

Prevalence of abnormal cervical cancer screening outcomes among screening-compliant women in the United States



OBJECTIVE: Formal guidelines recommend routine cervical cancer screening using the Papanicolaou test alone, every 3 years, for women aged 21–65 years; high-risk human papillomavirus (HPV) testing alone or concurrent high-risk HPV and Papanicolaou test (co-testing), every 5 years, for women aged 30–65 years.^{1–3} Early detection of precursor lesions through routine screening is central to cervical cancer prevention.¹ However, little is known about the prevalence of abnormal screening outcomes by cervical cancer screening modality. This study investigates the prevalence of abnormal cervical cancer screening results among screening-compliant women in the United States.

STUDY DESIGN: Study data were derived from the most recent (2015) Cancer Control Supplement of the National Health Interview Survey. Because the study purpose was to examine abnormal screening results including co-testing among screening compliant women, we restricted the analysis to women aged 30–65 years who had undergone screening in the last 3 years ($n = 7716$). We then excluded women who had undergone hysterectomy ($n = 976$). The final sample size was 6740 women.

To derive a history of an abnormal cervical cancer screening result, respondents were asked: Have you had a (fill 1: Pap/Pap or HPV) test in the last 3 years where the results were not normal? Response categories were: yes, Papanicolaou test not normal; yes, HPV test was not normal; or yes, both were not normal. Weighted prevalence of (1) abnormal Papanicolaou test, (2) abnormal HPV test, and (3) abnormal Papanicolaou and HPV tests were estimated by age, sex, marital status, level of education, health insurance coverage status, race/ethnicity, and cigarette smoking status.

RESULTS: Among the 6740 women who were screening compliant, 16.4% (95% confidence interval, 15.1–17.6) had an abnormal result. Among those with abnormal results, 10.9% reported an abnormal Papanicolaou test, 2.8% had an abnormal HPV test, while 2.7% had both an abnormal Papanicolaou and HPV test.

As age increased, the weighted prevalence of abnormal cervical cancer screening outcomes decreased (Table). Blacks had the highest prevalence of an abnormal Papanicolaou test (12.9%), as well as abnormal HPV and Papanicolaou test (5.28%), than other races. Education level was statistically significant, with rates of abnormal screening results found to be lower among women who had attained a bachelor's degree or higher compared with those who had no high school diploma or general education diploma recipients. Unmarried

women (12.5%) and those without health insurance (13.4%) had higher rates of abnormal Papanicolaou test results than married and insured women, respectively. Also, higher rates of abnormal Papanicolaou tests occurred in current smokers and Hispanics.

CONCLUSION: Surveillance of abnormal screening outcomes has immense utility as an indicator of the number of cervical cancer cases and deaths that could potentially be averted because of screening. This in turn is valuable for evaluating population-level impact (health and economic) of preventive programs pertinent to cervical cancer. Limitations of our study include lack of detailed information on abnormal screening results, such as stage or grade of intraepithelial lesion, as well as our use of self-reported data, which is prone to recall and social desirability bias. However, our finding of persistently higher rates of abnormal screening results in certain demographics, such as blacks and individuals with low levels of education, are consistent and similar to disparities observed in subsequent cervical cancer cases.^{4, 5} Interventions targeting at-risk populations identified in this study, through active management and surveillance at the level of health care providers, can help eliminate disparities observed in cervical cancer incidence and mortality in the United States. ■

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TABLE

Prevalence of abnormal cervical cancer screening results among US adult females aged 30-65 years by sociodemographic characteristics and smoking status (n = 6740), National Health Interview Survey, 2015

