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Improving Utilization of 2012 ASCCP Guidelines in a Family Practice Setting

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UNIVERSITY OF SAN DIEGO
Hahn School of Nursing and Health Science

DOCTOR OF NURSING PRACTICE PORTFOLIO

By

Michelle M. McCormick, BSN, RNC-OB

A portfolio presented to the

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Final Manuscript

Improving Utilization of 2012 ASCCP Guidelines

In a Family Practice Clinic

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Introduction

Improved cervical cancer screening in the United States has greatly reduced the incidence of cervical cancer and has led to a reduction in associated mortality associated with it through introduction of papanicolaou (Pap) testing in the middle 20th century (Siegel, Naishadham, & Jemal, 2012). Since the introduction of cervical cancer screening, more recent research has shown a correlation between the human papilloma virus (HPV) and virtually all cervical cancers, specifically high risk types 16 and 18. However, according to the National Cancer Institute (NCI), “Most high risk HPV infections occur without any symptoms, and may cause cytological abnormalities or abnormal cell changes, but go away on their own within 1 to 2 years” (NCI, 2012, para. 2). It is now understood that persistent infection with these high risk types of HPV is necessary for the development of cervical cancers and the precursors, cervical intraepithelial neoplasia grade 3 (CIN3), evidenced by epidemiologic case studies that show nearly 100% of cervical cancers test positive for HPV (Walboomers, et al, 1999). Due to this direct correlation, several organizations including the American Cancer Society (ACS), American Society for Colposcopy and Cervical Pathology (ASCCP), the American Society for Clinical Pathology (ASCP), the American College of Obstetricians and Gynecologists (ACOG), and the United States Preventative Task Force (USPTF), have recommended new guidelines for cervical cancer screening including utilizing Pap and HPV testing together dependent on age, pregnancy status, and previous cytology results (Saslow, et al., 2012).

Problem Identification and Evidence

Despite these recommendations, there are gaps nationwide in implementation of these screening guidelines. Although the recommendation to begin cervical cancer screening at age 21 was published by American Congress of Obstetricians and Gynecologists (ACOG) in 2009, a study 57% of adolescents age 18-21 were still receiving Pap testing as of 2011 (Hirth, Tan, Wilkinson, & Berenson, 2012). In addition, recommendations to discontinue Pap testing for women over age 65 who are not at high risk, or women who have undergone a total hysterectomy and have no history of cervical cancer have been well established since 2003. It is reported that 58% of women over the age of 65 have had a Pap test in the past 3 years, and 34% of women with a hysterectomy report a Pap test within the past 1 year (Kepka, Breen, King, Bernard, & Saraiya, 2014). This overuse of screening extends to increased frequency as well; many women continue to have annual Pap testing regardless of negative HPV status. This could be in part because according to one study, 31% of providers are still recommending annual testing to their patients (Meissner, Tiro, Haggstrom, & Coughlin, 2010). Over screening can result in an increase in abnormal results, leading to rising healthcare costs, additional office visits, and psychological stress for the patient with annual exams or incorrect procedures that yield little useful information or decrease in morbidity (Moyer, 2012). According to USPTF, “treatment of lesions that would otherwise resolve on their own is harmful because it can lead to procedures with unwanted side effects, including the potential for cervical incompetence and preterm labor” (Moyer, 2012, p. 884). Although consensus guidelines and algorithms detailing screening guidelines (Saslow et al., 2012) and management and follow up recommendations for all age groups, pregnancy status,

and cytology result were published by the ASCCP (Masaad, et al., 2012), providers are still performing unnecessary colposcopies, biopsies, and repeat Pap tests prior to recommended follow up. A brief summary of these recommendations is presented in Table 1. (Saslow et al., 2012, p. 149).

Table 1
Summary of Recommendations

Population	Page Numbers	Recommended Screening Method*	Management of Screen Results	Comments
Aged <21 y	521-522	No screening		HPV testing should not be used for screening or management of ASC-US in this age group
Aged 21-29 y	522-523	Cytology alone every 3 y	HPV-positive ASC-US† or cytology of LSIL or more severe: Refer to ASCCP guidelines‡ Cytology negative or HPV-negative ASC-US†: Rescreen with cytology in 3 y	HPV testing should not be used for screening in this age group
Aged 30-65 y	523-529	HPV and cytology "cotesting" every 5 y (preferred) Cytology alone every 3 y (acceptable)	HPV-positive ASC-US or cytology of LSIL or more severe: Refer to ASCCP guidelines‡ HPV positive, cytology negative: Option 1: 12-mo follow-up with cotesting Option 2: Test for HPV16 or HPV16/18 genotypes • If HPV16 or HPV16/18 positive: refer to colposcopy • If HPV16 or HPV16/18 negative: 12-mo follow-up with cotesting Cotest negative or HPV-negative ASC-US: Rescreen with cotesting in 5 y HPV-positive ASC-US† or cytology of LSIL or more severe: Refer to ASCCP guidelines‡ Cytology negative or HPV-negative ASC-US†: Rescreen with cytology in 3 y	Screening by HPV testing alone is not recommended for most clinical settings†
Aged >65 y	529-531	No screening following adequate negative prior screening		Women with a history of CIN2 or a more severe diagnosis should continue routine screening for at least 20 y
After hysterectomy	531	No screening		Applies to women without a cervix and without a history of CIN2 or a more severe diagnosis in the past 20 y or cervical cancer ever
HPV vaccinated	531-533	Follow age-specific recommendations (same as unvaccinated women)		

