HHS Public Access

Author manuscript

Am J Prev Med. Author manuscript; available in PMC 2019 September 01.

Published in final edited form as:

Am J Prev Med. 2018 September ; 55(3): 389–394. doi:10.1016/j.amepre.2018.04.028.

Cervical Cancer Screening Intervals Preferred by U.S. Women

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Abstract

Introduction: Many U.S. women continue to be screened annually for cervical cancer, despite current guidelines that recommend 3- or 5-year screening intervals depending on screening modality and patient age.

Methods: Data from 2012 and 2015 web-based surveys of U.S. adults were analyzed in 2017 to investigate U.S. women's cervical cancer screening preferences. The study was limited to women aged ≥ 18 years without a hysterectomy or cervical cancer diagnosis (2012 n=1,380, 2015 n=1,339).

Results: Women's preference for 3- or 5-year screening intervals doubled during the study period (2012: 31.2%, 2015: 64.2%, p<0.001). The most preferred screening options in 2015 were co-testing every 3 years with the Pap and human papillomavirus tests (34.0%) and annual Pap testing (30.4%)—neither of which were recommended at that time or currently. Use of 3- and 5-year Pap testing intervals increased during the study period (2012: 6.9%, 2015: 12.9%, p<0.001), whereas annual Pap testing declined (2012: 48.5%, 2015: 35.6%, p<0.001). Among women who were regularly screened and preferred 3- or 5-year screening intervals, the minority reported screening practices that matched this preference (2012: 24.1%, 2015: 29.3%, p=0.71).

Conclusions: Women's preference for longer cervical cancer screening intervals has increased rapidly and outpaced utilization. At the same time, many women continue to be screened annually. Expanding appropriate screening may require increasing women's and providers' comfort with screening recommendations.

INTRODUCTION

Annual cervical cancer screening remains common in the U.S.,[1–3] even though the U.S. Preventive Services Task Force (USPSTF) withdrew endorsement of this practice in 2003.[4] Current guidelines issued in 2012 from the American Cancer Society,[5] American College of Obstetricians and Gynecologists,[6] and USPSTF[7] endorse Pap testing every 3 years for women aged 21–65 years or Pap testing every 3 years for women aged 21–29 years followed

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No financial disclosures were reported by the authors of this paper.

by co-testing with both the Pap test and the human papillomavirus (HPV) test every 5 years for women aged 30–65 years. Another screening option emerged in 2015, when the Society of Gynecologic Oncology and the American Society for Colposcopy and Cervical Pathology released interim guidance recommending primary HPV testing (without Pap testing) every 3 years for women aged 25 years and older,[8] and American College of Obstetricians and Gynecologists endorsed this screening strategy in 2016.[9]

The present study compares 2012[2] and 2015 survey results to investigate U.S. women's cervical cancer screening preferences and the screening intervals they followed.

METHODS

The HealthStyles Fall survey is an annual, web-based survey that explores the health behaviors and attitudes of U.S. adults. The 2012 survey was administered from September 21 to October 5, 2012, and the 2015 survey was administered from September 10 to 29, 2015.

Study Population

Participants in the 2012 and 2015 HealthStyles Fall surveys were recruited from the KnowledgePanel®, a 55,000-member, online research panel that is representative of the U.S. population.

The 2012 and 2015 HealthStyles Fall surveys were sent to random samples of panel members aged ≥18 years who participated in an earlier linked survey (HealthStyles Spring survey). In 2012, the survey was sent to 4,371 panelists, and 3,503 (1,733 men and 1,770 women) participated, for a completion rate of 80.1%. In 2015, the survey was sent to 4,432 panelists, and 3,529 (1,815 men and 1,714 women) participated in the survey, for a completion rate of 79.6%. Women diagnosed with cervical cancer (2012: n=24, 2015: n=29) and those who had undergone hysterectomy (2012: n=366, 2015 n=346) were excluded from analyses, resulting in sample sizes of 1,380 in 2012 and 1,339 in 2015.

The 2012 and 2015 HealthStyles Fall surveys were administered by Porter Novelli (Washington, DC) and complied with the ICC/ESOMAR International Code for ethical research. This study was not subject to review by the IRB of the Centers for Disease Control and Prevention because it involved secondary data analyses and no individual identifiers were included in the data set received by investigators.

Measures

Current Pap testing interval was evaluated with a multiple-choice item: *How often do you get a Pap test?* Response options provided were *more often than once a year, every year, every 2 years, every 3 years, every 4 years, every 5 years, every 6 years or longer, I do not get regular Pap tests*, and *not sure*. The same item format was used to assess current HPV testing interval in 2015 (current HPV testing frequency was not assessed in 2012, as the USPSTF did not recommend co-testing until shortly before the survey was conducted[7]).

