneficiaries who have supplemental insurance paid by their employers, which is only a small proportion of all Medicare beneficiaries. Both databases include outpatient and inpatient encounters with diagnosis and procedure codes. Encounters in MarketScan databases reflect fully paid or adjudicated claims only. We accessed both MarketScan databases via an online analytic platform called Treatment Pathways [19]. MarketScan data are deidentified, and Treatment Pathways only output aggregated results; thus, approval by an institutional review board was waived.

To estimate annual screening test use, we included all women who were continuously enrolled in a health insurance plan for 12 months in each year. Next, by using relevant diagnosis and procedure codes (Appendix 1), we excluded women with no cervix (total hysterectomy), and those who had a history of precancer (cervical intraepithelial neoplasia grades 2 or 3) or invasive cervical cancer, or women who had treatment procedures for precancer such as loop electrical excision procedure. The purpose was to exclude women who had cervical cytology or HPV testing for reasons other than routine cancer screening, using available data as early as January 1, 2013.

We calculated the use of cervical cancer screening tests in a given year as the percentage of women who were screened among women who were eligible for screening after applying the inclusion and exclusion criteria. Cervical cancer screening was identified by using medical codes of cervical cytology or HPV testing (Appendix 2). We analyzed three screening modalities in each calendar year from 2013 through 2019: (1) at least one cytology but no HPV testing (cytology alone) in a given calendar year; (2) at least one HPV test but no cytology (HPV testing alone) in a given calendar year; and (3) cotesting, which we defined as cytology plus HPV testing within 3 days before or 30 days after the date of cytology test. The unit of analysis was person. These categories are mutually exclusive, and

each woman was either not screened or screened using one of the three modalities regardless of how many tests she had in a year. We estimated annual screening test use to examine temporal trends, which is a different outcome from up-to-date screening (e.g., percentage of women screened in the past 3 years) commonly used to study screening coverage.

Screening test use was stratified by eight age groups, metropolitan residence status, and the four US Census regions (www.census.gov/prod/1/gen/95statab/preface.pdf). The metropolitan and nonmetropolitan areas were delineated by the Office of Management and Budget [20]. Percent changes in screening test use from 2013 to 2019 were determined by subtracting the percentage in 2019 from that in 2013 and dividing the result by the percentage in 2013. Trends in cervical cancer screening percentage during 2013–2019 were analyzed by using a 2-sided Poisson regression adjusted for potential overdispersion.

3. Results

The study population (after applying inclusion and exclusion criteria) ranged in size from 9.8 million individuals in 2013 to 6.9 million individuals in 2019 (Table 1). Among the study population from 2013 to 2019, 25.6%–28.3% were younger than age 21 years, 9.9%–11.9% were aged 21–29 years, 52.5%–54.4% were aged 30–64 years, and 5.4%–12.0% were aged 65 years or older. Metropolitan residence distributions of the population were stable from 2013 to 2019, with the proportion of those residing in metropolitan areas ranging from 87.6% to 88.6%. Approximately 37%–43% resided in the South, 22%–25% resided in the Midwest, 16%–19% resided in the Northeast, and 13%–22% resided in the West. These regional population distributions were comparable to the distributions reported by the US Census Bureau (data not shown).

Among women aged 21–29 years, use of cytology alone decreased from 34.2% in 2013 to 26.4% in 2019, a 23% decrease ($P < .0001$, Fig. 2A). During the same period, annual test use hovered around 6% for cotesting and was below 0.3% for HPV testing alone. Among women aged 30–64 years, use of cytology alone decreased by 54%, from 18.9% in 2013 to 8.6% in 2019 ($P < .0001$, Fig. 2B), and cotesting use increased from 14.9% in 2013 to 19.3% in 2019, a 29% increase ($P < .0001$). Use of HPV testing alone among women aged 30–64 years increased from 0.2% in 2013 to 0.4% in 2019 ($P = .002$).

Cervical cancer screening test use decreased among women aged younger than 21 years from 2013 to 2019 (Table 2). However, of women aged 18–20 years, 9.0% still received some form of cervical cancer screening in 2019. Decreasing trend of cytology use was observed in both the 21–24 and 25–29 age groups ($P < .0001$). Cotesting use in a year was 4.1%–4.7% among women aged 21–24 years and 7.4%–8.2% among women aged 25–29 years during the study period.