ASCCP, American Society for Colposcopy and Cervical Pathology; ASC-US, atypical squamous cells of undetermined significance; CIN2, cervical intraepithelial neoplasia grade 2; HPV, human papillomavirus; LSIL, low-grade squamous intraepithelial lesion.

* Women should not be screened annually at any age by any method.

† ASC-US cytology with secondary HPV testing for management decisions.

This evidence based project will target the management of these abnormal results to reduce unnecessary procedures in a Family Practice Clinic at a Military Treatment Facility (MTF).

In order to determine the extent of the problem in the setting, data will be gathered to assess unnecessary referrals for colposcopies when compared to 2012 ASCCP guideline recommendations. In the Family Practice setting at this MTF, patients are referred to a colposcopy clinic for management by a group of residents and staff

physicians. Patient appointments are screened by a nurse and the staff physician overseeing the colposcopy clinic for appropriateness of referral. If the referral falls outside of the guidelines, the consult is then either returned to the referring provider, or scheduled based on provider discretion. The process can create confusion and anxiety for the patients, as they are told of their diagnosis and need for additional testing, then called back to be told to follow up in a given period of time for repeat cotesting based on current guidelines. This information would be gathered by collecting data for a 3-month period, screening all patients referred to the colposcopy clinic by comparing their cytology results and HPV status against 2012 ASCCP guidelines. A percentage will be calculated comparing patients within these guidelines to patients falling outside recommendations. Some diagnoses have repeat cotesting as preferred management, but allow colposcopy as an acceptable management option. These cases will be recorded as adhering to the guideline.

The second component of successful implementation depends on the provider's knowledge and comfort level with the guidelines. This would also be evaluated prior to implementation utilizing a survey (Appendix A) by the Association of Reproductive Health Professionals (ARHP), Cervical Cancer Screening Guidelines, monitoring providers' responses in relation to frequency of screening, co-testing with HPV, and modified to include management of abnormal cytology results (ARHP, 2013a). The survey would also identify any barriers to utilization of the guidelines in the setting in order to target the educational intervention. A paper and pencil test would be administered to all providers within the Family Practice Clinic at the MTF, which

provides a baseline for gaps in understanding and a focus for the provider educational session.

Program Context

With any evidence-based research, there is typically a delay in implementation in the clinical setting. This is true with provider knowledge and use of the 2012 ASCCP guidelines for cervical cancer screening and management of abnormal cytology in a variety of settings nationwide. In 2013, the ARHP convened a consensus meeting with leading experts in cervical cancer prevention to identify practice gaps and barriers to implementation of these guidelines. The consensus meeting key points included the “need for clinical training opportunities about the new guidelines for HPV and cervical cancer screening and management” and that “significant gaps in knowledge exist around the areas of timing of Pap testing, cotesting with HPV, follow up testing, and concerns over persistence of HPV” (ARHP, 2013b, p. 2).

Another contributing factor to the lack of adherence to the guidelines is the fact that they have changed multiple times over the last decade, and various professional organizations have adopted the recommendations at different points in time. Additionally, the algorithms for management of abnormal cytology are complex, with 19 pages of decision trees containing multiple options for management. Providers are hesitant to adopt the decreased screening intervals because many women use the annual Pap screening as their primary reason for accessing medical care; if they are only required to have it every three to five years, will they still come in for other routine screenings? (ARHP, 2013b & Meissner, 2010) This may extend to less aggressive management of

abnormal cytology. If it is not taken care of at the time of service, will patients return in one to three years for repeat testing?

