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Adherence to the 2012 national cervical cancer screening guidelines: a pilot study

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Abstract

OBJECTIVE—The goal of this pilot study was to evaluate adherence to the 2012 cervical cancer screening guidelines among health care providers in a large health maintenance organization.

STUDY DESIGN—A cross-sectional survey evaluating knowledge, reported practices, and views of the 2012 cervical cancer screening guidelines was distributed to 325 health care providers within HealthPartners. The survey was divided into 3 sections: (1) provider demographics; (2) knowledge of the 2012 age-specific cancer screening guidelines; and (3) provider practice. Comparisons based on appropriate knowledge and practice of the guidelines were made using Fisher exact tests.

RESULTS—The response rate was 42%. Of 124 respondents, 15 (12.1%) reported they were not aware of the 2012 guideline changes. Only 7 (5.7%) respondents answered all the knowledge questions correctly. A majority of respondents reported correct screening practices in the 21–29 year patient age group (65.8%) and in the >65 year patient age group (74.3%). Correct screening intervals in the 30–65 year patient age group varied by modality, with 89.3% correctly screening every 3 years with Pap smear alone, but only 57.4% correctly screening every 5 years with Pap smear + human papillomavirus cotesting. The most frequently cited reasons for not adhering were lack of knowledge of the guidelines and patient demand for a different screening interval.

CONCLUSION—Adherence to the 2012 cervical cancer screening guidelines is poor due, in part, to a lack of knowledge of the guidelines. Efforts should focus on improved provider and patient education, and methods that facilitate adherence to the guidelines such as electronic health record order sets.

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Keywords

cervical cancer screening; guideline adherence; provider survey

Screening has significantly decreased cervical cancer morbidity and mortality through the detection and treatment of preinvasive lesions, and diagnosis of invasive cervical cancers at earlier stages when treatment is more effective.¹ Pap smear screening was recommended annually for decades in an effort to maximize detection of precancerous lesions. The discovery that infection with the human papillomavirus (HPV) is a necessary cause of cervical cancer has led to the incorporation of HPV tests into routine screening since 2002.² Previous cervical cancer screening guidelines focused on maximizing detection of precancerous lesions through frequent screening. However, more aggressive screening can result in colposcopy evaluation and biopsies of lesions that are unlikely to progress to invasive cancer, resulting in patient stress³ and increased health care costs. Unnecessary excisional procedures can also result in distorted cervical anatomy and an increased risk of pre-term delivery in future pregnancies.^{4,5} The 2012 revised cervical cancer screening guidelines developed by the American Cancer Society, the American Society for Colposcopy and Cervical Pathology, and the American Society for Clinical Pathology and by the US Preventive Service Task Force aimed to maximize detection of precancerous lesions while minimizing harms. Previous guidelines recommended Pap smear testing alone every 1–2 years or cotesting with Pap smear and HPV test every 3 years for women aged 30–65 years. In contrast, the 2012 guidelines recommend cotesting every 5 years or Pap smear alone every 3 years. For women aged 21–29 years, Pap smear screening alone every 3 years is currently recommended⁶ (Table 1).

The 2012 cervical cancer screening guidelines were developed based on extensive systematic evidence reviews, and sought to maintain disease detection while minimizing the overtreatment of lesions that are likely to resolve spontaneously. However, for the new guidelines to be effective, health care providers and patients must adhere to them. A national survey of health care providers administered annually from 2006 through 2009 showed that 67–94% of providers recommended Pap smear testing at a shorter interval than recommended by the guidelines.⁷ To date, there has not been a published study evaluating adherence of health care providers to the most recent (2012) guidelines, which lengthens the screening interval even further than previous guidelines. The goal of this pilot study was to evaluate the knowledge, reported practices, and views of the new (2012) cervical cancer screening guidelines among practitioners in a large health maintenance organization.

Materials and Methods

Survey

A cross-sectional survey was conducted to evaluate health care provider knowledge, reported practices, and views of the 2012 cervical cancer screening guidelines within HealthPartners, a large health maintenance organization in Minnesota that performs approximately 46,000 Pap smears per year. An electronic health record query identified all practitioners in the organization who had ordered screening Pap smears within the past year.

An explanatory email with a link to an anonymous World Wide Web questionnaire was sent to the organizational email address of each of these providers. This study was exempt from the institutional review board since it met the criteria for a quality improvement study, and all information was collected anonymously.