Variables	Abnormal Pap test (n = 769)		Abnormal HPV test (n = 171)		Abnormal Pap and HPV test (n = 200)		Normal (n = 5600)	
	Weight, %	(95% CI)	Weight, %	(95% CI)	Weight, %	(95% CI)	Weight, %	(95% CI)
Age, y								
30–45	12.0	[10.7–13.6]	3.26	[2.52–4.21]	2.90	[2.27–3.70]	81.8	[80.0–83.5]
46–55	9.85	[8.22–11.8]	2.44	[1.59–3.74]	3.08	[2.24–4.21]	84.6	[82.3–86.7]
56–65	9.38	[7.55–11.6]	2.02	[1.16–3.49]	1.77	[1.15–2.71]	86.8	[84.4–89.0]
Race								
White	10.8	[9.67–12.0]	2.52	[2.01–3.14]	2.34	[1.87–2.92]	84.4	[82.9–85.7]
Black/African American	12.9	[10.6–15.6]	4.26	[2.74–6.57]	5.28	[3.77–7.35]	77.6	[74.1–80.7]
American Indian/ Alaska Native	2.77	[1.01–7.40]	8.18	[1.19–39.6]	1.84	[0.42–7.67]	87.2	[64.2–96.3]
Asian	9.98	[6.95–14.1]	2.67	[0.97–7.14]	1.95	[0.86–4.34]	85.4	[80.7–89.1]
Multiple	7.15	[3.95–12.6]	0.75	[0.11–4.99]	2.55	[1.01–6.29]	89.5	[83.1–93.7]
Hispanic								
No	10.4	[9.38–11.6]	2.97	[2.42–3.65]	2.76	[2.26–3.38]	83.8	[82.4–85.1]
Yes	13.1	[11.1–15.4]	1.71	[1.00–2.89]	2.42	[1.67–3.50]	82.7	[80.3–85.0]
Marital status								
Not married	12.5	[10.9–14.2]	3.36	[2.54–4.43]	3.13	[2.45–3.99]	81.0	[79.0–82.9]
Married/living with partner	10.2	[9.05–11.5]	2.54	[1.98–3.25]	2.53	[1.99–3.22]	84.7	[83.2–86.1]
Highest education								
No high school diploma/ GED recipient	14.8	[11.9–18.2]	3.24	[1.87–5.57]	4.49	[2.91–6.86]	77.5	[73.4–81.1]
High school graduate	12.2	[9.67–15.3]	2.81	[1.67–4.68]	2.92	[1.92–4.41]	82.1	[78.5–85.1]
AA degree/some college	10.5	[8.95–12.3]	3.00	[2.2–4.07]	2.76	[1.98–3.83]	83.7	[81.5–85.7]
Bachelor's degree and higher	9.57	[8.22–11.1]	2.27	[1.66–3.10]	2.14	[1.56–2.93]	86.0	[84.2–87.6]
Health insurance								
Not covered	13.4	[10.1–17.6]	1.94	[1.04–3.58]	4.64	[2.68–7.9]	80.0	[75.2–84.1]
Covered	10.7	[9.68–11.8]	2.78	[2.29–3.36]	2.52	[2.08–3.05]	84.0	[82.7–85.2]

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(continued)

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Prevalence of abnormal cervical cancer screening results among US adult females aged 30–65 years by sociodemographic characteristics and smoking status (n = 6740), National Health Interview Survey, 2015 (continued)

Variables	Abnormal Pap test (n = 769)		Abnormal HPV test (n = 171)		Abnormal Pap and HPV test (n = 200)		Normal (n = 5600)	
	Weight, %	(95% CI)	Weight, %	(95% CI)	Weight, %	(95% CI)	Weight, %	(95% CI)
Smoking status								
Never-smoker	10.2	[9.18, 11.3]	2.21	[1.69–2.89]	2.84	[2.29–3.53]	84.7	[83.3–86.0]
Former smoker	11.9	[9.51–14.7]	3.20	[2.04–5.0]	2.35	[1.51–3.64]	82.6	[79.3–85.5]
Current smoker	12.9	[10.2–16.3]	5.07	[3.37–7.56]	2.55	[1.55–4.16]	79.5	[75.6–82.8]

AA, associate's degree; GED, general educational development; HPV, human papillomavirus; Pap, Papanicolaou. Chido-Amajuoyi. Abnormal cervical cancer among US women. *Am J Obstet Gynecol* 2019.

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