While these factors are issues across the nation in various clinical settings, specific sites have their own unique concerns in relation to implementation of new guidelines. In this project setting, the organization is a military treatment facility, which may affect project implementation both positively and negatively. Cost containment and reduction of unnecessary or outdated procedures is typically of great concern to the chain of command, especially with the political climate and budget scrutiny within the Department of Defense (DoD). Stakeholders were presented with a cost analysis of the proposed intervention versus the cost savings with the number of procedures that could be eliminated, in order to generate command level support. However, this facility is a teaching facility, and providers are often only working in the particular setting for two to three years. This rapid turnover of clinicians as well as leadership leads to additional difficulty with proposed changes and maintenance. Approval for changes often takes several levels of permission within the command and can be a lengthy process.

Possible barriers to implementation included both patient and provider factors, in addition to some of the concerns specific to the site as mentioned. Because patients are been used to annual Pap testing, some may be resistant to decreased frequency. In a survey by Sirovich, Woloshin, and Schwartz (2005), 75% preferred annual Pap screening, although only 43% had heard recommendations for less frequent intervals. When given the recommendations, over half of the women felt the changes were based on cost, and 69% of these would still pursue annual testing despite advisement from their

provider. This resistance could be defused by providing consistent, repeated education of patients by providers and handouts emphasizing main points. These handouts could also neutralize concerns by the providers with time constraints. Most delays in implementation of guidelines are not due to resistance, but practices being overstretched (ARHPb, 2013). A handout at check-in for any well woman exam would decrease time spent counseling patients. Providing education and evidence behind guideline changes may also assist providers with buy-in for themselves and talking points to discuss with their patients, reducing opposition to any proposed solutions. Provider time schedules may also create challenges for any educational sessions, as it could take time away from patient care. Offering educational breakfast prior to clinic hours or a lunch and learn opportunity provide incentive and work around scheduling conflicts. Other valid concerns and barriers to implementation include the training of new residents in a teaching facility. Changes to ASCCP guidelines in 2001 and 2006 have already reduced colposcopies by 45%, resulting in a difficulty producing competent providers able to perform colposcopies in the family practice setting. Decreases also affect maintenance of skills for providers as well, as it is recommended that at least 10 colposcopies a month be performed to sustain proficiency (Keehbauch, Green, Lugo, & Pepe, 2012). The ASCCP guidelines often recommend a preferred treatment with repeat co-testing at one year, but identify colposcopy as an acceptable management option for some cytology results. For this project, offering the patient the option, and not targeting reduction of these patient scenarios would assist with this concern.

Evidence-based Practice Change Framework Model

In order to implement change using evidence based practice, a well developed model framework can keep the project focused and increase chances of success. An effective framework to guide this project can be found in the Catalyst Model by Brown and Ecoff (2007), also referred to as the Evidence Based Practice Institute Model. This framework leads the clinician through several steps in order to bring evidence to practice. The framework begins with a catalyst, a problem or concern that is identified within an organization. The clinician then moves through the various steps, including assessing why the problem is important; asking, which develops a PICO question; acquiring, or searching the literature for evidence; appraising the evidence and determining if there is enough to support a practice change; applying the data by outlining the practice to be changed, identifying desired outcomes, and implementing change into practice; analyzing results pre and post change and whether there were any unintended consequences; and finally, advancing and adopting, in which the clinician shares results and adopts the practice organization wide (Brown and Ecoff, 2007). It is important to be thorough and organized prior to initiating the project, and this framework assisted to ensure all important components were addressed and prepared prior to implementation.

Project Plan Process

According to literature, evidence based solutions to implement guidelines and reduce unnecessary procedures include utilization of electronic medical record (EMR) prompting and decision tools (Broach, et al., 2013, White & Kenton, 2013), peer review or audit and feedback, (Sabatino et al., 2008), and provider in-services and education

(Lozman, Belcher, & Sloand, 2011). When evaluating which solution would best fit this practice setting, several factors were considered, including cost, availability of resources, feasibility, and acceptability of each option. Ideally, the proposed solution should have the strongest evidence base, and apply to a setting similar to an MTF Family Practice Clinic. With the EMR option, this would have been the most involved, as it would require an existing template within the specific computer interface, or the creation of a new one. In a military health system, the computer interface is utilized across DoD, and this may not be accomplished at a command level. This option was one of the most costly, and dependent on outside resources.

A peer review or audit and feedback consists of evaluating performance in screening and management practices providing information to providers about their appropriate utilization of the guidelines. This may be performed after an educational component, and then accomplished with chart reviews targeted at abnormal Pap results. This would be inexpensive, require collaboration with Pathology Department Head or command computer super users to pull cytology and lab data, but no additional resources would be required. Data collection and notification could have been performed by the project implementer. Acceptability to providers may have been limited, however, as it could be perceived as punitive or interfering with provider discretion. Provider education could be accomplished during a 30-45 minute in-service targeting the knowledge gaps identified from a baseline survey. Lozman et al. (2011) recommended that educational sessions followed by a discussion period can also improve adherence to guidelines. This intervention was selected, as it was cost effective, and it would be delivered by the project implementer and a provider champion. This required no additional authorization,

utilized current resources available through professional organizations, and is typically well accepted in this setting.