Preferred screening option was also assessed with a multiple-choice item: *If your doctor offered each of these cervical cancer screening options to you, which one would you prefer?* Response options included: *Pap test alone once a year*, *Pap test once every 2 years* (2012 only), *Pap test alone once every 3 years, HPV test alone once every 3 years* (2015 only), *Pap test with HPV test once every 3 years, Pap test with HPV test once every 4 years* (2012 only), *Pap test with HPV test once every 5 years*, and *none of these*. HPV test alone once every 3 years was added as a response in 2015 to reflect the Society of Gynecologic Oncology/American Society for Colposcopy and Cervical Pathology interim guidelines released shortly prior to the 2015 survey.[6] And, Pap test alone every 2 years and Pap test alone every 4 years were not included on the 2015 survey due to low response frequencies in 2012.

Statistical Analysis

Descriptive analyses of the 2012 and 2015 data were conducted and weighted to match U.S. Current Population Survey estimates for age, household income, race/ethnicity, educational attainment, and geographic region for 2012 and 2014 (most recent year available when 2015 survey was conducted) respectively. Pearson chi-square tests were used to compare 2012 and 2015 weighted percentages of acceptability of cervical cancer screening, use of annual Pap testing interval, and use of 3- or 5-year Pap testing intervals, preferred cervical screening option (among women who indicated that they would accept cervical cancer screening), and use of 3- or 5-year screening intervals (among women who preferred 3- or 5-year screening intervals and screened regularly—every 1–5 years). All data analyses were conducted in 2017.

RESULTS

During the study period, acceptance of cervical cancer screening declined (2012: 88.1%, 2015: 82.6%, $p<0.001$), as did use of annual Pap testing (2012: 48.5%, 2015: 35.6%, $p<0.001$; Table 1). Use of 3- and 5-year Pap testing intervals increased (2012: 6.9%, 2015: 12.9%, $p<0.001$); few women (3.6%) reported use of 3- or 5-year HPV testing intervals in 2015.

Preference for 3- or 5-year screening intervals doubled during the study period (2012: 31.2%, 2015: 64.2%, $p<0.001$; Figure 1). In 2015, co-testing every 3 years was the most preferred screening option (34.0%), surpassing annual Pap testing (30.4%), which was favored in 2012 (51.1%).

Among regularly screened women who preferred 3- or 5-year screening intervals, the minority reported screening practices that matched this preference (2012: 24.1%, 2015: 29.3%, $p=0.71$ Figure 2).

DISCUSSION

The majority of women preferred 3- or 5-year cervical cancer screening intervals in 2015, but many were screened more often. One factor that may contribute to the disconnect

between screening preferences and practices may be providers, who have been found to be less accepting of longer Pap testing intervals than their patients.[10]

Women lacked knowledge about the screening regimen they followed. In 2015, a total of 34.2% reported that they were unsure how often they had HPV testing. Another 48.5% reported that they did not participate in HPV testing, but this may not be accurate. The HPV test is typically conducted using the same sample as the Pap test, and women may not be aware that they undergo co-testing.

In addition, women's screening preferences were not consistent with guidelines. The most preferred screening strategies in 2015—co-testing every 3 years (34.0%) and annual Pap testing (30.4%)—are obsolete. Neither of these approaches were recommended at the time of the study or are recommended currently.[5–7]

The observed 5.5% decline in acceptance of cervical cancer screening from 2012 to 2015 may be related to the evolution of guidelines. In a post hoc analysis (not shown), the largest drop was among women aged 65 years and older—from 5.1% non-acceptance in 2012 to 20.9% in 2015 (chi-square [1]=19.93, $p<0.001$). This result mirrors the recommendation that women with a history of adequate screening should not be screened after age 65 years, which became consistent across organizations in 2012.[11]

Limitations

The primary limitation of this study is the use of self-reported data from women in a preassembled research panel. Participants' characterization of the screening interval they followed is subject to recall biases. Also, screening preferences were investigated in a hypothetical context, and women may respond differently in real life. Although data were weighted to reflect the U.S. population, the extent to which results are generalizable is not known.

CONCLUSIONS

U.S. women's preference for longer cervical cancer screening intervals has increased rapidly and outpaced utilization. At the same time, many women continue to be screened annually. In 2015, the U.S. cervical cancer screening rate was 83.0%,[12] which falls short of the Healthy People 2020 target of 93.0%.[13] Expanding appropriate screening may require increasing women's and providers' comfort with screening recommendations.