Among women aged 30–64 years, the decreasing trend of cervical cancer screening using cytology alone and the increasing trend of cotesting were similar in metropolitan and non-metropolitan areas (Fig. 3). However, cotesting use was consistently higher among women residing in metropolitan areas compared with women in nonmetropolitan areas, whereas use of cytology alone was consistently higher among women residing in nonmetropolitan areas

compared with those in metropolitan areas. During 2013–2019, cervical cancer screening using cytology alone was the highest in the South and the lowest in the West, and cotesting use was the highest in the Northeast and the lowest in the Midwest (Fig. 4). The trends in cytology only and cotesting use were similar across the four US regions.

4. Discussion

We found that use of cytology alone declined whereas use of cotesting rose from 2013 to 2019; these temporal trends align well with the newer guidelines and recommendations for women aged 30–65 years which recommended cotesting as either an option or a preferred strategy starting in 2012 (Fig. 1). After FDA approved the first HPV test for primary screening in 2014, the interim guidance by the American Society of Colposcopy and Cervical Pathology (ASCCP) in 2015, the ACOG guideline in 2016, and the USPSTF recommendation in 2018 all recommended HPV testing alone as an option. However, given the limited time following the recommendation, use of HPV testing alone remained low. With the 2020 ACS guideline suggesting that primary HPV testing alone is the preferred screening method and ACOG endorsing primary HPV testing in 2021 [21], we may see an increased use of this strategy with time.

We found potential over-screening among adolescents and young women younger than age 21 years. Even though screening test use decreased from 2013 to 2019, 9.0% of women aged 18–20 years received cervical cancer screening in 2019, which was not recommended for this age group. This finding is consistent with a recent study using nationally representative data, which estimated that 2.2 million adolescent girls and young women younger than age 21 received a Pap test in a single year, and 71.9% of these tests were potentially unnecessary [22]. These findings may be related to several reasons including evolvement of guidelines regarding when to start screening, historic and long-standing medical practices, knowledge and misunderstanding in health care providers and women [22]. Interventions at system level (e.g., health insurance reimbursement policy, electronic health record alert) could disincentivize and remind providers of unnecessary tests, and education (e.g., continuing medical education credits) could help health care professionals to stay current with the research and updates in professional guidelines.

A decreasing trend in use of cytology alone among women aged 21–29 years has been reported previously [23,24], and we showed a continuation of this trend through 2019. The decline may be attributable to several factors. Guidelines and recommendations state cytology alone every 3 years among women aged 21–29 years, including those who had received HPV vaccination, given the uncertainties of the vaccine's long-term efficacy. Emerging evidence has shown a decline in cervical precancer and cancer among women younger than age 30 years, likely as a result of the implementation of HPV vaccine [13,25]. Studies have reported mixed results about the relation between HPV vaccine and cervical cancer screening uptake. Some have reported declines in Pap testing after women receive the HPV vaccine [26,27]. Others have demonstrated that young women who received HPV vaccine are more likely to get subsequent cervical cancer screening [28,29]. The HPV vaccination coverage among US youth has increased steadily since its inception in 2006 [30], whereas cytology screening has decreased among young women during the same

period, as demonstrated in this and other studies. We found a 30% decline of cytology screening among women aged 25–29 years and a 16% decline among women aged 21–24 years from 2013 to 2019. The ACS raised the age to initiate screening at 25 years on the basis of an assessment of the benefit-to-harm balance [8]. The ongoing investigation of the effect of HPV vaccine on cervical precancer and cancer could provide important data for future screening guidelines and recommendations.

Another potential reason for the decline in use of cytology alone may be related to extended screening interval. An annual or biennial Pap test was recommended and commonly practiced before 2012 [1,15]. The recommendation extending Pap test interval to every 3 years in 2012 could lead to a decrease in annual use percentage, although similar trends in cytology alone and cotesting during 2005–2014 have been reported in a previous study using the same data source examining test use in 3-year intervals [24]. More in-depth research examining adherence to the recommended screening intervals could help us understand the observed trends.