The survey was divided into 3 sections: (1) provider demographics; (2) knowledge of the 2012 cervical cancer screening guidelines; and (3) provider practice. The demographic section collected information about provider age, provider gender, number of years in practice, medical specialty and degree, and information about the provider's practice, including frequency with which the provider performs Pap smears and average number of Pap smears performed per year. We also collected information about how the provider learned of the 2012 cervical cancer screening guidelines (email, World Wide Web site, memo/letter, press release, social media, professional organization, other), and how the provider would like to receive guideline updates in the future. The knowledge section presented 6 questions that asked the provider to identify the screening recommendation for each scenario per the 2012 cervical cancer screening guidelines. The questions assumed all previous cervical cancer screening results were normal, and covered 4 patient age groups: <21 years; 21–29 years; 30–65 years; and >65 years. The provider practice section consisted of 15 questions. There were 3 groups of 4 questions, each of which addressed cervical cancer screening for the following age categories: 21–29 years; 30–65 years; >65 years. The questions addressed how providers are screening patients (Pap smear alone vs cotesting) and the frequency at which they are performing each screening modality (cotesting every 5 years vs Pap smear alone every 3 years, or either at another interval). The last 5 questions in this section addressed provider views of their practice in relation to the guidelines, including how often they adhere to the guidelines (always; sometimes; rarely; never; not aware of the 2012 guidelines) and reasons for not adhering to guidelines in each age group (I am following the guidelines; I do not know the current guidelines; I do not think the guidelines are based on good data; I feel I have a higher-risk patient population; my patients are demanding a different screening interval; I am worried about missing a high-grade dysplasia/cancer in the interim; other). All survey questions were in a multiple-choice format, with a free-write option under "other."

Statistical analysis

Survey item frequencies were examined for errors, missing data, or inconsistencies. Respondent demographic and clinical practice were summarized and presented as number and percent of sample unless otherwise noted. A total knowledge score was calculated for each respondent using the 6 clinical scenario questions, with respondents receiving 1 point for each correct answer. Since HealthPartners recommends either cotesting every 5 years or Pap smear alone every 3 years as acceptable cervical cancer screening strategies for women aged 30–65 years, practitioners were given credit for selecting "cytology + HPV cotesting every 5 years," "cytology alone every 3 years," or both answers.

Provider practice scores for each respondent for the screening age groups 21–29 years and >65 years were calculated using groups of 4 questions each. Participants with scores of 4 out of 4 in the 21–29 years or >65 years screening age groups were considered to appropriately

follow the guidelines in their practice for a particular age group. A total score was not calculated for the 30–65 year screening age group since there are 2 correct screening strategies per the 2012 guidelines; proportion of respondents reporting correct screening practices for Pap smear alone and Pap smear + HPV cotesting are presented individually. Comparisons based on appropriate knowledge and practice of the guidelines for the 21–29 and >65 year screening age groups were conducted using Fisher exact tests. All analyses were performed using software (SAS, version 9.3; SAS Institute Inc, Cary, NC).

Results

From February through March 2013, 135 of 325 eligible providers responded to the survey for a total survey response rate of 41.5%. Eleven providers responded only to the demographic questions, resulting in 124 surveys available for analysis of the knowledge questions and practice patterns.

Table 2 presents the demographic results for the survey respondents. Physicians (MD/DO) represented the majority of respondents (63.7%), with physician assistants, nurse practitioners, and certified nurse midwives making up the remainder. Approximately half of respondents were >50 years of age, and only 15.6% of respondents were aged <35 years. Three quarters of respondents were female; male respondents tended to be older ($P = .131$). Family practitioners represented the largest group of respondents (38.5%) followed by gynecologists (23.0%), internal medicine (20.0%), and midwives (14.1%). The majority of practitioners reported >10 years in practice (69.9%). The large majority of respondents performed cervical cancer screening at least weekly, with 61.5% performing screening daily.

Among respondents, 15 (12.1%) reported they were not aware that the screening guidelines changed in March 2012 (Table 3). Of the 15 respondents who were not aware of the guideline changes, the breakdown by specialty was gynecology ($n = 5$; 33.3%), internal medicine ($n = 3$; 20.0%), family practice ($n = 5$; 33.3%), midwifery ($n = 1$; 6.7%), and geriatrics ($n = 1$; 6.7%). Of those who were aware of the guideline changes, the majority learned of the change through a professional organization, while one-third learned of the change through an email from the health care organization. In the future, the majority (87.9%) would like to learn of guideline changes via email, while 39% also indicated that they would like the electronic health record prompts to reflect new guidelines.