When evaluating the evidence to support provider education, there are multiple large systematic reviews and meta-analysis that address implementing guidelines into a practice setting. Of the three strongest articles, two were meta-reviews that included 12 and 41 systematic reviews respectively (Francke, Smit, de Veer, & Mistiaen, 2008, Grimshaw, et al., 2001) and one systematic review included 33 randomized controlled trials (Chaillet et al., 2006). These articles all concluded that a multifaceted approach to implementation was most successful versus single interventions such as provider education alone. Additionally, Grimshaw et al. (2001) concluded that “multifaceted interventions based on assessment of potential barriers to change are more likely to be effective” (p. II-26). Francke et al. (2008) discussed other considerations for successful implementation including complexity of the guideline, stating “when a guideline can be relatively easily understood and tried out, the chance is greater the guideline will be used” (p. 7), and recommended targeted interventions in which providers “are directly and actively involved... combinations of (web-based, written, or face-to-face) practical recommendations, educational material, and educational meetings” (p. 8). Like Grimshaw et al., the study by Chaillet et al., (2006) stressed the importance of identifying barriers and adapting the intervention, resulting in significantly higher success rates compared to other interventions. This study also cited reminder systems as one effective component of the multifaceted approach. These are defined as “manual or computerized decision making systems...developed from clinical practice guidelines and pre-

intervention study of barriers to change, an easy-to-use model” (Chiallet et al., 2006, p. 1241).

According to the Oxford Centre for Evidence-based Medicine Levels of Evidence, a systematic review of randomized controlled trials is considered level 1a evidence, or the highest quality and strength (Phillips et al., 2009). Although there is some heterogeneity in the results, it does not affect the aspects and interventions evaluated for this project. This means there is a strong evidence base to support these interventions. Because of the complexity of the algorithm, and the recommendations in the systematic reviews, a two part approach to implementation was planned; a provider education component in the form of a lunch and learn with a presentation and discussion portion, and selection of user friendly tools to assist providers with the application of the 2012 ASCCP guidelines. Tools selected include a mobile app developed by the ASCCP, a free web based application, a one page simplified chart based on ASCCP guidelines, and a pocket sized booklet of the ASCCP algorithms (Appendix B). The educational session was developed using multiple evidence based resources including ARHP’s *Applying Cervical Cancer Screening Guidelines to Clinical Practice* (2014) and *Managing HPV: A New Era in Patient Care* (2013c), as well as Updated ASCCP Consensus Guidelines for Managing Abnormal Cervical Cancer Screening Tests and Cancer Precursors (Gold, 2014 & Lawson, 2014) and HPV Primary Screening in the United States (Mayeaux, 2014). Based on the results of the pre-intervention survey, knowledge gaps and barriers to implementation would be identified and educational presentations tailored to address these areas specifically. The 30 minute educational session is then followed by a 10-15 minute discussion to allow questions and response.

Providers would be trained on the user friendly tools for application of 2012 ASCCP guidelines, and any written information related to the tools distributed at the in-service. Case studies and examples to apply the tool to various patient scenarios are presented as well.

Using the Catalyst Model, an important component of evidence based practice implementation includes developing a PICO question to focus on a specific patient population, intervention, comparison, and outcomes. Based on the literature to support the selected interventions, the PICO statement for this project is:

In women ages 21 to 65 in a military treatment facility, does implementation of 2012 ASCCP guidelines through provider education and utilization of user friendly tools decrease the number of unnecessary referrals for colposcopy?

Program Objectives

Successful implementation of the project would result in meeting several objectives focused on short term and long term impact to the patient, providers, and organization as a whole. The initial outcome objective was focused on improving the provider knowledge of the 2012 ASCCP guidelines for management of abnormal cytology and increased utilization of the guidelines in the setting. The increase in provider utilization should then result in a secondary outcome, a decrease of unnecessary referrals to the colposcopy clinic. The goal was to decrease unnecessary referrals by 25%. The focus of this objective will depend on pre-intervention data collection, the number of unnecessary referrals falling outside of recommendations according to 2012 ASCCP

guidelines. One effect on the organization if these objectives are met would be a decrease in cost to the command. Furthermore, if providers are more knowledgeable and refer less procedures unnecessarily, this would result in a time savings to the providers, both deciding management for abnormal cytology results, and for the colposcopy clinic screening and returning inappropriate referrals. This allows providers to spend more time on patient care rather than administrative tasks. Also, because patients are receiving clear recommendations, it would result in a decrease in patient anxiety, an increase in patient confidence in their provider and increased patient satisfaction. These are long term outcomes that will not be measured for the purposes of this project, but ultimately make a positive impact.