ACKNOWLEDGMENTS

This study was funded by the Centers for Disease Control and Prevention's Inside Knowledge: Get the Facts about Gynecologic Cancer campaign. However, the findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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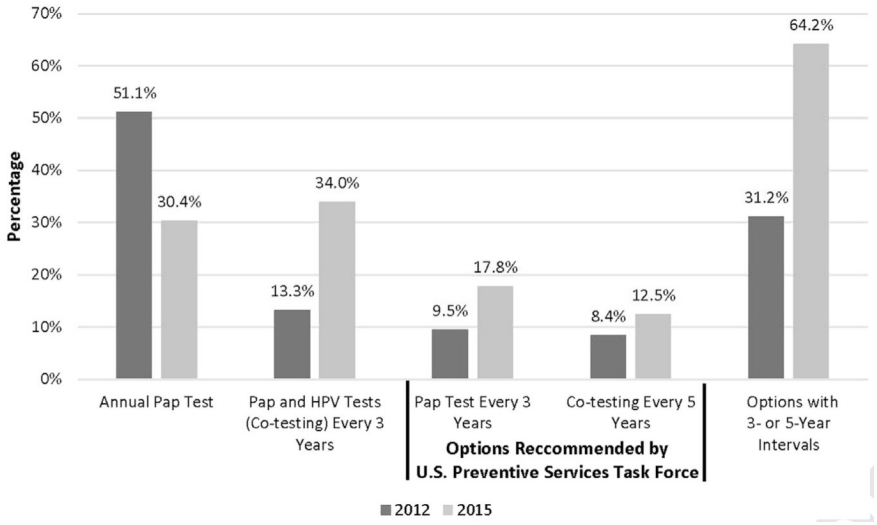

Figure 1. Preferred cervical cancer screening option, U.S. women, HealthStyles Fall Survey, 2012 and 2015.

Note: Analyses were limited to women who had never been diagnosed with cervical cancer and had not undergone a hysterectomy, and would accept cervical cancer screening (2012 n=1,134; 2015 n=1,085). Year 2012 and 2015 percentages were weighted to match U.S. Current Population Survey estimates for age, household income, race/ethnicity, educational attainment, and geographic region for 2012 and 2014, respectively. Screening options not included in the figure are as follows: Pap test every 2 years (14.6%, 2012 only); HPV test every 3 years (1.6%, 2015 only); Pap test every 4 years (1.6%, 2012 only); and none of these (1.4%, 2012; 3.7%, 2015). Pearson chi-square tests were used to compare 2012 and 2015 percentages for preferred screening options in figure: annual Pap test (chi-square=102.03, df=1, p<0.001); Pap and HPV tests (co-testing) every 3 years (chi-square=133.98, df=1, p<0.001); Pap test every 3 years (chi-square=32.73, df=1, p<0.001); co-testing every 5 years (chi-square=10.27, df=1, p=0.001); and options with 3- or 5-year intervals (chi-square=248.72, df=1, p<0.001). HPV, human papillomavirus.

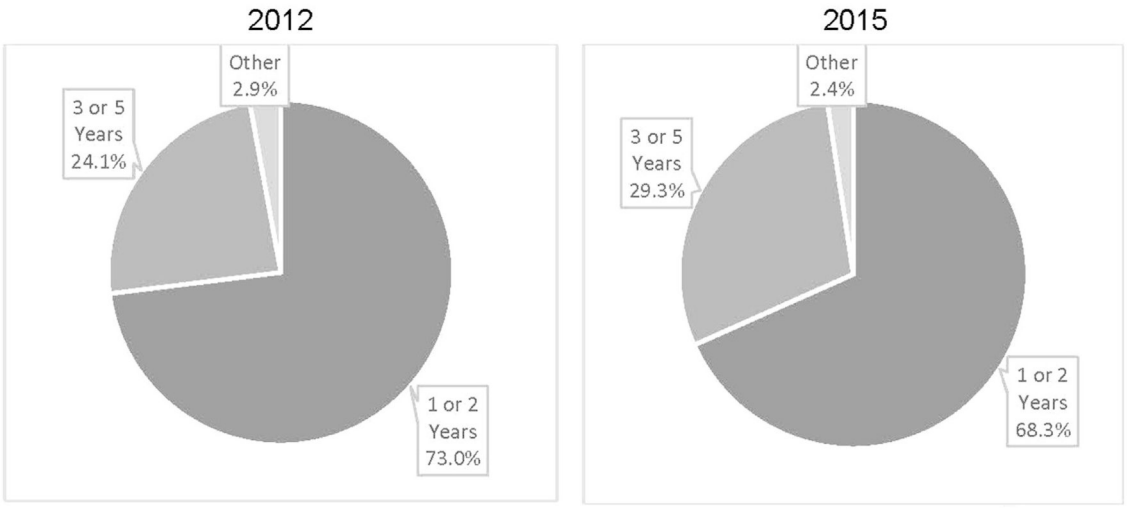

Figure 2. Cervical cancer screening intervals used by regularly screened women who preferred screening every 3 or 5 years, HealthStyles Fall Survey, 2012 and 2015.