Results from the 6 multiple-choice knowledge questions are detailed in Table 4. Only 7 (5.7%) respondents answered all 6 knowledge questions correctly, however 99 (79.8%) answered 4 of the 6 questions correctly. The highest percentage of correct answers was for the question that addressed patients who had already undergone a hysterectomy including removal of cervix, with only 1 incorrect response. Most respondents also identified the age groups who do not require screening, including <21 years (92.7%) and >65 years with previous normal screening (87.1%). Most respondents (83.7%) answered questions about guidelines for patients aged 30–65 years correctly when cotesting every 5 years, Pap smear alone every 3 years or both were all counted as correct answers. The lowest proportion of correct responses was in the 21–29 year age group (62.9%).

Results from the practice section of the survey are presented in Tables 5–7. In the 21–29 year patient age group, three-quarters of respondents (78.1%) reported screening women in the 21–29 year age group correctly with Pap smear alone every 3 years, however, one-third (36.7%) report screening incorrectly with a Pap smear + HPV cotesting (Table 5). In the 30–65 year age group, the proportion of correct responses varied by screening modality used. Similar numbers of respondents reported screening with Pap smear + HPV cotesting (58.1%) and Pap smear alone (64.1%) (Table 6). When screening with Pap smear alone, 89.3% of respondents reported correctly screening every 3 years. However, only 57.4% reported cotesting at a correct interval of 5 years, with another 38.2% cotesting at an incorrect interval of every 3 years. In the >65 year patient age group with no history of abnormal cervical cancer screening tests, 74.3% of respondents do not screen, in concordance with the 2012 guidelines; however, 11.0% of respondents incorrectly screen if the woman has a new sexual partner (Table 7). For those health care providers who reported not always adhering to the guidelines, the most frequently cited reasons for not complying were lack of knowledge of the guidelines and patient demand for a different screening interval.

Associations between knowledge and self-reported practice varied by patient age-specific guidelines. Answering all 6 knowledge questions correctly was positively associated with self-reported adherence to the guidelines (measured by answering all 4 practice questions correctly) for the 21–29 year patient age group ($P = .014$), but was not quite statistically significant for the >65 year patient age group ($P = .138$). When the number of knowledge questions answered correctly was decreased to 5, there was a positive association with self-reported practice in both the 21–29 years ($P = .001$) and >65 years patient age groups ($P = .019$).

Comment

Cervical cancer screening has been one of the most successful screening programs in the United States, decreasing the mortality from cervical cancer by 70% since the introduction of routine Pap smear testing in the 1950s.^{8,9} The sensitivity of cervical cancer screening has been even further improved with the addition of HPV testing since 2002.² This has allowed for longer screening intervals and improved triage of women based on their risk of developing cervical dysplasia or cancer. The goal of the 2012 guidelines was to minimize risk that comes from unnecessary screening and diagnostic procedures while maximizing benefits from reduced risk of cancer incidence and death. However, the effectiveness of the new 2012 screening guidelines depends on provider knowledge and adherence. Our study showed that comprehensive knowledge of the 2012 cervical cancer screening guidelines across all screening age categories was low. Further, answers to knowledge questions on the survey were not statistically significantly associated with self-reported practice except for the guidelines for the 21–29 year patient age group, which suggests a difference between knowledge and practice. Compared to studies of provider adherence to previous cervical cancer screening guidelines, which showed that <25% of providers recommended screening at the recommended interval,^{7,10} our study showed that self-reported practice was in concordance with the 2012 cervical cancer screening for >40% of respondents in all age

groups. However, improvement in practice is needed, especially regarding the appropriate use of Pap smear and HPV cotesting.