Evaluation Results

Despite initial support from site stakeholders, departmental leadership, and providers in the Family Practice Clinic, data collection and delivery of educational session was ultimately not implemented due to multiple project barriers. Although the project was reviewed and approved by the Clinical Investigation Department in August of 2014 as a Process Improvement and Quality Assurance (PI/QA) project, changes to the Institutional Review Board (IRB) process during project implementation created delays in delivery of intervention and data collection. Shortly after approval to proceed as a PI/QA project requiring only a letter of departmental support and chain of command notification, the Clinical Investigative Head position at the site was eliminated. When scheduling of educational session and administration of provider survey was to be arranged in December 2014, a new, formalized approval process for PI/QA projects was

created. In the same timeframe, the clinical mentor was sent on a temporary duty assignment for military training for a six week period beginning December 2014. In addition, staff turnover occurred in two key leadership positions involved as project stakeholders during fall of 2014.

At a command level, there were also several barriers that halted project implementation including the importance of the site for colposcopy training of residents and for maintenance of colposcopy skills for family practice physicians. Stakeholders in higher leadership positions were concerned about maintenance of these educational programs for new staff if the number of colposcopies were reduced. Higher levels of leadership also perceived a mismatch between project goals and the current Healthcare Effectiveness Data and Information Set (HEDIS) measure of all eligible patients having a Pap within last 3 years. Although cost containment is a typically a goal of Military Medicine, this particular project ultimately was not a priority to the command due to competing resource allocation and higher priority educational needs of the organization.

Conclusion

The evidence based research and literature review presented in this project was strong enough to support implementation of the proposed change in this setting, and in a facility such as a Family Practice Clinic in a Military Treatment Facility, a cost savings based on evidence based practice changes would be a great benefit to the patients, providers, and the organization as a whole. The cost of this project would be minimal, taking into consideration the implementers time, which is donated as a student, cost of supplies including paper for surveys, laminated handouts, and booklets for provider participants.

The cost benefit to the command from program implementation would include the cost savings of repeat visits including provider time, Pap testing or colposcopy cost which averages \$500-\$1000 depending on the number of biopsies performed, times the number of patients per year with unnecessary referrals to the colposcopy clinic. Additional cost savings to take into consideration include collection supplies (speculum, swabs, transport media, linen, exam table paper, chux); lab costs (personnel and lab testing supplies); provider time not only for the visit, but also time spent looking up recommendations for management and calling patient with results; cost of assistive personnel to get vitals, standby for exam, process specimens, order labs, transport specimens, and clean the room.

Although the project appears to be cost effective, when beginning Evidence Based Practice project implementation, consideration for benchmarking improvement goals, mission and vision of the organization is of equal or greater importance to the success of the project. Additionally, one should anticipate more levels of approval, larger number of stakeholders in military health systems. Other obstacles include frequent turnover of leadership and key personnel creating additional challenges to organizational change in this setting.

References

- American Congress of Obstetricians and Gynecologists (2009). ACOG practice bulletin 109: Cervical cytology screening. *Obstetrics & Gynecology*, 114, 1409-1420. doi: 10.1097/AOG.0b013e3181c6f8a4.
- Association of Reproductive Health Professionals (2013a). *Cervical Cancer Screening Guidelines Survey*.
- Association of Reproductive Health Professionals (2013b). *Report of the Consensus Meeting: Using New Guidelines to Help Prevent Cervical Cancer and HPV Disease in Women*. Denver, CO. Retrieved from http://www.arhp.org/uploaddocs/2013_HPV_Consensus_Rpt.pdf
- Association of Reproductive Health Professionals. (2013c). *Managing HPV: A new era in patient care*. [PowerPoint Presentation]. Retrieved from <http://core.arhp.org/search/searchDetail.aspx?itemId=1436>
- Association of Reproductive Health Professionals. (2014). *Applying cervical cancer screening guidelines to clinical practice*. [PowerPoint Presentation]. Retrieved from <http://core.arhp.org/search/searchDetail.aspx?itemId=10772>
- Broach, V., Day, L., Barenberg, B., Huang, S., Kenton, K., & White, P. (2013). Use of electronic health record-based tools to improve appropriate use of the human papillomavirus test in adult women. *Journal of Lower Genital Tract Disease*, 18, 26-30. doi: 10.1097/LGT.0b013e31828cde2a