The low uptake of HPV screening alone during 2013–2019 among commercially insured women may be related to several factors, including access to FDA-approved primary HPV tests, clinician and patient acceptance and preference, easily implementable and evidence-based management advice, and system-based approaches to help clinicians implement optimal care [31]. Currently, only two HPV tests (Roche Cobas and BD Onclarity) are approved by the FDA for primary screening, available in a limited number of US laboratories. Transition from cytology or cotesting-based laboratory platforms and screening protocols to primary HPV testing will take time and financial resources [8]. It has been shown that both awareness and acceptance of primary HPV testing was low among US women [32]. Many women are concerned about HPV testing without a Pap test, as well as the extension of screening interval to once every 5 years [33]. However, women are more willing to get the HPV test if a provider recommends it, and if women are following current cervical cancer screening guidelines [34], which underscores the importance of continued educational efforts. The 2019 ASCCP evidence-based management guidelines updated guidance for the management of a positive result from primary HPV screening [35], adding another critical component to implement primary HPV testing. On the other hand, the complexity of the management algorithms has the potential to challenge systems charged with coordinating followup visits and ensuring high-quality services, especially when multiple screening strategies are used [36]. Clinicians will need greater infrastructure to access prior test results along with decision support systems to generate management recommendations [31].

This study showed a sustained difference in uptake of cotesting and cytology screening by metropolitan residence and by the four US regions, where metropolitan areas and the Northeast region had higher use of cotesting compared with other geographic areas. Higher cervical cancer incidence and mortality in rural areas compared with urban areas have been well-documented [37]. However, few have studied rural–urban disparities in cervical cancer screening. An analysis of BRFSS data from 1994 through 2004 showed that rural women were less likely to receive a Pap test than women in metropolitan areas, but after adjusting for socioeconomic and demographic characteristics the rural-urban differences no longer

existed [38]. Our findings are consistent with another study using the 2016 BRFSS, which showed that cotesting prevalence varied substantially by state and was generally lower in the Midwest and South than the Northeast [39].

The biggest strength of this study is the large sample size, with millions of women from geographic regions with similar distributions to the US general population. We were able to examine three different screening modalities separately, including the HPV testing alone, which has not been reported previously. This study also has several limitations. First, women in the MarketScan database are from a convenience sample of individuals who had commercial health insurance through mostly large employers; thus, the results do not represent under- or uninsured women, those with public health insurance, or the entire commercially insured population. Studies have shown that women who are un–/under-insured and those with only public insurance have a lower percentage of receiving cervical cancer screening compared with those who have private health insurance [40]. In addition, access to FDA-approved HPV testing is higher in locations with greater resources (e.g., hospital/medical centers and commercial laboratories) compared with lower resource settings (e.g., public health laboratories) [8]. Second, this study did not analyze screening intervals or up-to-date screening. Further investigation on screening intervals using health records, claims, or local screening registry could shed light on whether women are getting screened at the appropriate time to avoid under- or over-screening. Third, we were only able to examine a woman's medical history when she was in the database during the study period. Although we excluded women who had known history of precancer and invasive cancer, it is possible that some tests considered as screening were for surveillance (e.g., women with previous abnormal screening results). Fourth, there could be misclassification in the identification of screening modalities. For example, some women screened with cytology alone who have minimal abnormality test results (e.g., atypical squamous cells of undetermined significance or ASC-US) may have additional (reflex) HPV testing for test result management. Without knowing test results, we cannot distinguish reflex testing from cotesting. However, the misclassification is believed to be similar across the years, and only a small fraction of women would have had reflex HPV testing [41]; therefore, an important effect on observed temporal trends is unlikely.

In summary, using medical claims data from millions of commercially insured women, we described cervical cancer screening trends from 2013 to 2019 by different modalities and age groups. Specifically, we found that from 2013 to 2019, use of cytology alone decreased among women aged 21–64 years, and use of cotesting increased among women aged 30–64 years. There was little uptake of primary HPV screening among all age groups. Cervical cancer screening guidelines and recommendations are expected to continue evolving with growing scientific data, changing testing technology and regulatory landscapes, and more HPV-vaccinated population entering screening. The transition from current cytology and cotesting-based cervical cancer screening to the future direction of primary HPV screening, is likely to take some time, and continued population-level surveillance is needed to monitor and guide this process. Our observation that about 10% of women aged 18–20 years were screened for cervical cancer is of concern; educating primary care clinicians, including those in pediatric settings, is warranted to increase adherence to clinical guidelines and decrease harms.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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HIGHLIGHTS

- From 2013 to 2019, use of cytology alone decreased among women aged 21–64 years.
- Use of cotesting increased among women aged 30–64 years.
- There was little uptake of primary HPV screening among all age groups.
- Many women younger than age 21 received cervical cancer screening which is not recommended.