In previous studies, patient demand was one of the most commonly cited reasons for screening more frequently than recommended by the guidelines, and respondents in our survey expressed a similar concern. A patient survey conducted from December 2001 through July 2002 showed that 69% of patients would reject a provider's recommendation to lengthen the interval between Pap smears¹¹; however, a more recent patient survey performed in 2007 showed that 61.4% of respondents would feel comfortable extending the Pap smear interval from yearly to every 2–3 years, and 69.4% reported that they would follow their provider's advice for less frequent screening.¹² Patients who knew someone with cervical cancer, or who believed the guideline changes were due to cost concerns, were more likely to reject the recommendation for less frequent screening, while those who believed the recommendations were based on scientific evidence were more likely to accept the new guidelines.^{11,13} In a survey study in 2005 through 2007 evaluating both physician practices and patient preferences, 63% of patients reported a willingness to adopt the 3-year screening regimen, but only 32% of physicians had adopted the 3-year Pap test interval recommended at the time.¹⁴ Physician factors associated with more frequent screening included nonwhite race and longer interval since medical school graduation. However, to our knowledge, no other survey has directly assessed the reasons for nonadherence. In our study, other reasons cited for nonadherence to the guidelines were lack of knowledge of the guidelines, concerns about insurance coverage, and lack of clarity regarding whether the health maintenance organization endorsed the 2012 guidelines. These studies identify key areas for improvement, including clearer communication about the health care organization's screening policies, better education for health care providers, and more effective methods for communicating guideline changes to patients. Importantly, these studies suggest that a majority of patients would be willing to accept longer screening intervals if recommended by their health care providers, and if provided with a scientific rationale for the changes. In the age of electronic media, providers have indicated that the most effective modes of communication of guidelines is through email and changes in the electronic health record order prompts. Effective use of the electronic health record and health information technology allows for point-of-care reminders and education for health care providers, and can provide prompts for health care providers to provide patient education.¹⁵ Additionally, Medicaid and Medicare encourage providers to provide clinical summaries for patients at each health care visit,¹⁶ and the guidelines and information about the guidelines could be incorporated into these clinical summaries.

Our study is unique in that we collected information regarding reasons for not adhering to the cervical cancer screening guidelines. We also had a response rate of >40% within an organization that performs >46,000 Pap smears per year. It would be interesting to evaluate adherence rates based on provider demographics (eg, specialty, provider gender, provider age, number of years in practice, number of Pap tests performed annually), however, our small sample size despite the relatively high response rate limited our ability to conduct any subgroup analyses. Additionally, we do not have information on nonresponders, who may have lower guideline adherence rates. We do however note that despite the small sample size, our study should raise concerns about the low adherence to national screening

guidelines, since a health maintenance organization with a standardized screening program may overestimate adherence compared to the wider community of health care providers. Lastly, we used a self-reported survey design to collect data on knowledge of the guidelines. The data was collected anonymously to help ensure a high response rate for the survey. However, one of the limitations of this study is that self-reported practice is only a proxy for true practice. It is possible that respondents were answering the practice questions based on their knowledge of the guidelines rather than based on a reflection of their true practice. Use of electronic health records to match knowledge and actual practice would improve the reliability of the data, but would not allow for anonymous collection of data and may result in a lower response rate from those who are aware of their lack of knowledge of the guidelines.

In conclusion, cervical cancer screening guidelines are frequently updated in an effort to improve detection of disease while minimizing harms of screening. As screening guidelines become more complex, adherence to guidelines becomes more difficult. Although our study shows improvement in adherence compared to previous studies, adherence rates are only moderate within a single health care maintenance organization, and are likely even lower in the wider health care community. Efforts should focus on education and improving cervical cancer screening electronic health record order sets to improve adherence to the 2012 cervical cancer screening guidelines.

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TABLE 1ACS/ASCCP/ASCP 2012 cervical cancer screening recommendations⁶

Screening population age	Screening method
<21 y	No screening
21–29 y	Cytology alone (no HPV testing) every 3 y
30–65 y	Cytology and HPV cotesting every 5 y preferred; cytology alone every 3 y acceptable
>65 y	No screening If history of CIN2+, then screen for 20 y after diagnosis
Posthysterectomy	No screening provided following criteria are met:
	1) Cervix removed
	2) No history of CIN2+ in past 20 y
	3) No history of cervical cancer
Post-HPV vaccination	Follow age-specific recommendations (same as unvaccinated women)

ACS, American Cancer Society; *ASCCP*, American Society for Colposcopy and Cervical Pathology; *ASCP*, American Society for Clinical Pathology; *CIN*, cervical intraepithelial neoplasia; *HPV*, human papillomavirus.