- Brown C. E. & Ecoff L. (2007). *Evidence-Based Practice Institute Model*. San Diego, CA: Consortium for Nursing Excellence. Retrieved from https://health.ucsd.edu/medinfo/nursing/edr/research/Documents/EBP_85x11_Color.pdf
- Chaillet, N., Dube, E., Dugas, M., Audibert, F., Tourigny, C., Fraser, W. D., & Dumont, A. (2006). Evidence-based strategies for implementing guidelines in obstetrics: A systematic review. *Obstetrics & Gynecology*, 108, 1234-1245. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0022913/>
- Francke, A. L., Smit, M. C., de Veer, A. J., & Mistiaen, P. (2008). Factors influencing the implementation of clinical guidelines for health care professionals: A systematic meta-review. *BioMed Central Medical Informatics and Decision Making*, 8(38), 1-11. doi: 10.1186/1472-6947-8-38.
- Ghofrani, M. (2014). *Pap Reader Online*. [Web-based Application]. Retrieved from <http://www.pathologyresources.com>
- Gold, M. A. (2014). Proceedings from The International Federation of Cervical Pathology and Colposcopy (IFCPC) 15th World Congress: *Updated ASCCP Consensus Guidelines for Managing Diagnosed Cervical Cancer Precursors*. London, UK. Retrieved from <http://www.asccp.org/LinkClick.aspx?fileticket=BnCfZpPymPo%3d&portalid=9>
- Grimshaw, J. M., Shirran, L., Thomas, R., Mowatt, G., Fraser, C., Bero, L., ... O'Brien, M. A. (2001). Changing provider behavior: An overview of systematic reviews of interventions. *MedicalCare*, 39, II 2-II 45.

- Hirth, J. M., Tan, A. T., Wilkinson, G. S., & Berenson, A. B. (2012). Compliance with cervical cancer screening and human papillomavirus testing guidelines among insured young women. *American Journal of Obstetrics & Gynecology*, 209, 200-207. doi: 10.1016/j.ajog.2013.05.058
- Keehbauch, J., Green, L., Lugo, N., & Pepe, J. (2012). The influence of ASCCP guideline changes on family medicine residency colposcopy training. *Family Medicine*, 44, 650-653. Retrieved from <http://www.stfm.org/fmhub/fm2012/October/Jennifer650.pdf>
- Kepka, D., Breen, N., King, J. B., Bernard, V. B., & Saraiya, M. (2014). Overuse of papanicolaou testing among older women and among women without a cervix. *Journal of American Medical Association Archives of Internal Medicine*, 174, 293-296. doi:10.1001/jamainternmed.2013.12607.
- Lawson, H. W. (2013). *Updated ASCCP Consensus guidelines for managing abnormal cervical cancer screening tests and cancer precursors*. [Online CME Course]. Retrieved from <http://www.asccp.org/Education/Online-CME/Online-CME-Series/CourseListONL/Updated-ASCCP-Consensus-Guidelines>
- Lozman, R. A., Belcher, A., & Sloand, E. (2011). Does a 30-min quality improvement clinical practice meeting reviewing the recommended Papanicolaou test guidelines for adolescents improve provider adherence to guidelines in a pediatric primary care office? *Journal of the American Association of Nurse Practitioners*, 25, 584–587. doi: 10.1111/1745-7599.12019

Massad, L. S., Einstein, M. H., Huh, W. K., Katki, H. A., Kinney, W. K., Schiffman, M.,
... Lawson, H.W. (2013). 2012 updated consensus guidelines for the management
of abnormal cervical cancer screening tests and cancer precursors. *Journal of
Lower Genital Tract Disorders*, 17(5), S1-27. doi:
10.1097/LGT.0b013e318287d329

Mayeaux, E. J. (2014). Proceedings from The International Federation of Cervical
Pathology and Colposcopy (IFCPC) 15th World Congress: *HPV Primary
Screening in the United States*. London, UK. Retrieved from
[http://www.asccp.org/Portals/9/docs/Resources/HPV%20Primary%20Screening%
20in%20the%20US%20London%20n%20Orlando%20-%20mayeaux.pdf](http://www.asccp.org/Portals/9/docs/Resources/HPV%20Primary%20Screening%20in%20the%20US%20London%20n%20Orlando%20-%20mayeaux.pdf)

Meissner, H. I., Tiro, J. A., Haggstrom D. A., & Coughlin, S. S. (2010). Too much of a
good thing? Physician practices and patient willingness for less frequent Pap test
screening intervals. *Medical Care*, 48, 249-59. doi:
10.1097/MLR.0b013e3181ca4015

Moyer, V. A. on behalf of the U.S. Preventive Services Task Force (2012). Screening for
cervical cancer: U.S. Preventive Services Task Force recommendation statement.
Annals of Internal Medicine, 156, 880-891. doi:10.7326/0003-4819-156-12-
201206190-00424