Note: Results in figure were limited to women who preferred 3- or 5-year intervals, were screened regularly (every 1–5 years), had never been diagnosed with cervical cancer, and had not undergone a hysterectomy (2012 n=247, 2015 n=527). 2012 and 2015 percentages were weighted to match U.S. Current Population Survey estimates for age, household income, race/ethnicity, educational attainment, and geographic region for 2012 and 2014, respectively. 2012 and 2015 percentages for screening every 3 or 5 years did not differ (chi-square=0.68, df=1, p=0.71).

Table 1.

Participant Characteristics, U.S. Women, HealthStyles Fall Survey, 2012 and 2015

	2012 (*n*=1,380)		2015 (*n*=1,339)	
Characteristics	***n***	**Weighted %**	***n***	**Weighted %**
Age, years				
18–24	167	14.2	110	14.1
25–34	218	20.0	237	20.3
35–44	243	20.2	192	18.4
45–54	278	18.9	204	15.9
55–64	247	13.8	313	15.6
≥65	227	12.9	283	15.7
Race/ethnicity				
White, non-Hispanic	1,022	64.9	1,016	66.4
Black, non-Hispanic	130	11.6	127	10.6
Other, non-Hispanic	76	6.9	61	9.2
Hispanic	152	16.6	135	13.8
Educational attainment				
Less than high school	61	9.5	53	8.1
High school	369	31.7	385	28.0
Some college	445	29.6	412	30.9
Bachelor’s degree or higher	505	29.3	489	33.1
Geographic region				
Northeast	282	20.0	250	18.7
Midwest	336	21.9	351	22.9
South	450	34.6	451	35.4
West	312	23.5	287	23.0
Menopause status				
Post-menopausal	501	28.9	585	31.1
Peri-menopausal	123	8.3	103	7.5
Not post- or peri-menopausal/not sure	743	62.7	636	61.4
Pap test usage				
≥ 1 Pap test	1,104	74.3	1,123	77.7
No prior Pap test	270	25.7	210	22.3
Prior abnormal Pap test result				
≥ 1 abnormal Pap result	187	12.4	268	17.6
No prior abnormal Pap result	1,182	87.6	1,053	82.4
Human papillomavirus (HPV) test usage				
≥ HPV test	126	8.5	154	12.1
No prior HPV test	1,248	91.5	1,179	87.9
HPV vaccination status				
Vaccinated	87	7.5	147	14.7
Unvaccinated	1,287	92.5	1,189	85.3

Characteristics	2012 (*n*=1,380)		2015 (*n*=1,339)	
	n	**Weighted %**	***n***	**Weighted %**
Would accept cervical cancer screening				
Yes[a]	1,134	88.1	1,086	82.6
No	134	11.9	190	17.4
Current Pap testing interval				
More often than once a year	13	1.0	8	0.5
Annual[a]	676	48.5	469	35.6
Every 2 years	230	15.5	265	17.5
Every 3 years	88	6.3	148	10.8
Every 4 years	10	0.7	15	1.3
Every 5 years	12	0.6	28	2.1
Every 6 years or longer	13	1.1	20	1.3
Does not have regular Pap tests	255	19.7	301	24.1
Not sure	68	6.7	70	7.0
Every 3 or 5 years[a]	100	6.9	176	12.9
Current HPV testing interval[b]	N/A	N/A		
More often than once a year			4	0.4
Annual			104	7.7
Once every 2 years			54	3.8
Once every 3 years			36	2.5
Once every 4 years			4	0.5
Once every 5 years			14	1.1
Once every 6 years or longer			4	0.1
Does not have regular HPV tests			700	48.5
Not sure			401	34.2
Every 3 or 5 years			50	3.6

Note: Analyses were limited to women who had never been diagnosed with cervical cancer and had not undergone a hysterectomy. When variable responses do not sum to N, responses are missing unless otherwise noted. Year 2012 and 2015 percentages were weighted to match U.S. Current Population Survey estimates for age, household income, race/ethnicity, educational attainment, and geographic region for 2012 and 2014, respectively.

[a]Pearson χ^2 tests were used to assess pairwise comparisons of 2012 and 2015 weighted percentages of acceptability of cervical cancer screening (χ^2=17.19, df=1, p<0.001); annual current Pap testing interval (χ^2=48.90, df=1, p<0.001); and 3- or 5-year current Pap testing interval (χ^2=27.92, df=1, p<0.001).

[b]Current HPV testing interval was not assessed in 2012, as the U.S. Preventive Services Task Force did not recommend co-testing with the Pap and HPV tests until shortly before the survey was conducted.[7]