TABLE 2

Demographics and clinical expertise of respondents (N = 135)

Variable	n	%
Degree		
MD/DO	86	63.7
PA	12	8.9
NP	19	14.1
Other ^a	18	13.3
Age, y		
<35	21	15.6
35–50	45	33.3
>50	69	51.1
Sex		
Female	99	73.3
Male	36	26.7
Years in practice		
<5	20	14.8
5–10	21	15.6
>10	94	69.6
Specialty		
Gynecology	31	23.0
Internal medicine	27	20.0
Family practice	52	38.5
Midwifery	19	14.1
Other ^b	6	4.4
Frequency of Pap smear screening in practice		
Daily	83	61.5
Weekly	36	26.7
Monthly	13	9.6
Yearly	3	2.2
Approximate no. of Pap smears/y		
0–5	3	2.2
5–20	14	10.4
20–50	20	14.8
>50	98	72.6

DO, doctor of osteopathy; MD, doctor of medicine; NP, nurse practitioner; PA, physician assistant.

^a 17 Certified nurse midwives, 1 bachelor of medicine;

^b Primary care, medicine-pediatrics, geriatrics, and occupational medicine each represented <2% of practitioners.

TABLE 3

Awareness and compliance with new guidelines (N = 124)

Guideline awareness and compliance	n	%
Aware guidelines changed March 2012?		
Yes	109	87.9
No	15	12.1
If aware, how did you learn about them? (Check all that apply)		
Health Partners email	36	33.0
Health Partners World Wide Web site	5	4.6
Health Partners memo/letter	6	5.5
Press release	15	13.8
Social media	3	2.8
Professional organization	56	51.4
Other ^a	22	17.7
How would you like Health Partners to communicate new guidelines to you? (Check all that apply)		
Email	109	87.9
Online newsletter	12	9.7
World Wide Web site	11	8.9
Epic (EHR) prompts	48	38.7
Paper letter/memo	4	3.2
Social media	2	1.6
Other ^b	2	1.6
What level of compliance have you achieved with new guidelines?		
I always comply with new guidelines	63	50.8
I sometimes comply with new guidelines	50	40.3
I rarely comply with new guidelines	4	3.2
I never comply with new guidelines	0	0.0
I am not aware of new guidelines	7	5.7

EHR, electronic health care record.

^aContinuing medical education (5), colleague (5), publication in peer-reviewed medical journal (3), American Society for Colposcopy and Cervical Pathology and/or US Preventive Services Task Force (4); unknown (5);

^bEmployee Resource Information Center on Health Partners Intranet (1) and source not identified (1).

TABLE 4

Knowledge of cervical cancer guidelines (N = 124)

Screening group	Knowledge question (clinical scenario)	n	%
Age <21 y	Age 19 y, no abnormal history, presents for STD screening		
	Correct – no screening recommended	115	92.7
	Incorrect	9	7.3
Age 21–29 y	Age 24 y, no abnormal history, presents for preconception counseling		
	Correct – Pap smear every 3 y	78	62.9
	Incorrect	46	37.1
Age 30–65 y	Age 32 y, no abnormal history, presents for annual exam		
	Correct – Pap smear every 3 y and/or Pap smear + high-risk HPV cotesting every 5 y	103	83.7
	Incorrect	20	16.3
Age >65 y	Age 67 y, received regular Pap screening for 20 y, no abnormal history, presents for annual exam		
	Correct – no screening recommended	108	87.1
	Incorrect	16	12.9
Age >65 y	Age 69 y, not undergone Pap screening since 30s, presents for annual exam		
	Correct – Pap smear every 3 y and/or Pap smear + high-risk HPV cotesting every 5 y	8	6.5
	Incorrect	116	93.6
Hysterectomy	Age 42 y, history of total hysterectomy (including removal of cervix), no abnormal history, presents for annual exam		
	Correct – no screening recommended	123	99.2
	Incorrect	1	0.8
Summary	All 6 items correct		
	Yes	7	5.7
	No	117	94.4
	At least 5 items correct		
	Yes	61	49.2
	No	63	50.8
	At least 4 items correct		
	Yes	99	79.8
	No	25	20.2

HPV, human papillomavirus; STD, sexually transmitted disease.