National Cancer Institute. (2012). HPV and cancer. Retrieved from:
<http://www.cancer.gov/cancertopics/factsheet/Risk/HPV>

- Phillips, B., Ball, C., Sackett, D., Badenoch, D., Straus, S., Haynes, B., & Dawes, M. (2009). Oxford centre for evidence-based medicine levels of evidence. Retrieved from <http://www.cebm.net/index.aspx?o=1025>
- Sabatino, S. A., Habarta, N., Baron, R. C., Coates, R. J., Rimer, B. K., Kerner, J., ... & Chattopadhyay, S. (2008). Interventions to increase recommendation and delivery of screening for breast, cervical, and colorectal cancers by healthcare providers: Systematic reviews of provider assessment and feedback and provider incentives. *American Journal of Preventive Medicine*, 35(1), S67-S74. doi: 10.1016/j.amepre.2008.04.008.
- Saslow, D., Solomon, D., Lawson, H. W., Killackey, M., Kulasingam, S. L., Cain, J., ... & Myers, E. R. (2012). American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology screening guidelines for the prevention and early detection of cervical cancer. *CA: A Cancer Journal for Clinicians*, 62, 147-172. doi: 10.3322/caac.21139
- Siegel, R., Naishadham, D., & Jemal, A. (2012). Cancer statistics, 2012. *CA: A Cancer Journal for Clinicians*, 62, 10-29. doi: 10.3322/caac.20138
- Sirovich, B. E., Woloshin, S., & Schwartz, L. M. (2005). Screening for cervical cancer: Will women accept less? *The American Journal of Medicine*, 118, 151-158. doi: <http://dx.doi.org/10.1016/j.amjmed.2004.08.021>
- Walboomers, J. M., Jacobs, M. V., Manos, M. M., Bosch, F. X., Kummer, J. A., Shah, K. V., ... Muñoz, N. (1999). Human papillomavirus is a necessary cause of invasive cervical cancer worldwide. *Journal of Pathology*, 189(1), 12-19. doi: 10.1002/(SICI)1096-9896(199909)

White, P., & Kenton, K. (2013). Use of electronic medical record–based tools to improve compliance with cervical cancer screening guidelines: Effect of an educational intervention on physicians' practice patterns. *Journal of Lower Genital Tract Disease, 17*, 175-181. doi: 10.1097/LGT.0b013e3182607137

Appendix A

Provider Survey of Cervical Cancer Screening and Management

Thank you for your time completing this survey. All surveys will be anonymous.

1. What is your professional category?
 - a. Certified Nurse Midwife
 - b. Nurse Practitioner
 - c. Physicians Assistant
 - d. Physician
 - e. Resident
 - f. Intern
 - g. Student (NP, PA, Medical Student)
 - h. Other (Please Specify):_____

2. How many years have you been practicing as a provider?
 - a. 1-2 years
 - b. 2-5 years
 - c. 5-10 years
 - d. 10 or more years

3. How would you describe the setting of your primary clinical practice?
 - a. Primary Care Clinic
 - b. OB/GYN
 - c. Internal Medicine
 - d. Other (Please Specify):_____

4. Do you perform PAP testing and/or colposcopies?
 - a. Yes, I perform both PAP tests and colposcopies
 - b. I perform PAP testing only
 - c. No, I am not able to perform PAP testing or colposcopies

5. How would you describe your level of proficiency regarding the latest cervical cancer screening guidelines including HPV testing?
- a. Expert (recognized authority)
 - b. Advanced
 - c. Intermediate (practical application)
 - d. Novice
 - e. Fundamental Awareness (basic knowledge)
6. How would you describe your level of proficiency regarding guidelines for management of abnormal cytology?
- a. Expert (recognized authority)
 - b. Advanced
 - c. Intermediate (practical application)
 - d. Novice
 - e. Fundamental Awareness (basic knowledge)
7. What do you believe are the primary barriers to integration of the guidelines for cervical cancer screening and management of abnormal cytology (circle ALL that apply)?
- a. Lack of knowledge or awareness about new guidelines
 - b. Ensuring patients' continuity of care
 - c. Patient resistance (i.e. desire for annual Pap test)
 - d. Provider time used to explain new guidelines to patients
 - e. Colleagues' resistance to change
 - f. Administrative barriers
 - g. Frequently changing guidelines
 - h. Guidelines very complex and difficult to apply to practice
- Other (Please Specify):

8. How are you using HPV testing in screening?
- a. Substitute for regular cervical cytology screening
 - b. Follow-up to ASCUS or abnormal tests only
 - c. Cotesting all women age 21 and older
 - d. Follow-up to ASCUS in women 21 to 29 and cotesting for women 30 and older
 - e. I'm not using HPV testing
 - f. Other (please specify): _____