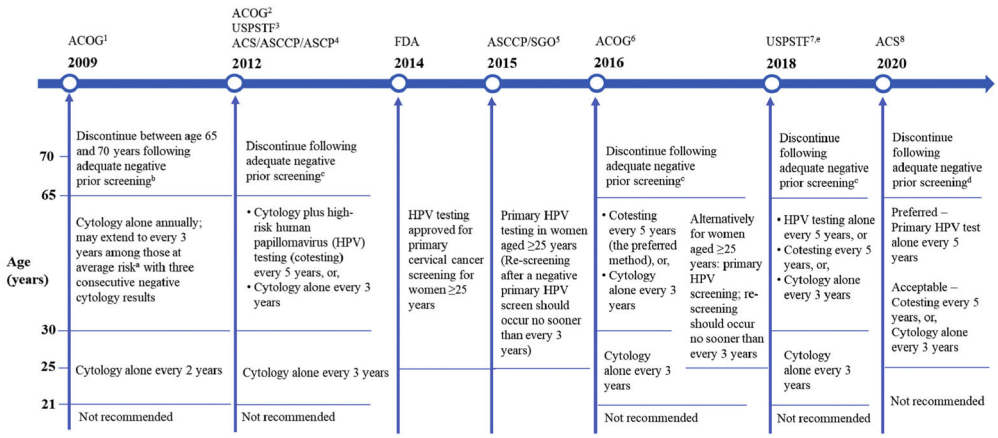

Fig. 1.

Chronicle of cervical cancer screening guidelines for average-risk individuals[a], recommendations, and testing options, 2009–2018.

[a]Average risk defined as no history of high-grade, precancerous cervical lesion (cervical intraepithelial neoplasia grade 2 or a more severe lesion) or cervical cancer; not immunocompromised (including being HIV-infected); and no in utero exposure to diethylstilbestrol.

[b]Adequate screening: ≥3 negative cytology test results in a row and no abnormal test results in the past 10 years.

[c]Adequate negative prior screening test results are defined as 3 consecutive negative cytology results or 2 consecutive negative cotest results within the previous 10 years, with the most recent test performed within the past 5 years.

[d]Adequate negative prior screening test results are defined as no history of cervical intraepithelial neoplasia grade 2 or a more severe diagnosis within the past 25 years, and documented adequate negative prior screening in the 10-year period before age 65 years to discontinue cervical cancer screening with any modality.

[e]ACOG endorsed the 2018 USPSTF recommendation in April 2021 [21].

Superscript 1–8 correspond to references 1–8.