TABLE 5

Self-reported cervical cancer screening practices: screening age group 21–29 years (N = 124)

For women ages 21–29 y, no history of abnormal Pap		n	%
Are you screening with Pap smear alone?			
Yes ^a		82	68.3
No		38	31.7
Missing		4	
At what interval are you screening with Pap smears alone?			
Every year		8	9.8
Every 3 y ^a		64	78.1
Every 5 y		0	0.0
Every 10 y		0	0.0
Other		10	12.2
Missing – does not screen with Pap only		42	
Are you screening with Pap smear and HPV cotesting together?			
Yes		44	36.7
No ^a		76	63.3
Missing		4	
At what interval are you performing Pap smears and HPV cotesting together?			
Every year		5	11.4
Every 3 y		30	68.2
Every 5 y		5	11.4
Every 10 y		0	9.1
Other		4	0.0
Missing – does not screen with Pap + HPV cotesting		80	
If not following current screening guidelines, why?			
I am following current guidelines		73	60.8
I do not know current guidelines		12	10.0
I do not think guidelines are based on good data		0	0.0
I feel I have a higher-risk patient population		3	2.5
My patients are demanding a different screening interval		10	8.3
I am worried about missing high-grade dysplasia or cancer in that interim		0	0.0
Other		22	18.3
Missing		4	

HPV, human papillomavirus.

^aCorrect answers following 2012 cervical cancer screening guidelines.

TABLE 6

Self-reported cervical cancer screening practices: screening age group 30–65 years (N = 124)

For women ages 30–65 y, no history of abnormal Pap	n	%
Are you screening with Pap smear alone?		
Yes ^a	75	64.1
No	42	35.9
Missing	7	
At what interval are you screening with Pap smears alone?		
Never	1	1.3
Every year	3	4.0
Every 3 y ^a	67	89.3
Every 5 y	2	2.7
Every 10 y	0	0.0
Other	2	2.7
Missing	49	
Are you screening with Pap smear and HPV cotesting together?		
Yes ^a	68	58.1
No	49	41.9
Missing	7	
At what interval are you performing Pap smears and HPV cotesting together?		
Every year	0	0.0
Every 3 y	26	38.2
Every 5 y ^a	39	57.4
Every 10 y	0	0.0
Other	3	4.4
Missing	56	
If not following current screening guidelines, why?		
I am following current guidelines	70	59.8
I do not know current guidelines	11	9.4
I do not think guidelines are based on good data	0	0.0
I feel I have a higher-risk patient population	2	1.7
My patients are demanding a different screening interval	10	8.6
I am worried about missing high-grade dysplasia or cancer in that interim	1	0.9
Other	23	19.7
Missing	7	

HPV, human papillomavirus.

^aCorrect answers following 2012 cervical cancer screening guidelines.

TABLE 7

Self-reported cervical cancer screening practices: screening age group >65 years (N = 124)

For women ages >65, no history of abnormal Pap		n	%
Are you screening with Pap smear alone?			
Yes		16	14.7
No ^a		81	74.3
Only if she is sexually active		0	0.0
Only if she has new sexual partner		12	11.0
N/A – I do not see women >65 y in my practice		8	
Missing		7	
At what interval are you screening with Pap smears alone?			
Never ^a		9	25.0
Every year		2	5.6
Every 3 y		12	33.3
Every 5 y		1	2.8
Every 10 y		0	0.0
Other		12	33.3
Missing		99	
Are you screening with Pap smear and HPV cotesting together?			
Yes		11	10.1
No ^a		90	82.6
Only if she is sexually active		0	0.0
Only if she has new sexual partner		88	7.3
N/A – I do not see women >65 y in my practice		8	
Missing		7	
At what interval are you performing Pap smears and HPV cotesting together?			
Never ^a		8	29.6
Every year		0	0.0
Every 3 y		5	18.5
Every 5 y		5	18.5
Every 10 y		0	0.0
Other		9	33.3
Missing		108	
Why do you screen women >65 y of age with no history of abnormal Pap?			
I am not screening women >65 y of age		79	68.1
I do not know current guidelines		4	3.5
I do not think guidelines are based on good data		1	0.9
I feel I have a higher-risk patient population		1	0.9
My patients are demanding screening		14	12.1

For women ages >65, no history of abnormal Pap	n	%
I am worried about missing high-grade dysplasia or cancer in this patient population	3	2.6
Other	14	12.1
Missing	8	

HPV, human papillomavirus; N/A, not applicable.

^a Correct answers following 2012 cervical cancer screening guidelines.