Abbreviations

ACOG – American College of Obstetricians and Gynecologists

ACS – American Cancer Society

ASCP – American Society for Clinical Pathology

ASCCP – American Society for Colposcopy and Cervical Pathology

FDA – US Food and Drug Administration

SGO – Society of Gynecologic Oncology

USPSTF – US Preventive Services Task Force

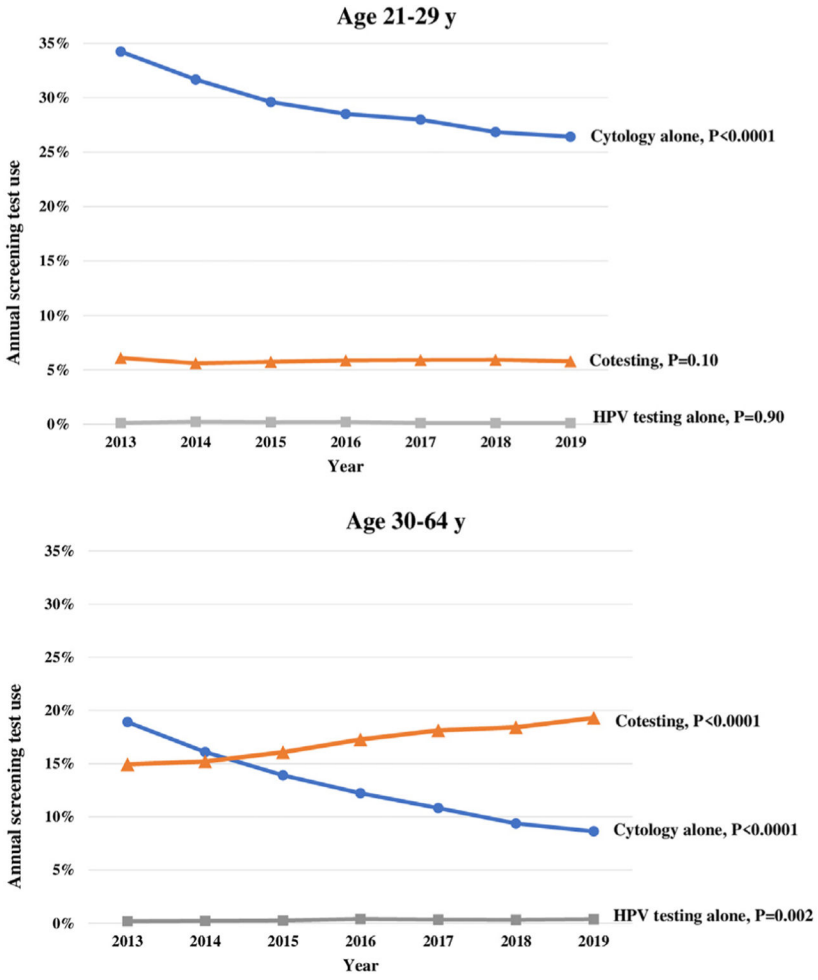

Fig. 2.

Annual cervical cancer screening test use by age group and modality, 2013–2019.

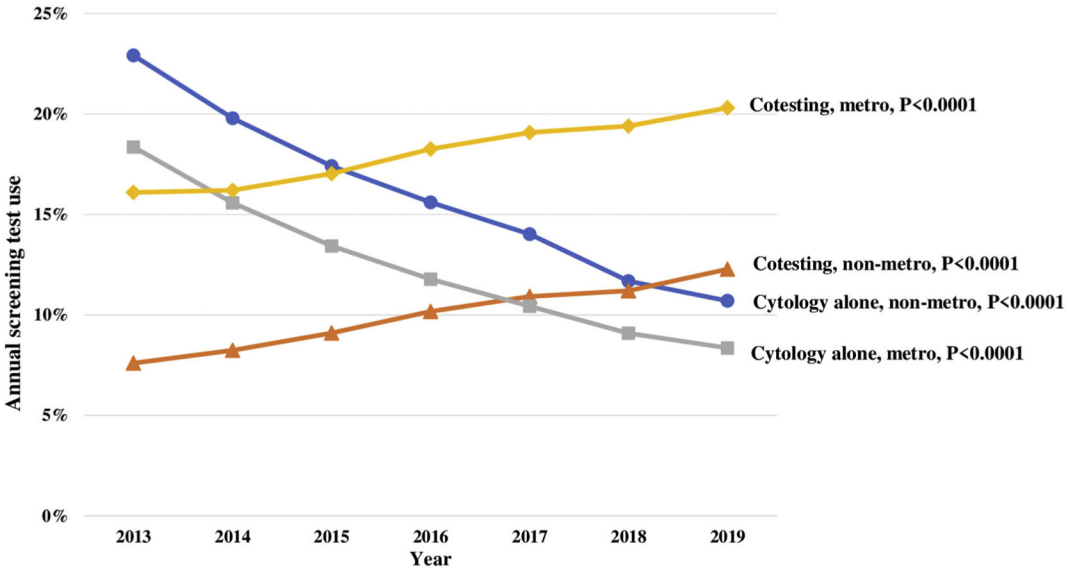

Fig. 3.

Annual cervical cancer screening test use among women aged 30–64 years by metropolitan residence and modality (cytology alone or cotesting), 2013–2019.

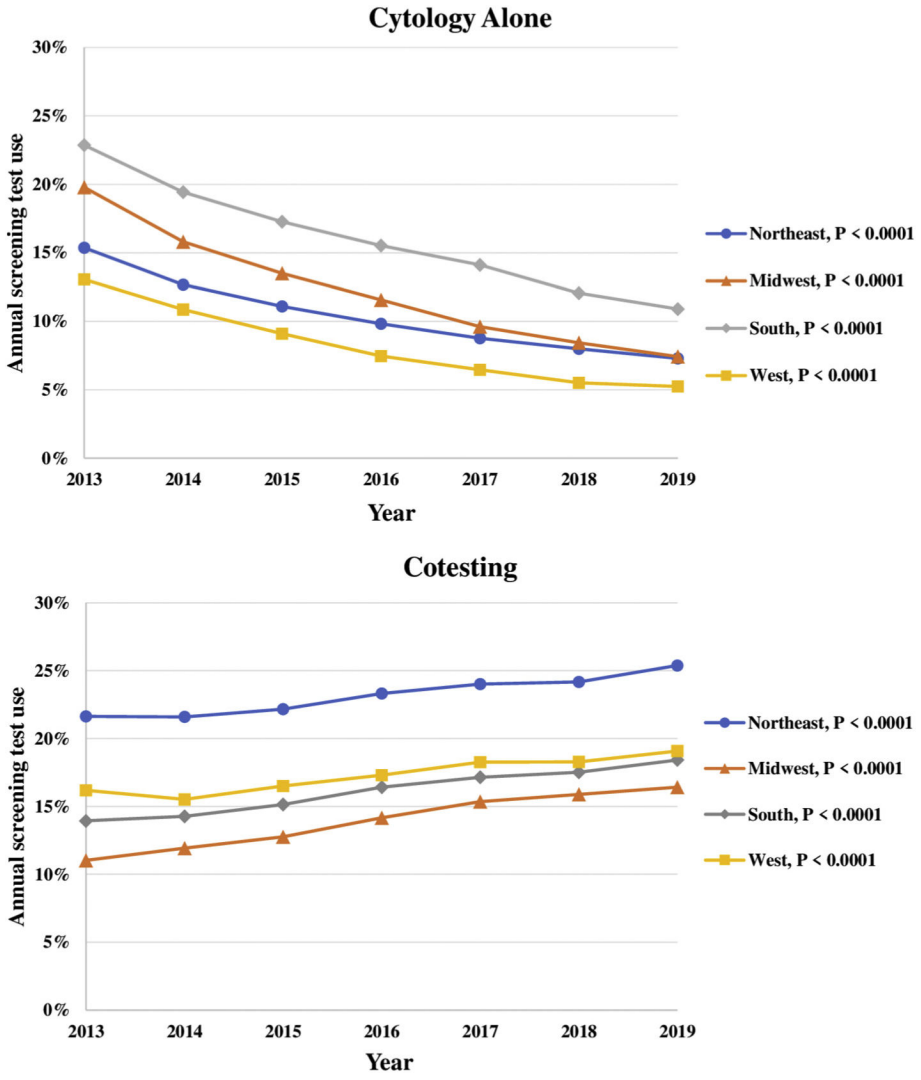

Fig. 4.

Annual cervical cancer screening test use among women aged 30–64 years by four U.S. region and modality (cytology alone or cotesting), 2013–2019.

Table 1

Characteristics of eligible women for cervical cancer screening in MarketScan database, 2013–2019.

Year	2013	2014	2015	2016	2017	2018	2019
Total	9,828,405	8,916,074	8,445,231	8,437,170	7,947,718	7,422,148	6,879,860
Age group, y							
<18	21.5%	22.0%	22.6%	22.6%	23.4%	23.5%	23.5%
18–20	4.1%	4.2%	4.4%	4.4%	4.6%	4.7%	4.8%
21–24	5.4%	5.6%	5.9%	6.0%	6.3%	6.4%	6.5%
25–29	4.5%	4.6%	4.7%	4.9%	5.2%	5.2%	5.4%
30–39	12.3%	12.5%	12.6%	12.9%	13.7%	13.8%	14.1%
40–49	15.2%	15.1%	14.8%	14.8%	15.2%	15.3%	15.5%
50–64	25.0%	25.3%	25.4%	25.1%	25.0%	24.9%	24.8%
65+	12.0%	10.6%	9.5%	9.4%	6.6%	6.1%	5.4%
Metropolitan residence							
Nonmetro	12.1%	12.0%	11.7%	11.6%	11.1%	11.4%	12.0%
Metro	87.6%	87.6%	87.9%	88.1%	88.6%	88.3%	87.8%
US Region							
Northeast	16.4%	17.6%	18.3%	18.3%	18.5%	18.4%	19.2%
Midwest	21.9%	22.8%	24.0%	23.9%	24.1%	25.2%	24.9%
South	39.5%	42.8%	40.4%	40.4%	40.5%	37.1%	42.2%
West	21.7%	16.4%	16.9%	17.1%	16.5%	16.3%	13.4%

Percentages bymetropolitan residence and by region do not add up to 100% because, depending on the year, 0.3%–2.6%were not assigned to any region and 0.2%–0.4%were not assigned to a metropolitan residence category.

Table 2

Annual cervical cancer screening test use in the study population by age group and modality, 2013–2019.

	Year	2013	2014	2015	2016	2017	2018	2019	Percent change[a]	P for trend
	Total	9,828,405	8,916,074	8,445,231	8,437,170	7,947,718	7,422,148	6,879,860		
Age group, y										
	Cytology alone	0.39%	0.26%	0.19%	0.14%	0.11%	0.09%	0.07%	−81%	<0.0001
<18	Cotesting	0.08%	0.06%	0.05%	0.04%	0.03%	0.03%	0.02%	−67%	<0.0001
	HPV testing alone	0.007%	0.007%	0.005%	0.004%	0.005%	0.006%	0.005%	−33%	0.017
	Cytology alone	11.64%	7.02%	8.97%	8.45%	8.18%	7.80%	7.52%	−35%	<0.0001
18–20	Cotesting	1.97%	1.65%	1.56%	1.49%	1.44%	1.39%	1.38%	−30%	<0.0001
	HPV testing alone	0.073%	0.082%	0.065%	0.059%	0.062%	0.055%	0.048%	−34%	0.25
	Cytology alone	30.82%	29.16%	27.51%	26.92%	27.04%	26.15%	25.93%	−16%	<0.0001
21–24	Cotesting	4.67%	4.11%	4.15%	4.18%	4.06%	4.19%	4.19%	−10%	0.27
	HPV testing alone	0.095%	0.160%	0.104%	0.097%	0.074%	0.074%	0.073%	−23%	0.035
	Cytology alone	38.34%	34.73%	32.25%	30.46%	29.12%	27.72%	27.01%	−30%	<0.0001
25–29	Cotesting	7.83%	7.44%	7.73%	7.95%	8.16%	8.07%	7.76%	−1%	0.21
	HPV testing alone	0.120%	0.310%	0.296%	0.331%	0.148%	0.146%	0.145%	21%	0.49
	Cytology alone	21.63%	17.96%	15.35%	13.22%	11.57%	9.94%	8.91%	−59%	<0.0001
30–39	Cotesting	20.12%	20.36%	21.02%	22.28%	22.88%	23.12%	23.68%	18%	<0.0001
	HPV testing alone	0.244%	0.332%	0.377%	0.530%	0.417%	0.445%	0.460%	89%	0.014
	Cytology alone	19.64%	16.82%	14.41%	12.65%	11.25%	9.78%	8.99%	−54%	<0.0001
40–49	Cotesting	16.76%	16.90%	17.84%	19.07%	19.81%	20.11%	21.13%	26%	<0.0001
	HPV testing alone	0.194%	0.227%	0.273%	0.421%	0.362%	0.339%	0.384%	99%	0.003
	Cytology alone	17.14%	14.73%	12.89%	11.46%	10.18%	8.84%	8.25%	−52%	<0.0001
50–64	Cotesting	11.29%	11.63%	12.59%	13.66%	14.51%	14.77%	15.67%	39%	<0.0001
	HPV testing alone	0.144%	0.153%	0.206%	0.310%	0.266%	0.249%	0.319%	122%	0.0006
	Cytology alone	3.59%	3.01%	2.69%	2.52%	2.15%	2.48%	2.81%	−22%	0.005
≥65	Cotesting	0.73%	0.67%	0.77%	0.80%	0.71%	1.01%	1.23%	70%	0.002
	HPV testing alone	0.044%	0.039%	0.035%	0.025%	0.025%	0.029%	0.036%	−18%	0.019

[a]Calculated by subtracting the rate in 2019 from that in 2013 and dividing the result by the rate in 2013, and times 100.