9. 15. Have you ordered an HPV 16/18 genotyping test in the past 6 months? (i.e. a diagnostic test that identifies the presence of HPV 16 or 18 separately from other high-risk genotypes)
- a. Yes
 - b. No
10. If no, why haven't you ordered an HPV 16/18 genotyping test in the past 6 months? (check ALL that apply)
- a. I was unaware a genotyping test existed.
 - b. The test is not available at the lab I use.
 - c. I am not convinced of the medical or clinical value of the test.
 - d. I am unclear on what I would do differently with the results of the test.
 - e. Use of this test is not consistent with screening guidelines.
 - f. Other (Please Specify): _____

11. What resources do you currently use to determine management of an abnormal cytology result?
- a. UpToDate
 - b. ASCCP Algorithms
 - c. Mobile App
 - d. Expert provider in my clinic
 - e. Expert provider in another specialty clinic
 - f. Same management as I have used in the past

g. Other (Please Specify): _____

12. HPV types 16 and 18 account for what percentage of invasive cervical cancers?

- a. 50%
- b. 60%
- c. 70%
- d. 80%
- e. 90%

13. Which one of the following statements about HPV testing for cervical cancer screening is not correct?

- a. It should be used instead of cytology for women under age 25
- b. It assesses future risk not just current disease
- c. Identifies cervical cancer precursors earlier
- d. HPV negative women have a lower risk of cervical cancer than cytology negative women

14. Based on current consensus-based cervical cancer screening guidelines, which statement below is correct?

- a. Cervical cytology alone is not acceptable as a primary method of cervical cancer screening
- b. Primary HPV screening should begin at age 30
- c. Cotesting (HPV testing and cervical cytology) is preferred in women 25 years of age and older
- d. Cotesting (HPV testing and cervical cytology) is preferred in women 30 years of age and older
- e. Cotesting (HPV testing and cervical cytology) is preferred in women 35 years of age and older

15. A 32 year-old patient arrives for a well woman exam at your clinic. Her last visit was 5 years ago. She is currently sexually active with a new partner. You perform cotesting with cervical cytology and HPV testing, and her results show ASC-US with negative HPV. What is your management of this patient?
- a. Refer for colposcopy
 - b. Repeat cotesting in 12 months
 - c. Repeat cotesting in 3 years
 - d. Repeat cotesting in 5 years
 - e. Both a or b would be acceptable
16. Another patient, a 44 year old woman in a mutually monogamous relationship for the past 20 years, arrives for her well woman exam. Her last visit was 3 years ago, with a negative cytology, but no previous HPV testing. You perform cotesting, and her results show negative cytology with a positive HPV. What is your management of this patient?
- a. Refer for colposcopy
 - b. Repeat cotesting in 12 months
 - c. Perform HPV genotyping
 - d. Repeat cotesting in 3 years
 - e. Both b or c would be acceptable
17. Your last patient is a 22 year old woman presenting for her first well woman exam, she is not sexually active. You perform cytology alone, and her results show Low-grade Squamous Intraepithelial Lesion (LSIL). What is your management of this patient?
- a. Refer to colposcopy
 - b. Repeat cytology alone in 12 months
 - c. Routine screening
 - d. Perform reflex HPV testing
 - e. Both b or d would be acceptable
18. Which of the following information topics would be helpful to better understand cervical cancer screening and management of abnormal cytology guidelines (check best THREE choices)?
- a. Explanation of the natural history of HPV and the development of cervical cancer
 - b. Understanding of the difference between transient and persistent infection

- c. Data behind extended screening interval
 - d. Real world data on loss of follow-up due to extended screening interval
 - e. What should be included in the annual visit if it no longer focuses on the Pap test
 - f. Case studies of patients with varying test results
 - g. Ongoing follow up after colposcopies
 - h. When to return to normal screening intervals after abnormal cytology or colposcopy
 - i. Other (Please Specify): _____
-

19. Which of the following tools or educational activities would be helpful to you in applying guidelines for cervical cancer screening or management of abnormal cytology (check best THREE choices)?

- a. Patient education fact sheets
 - b. Inclusion of cervical cancer screening measures and management guidelines in electronic medical record (EMR)
 - c. Quality measures such as HEDIS that include HPV testing
 - d. Web based tool for providers to apply the guidelines
 - e. Smartphone apps
 - f. Simplified algorithms
 - g. CME Web-based educational sessions
 - h. Other (Please Specify): _____
-

Appendix B

Screening Interval for Combined Pap and HPV Testing in Women 30 and Older: Primary Screening

HPV Result	Cytology	Recommended Management
Negative	Negative	Cotest in 5 years
Negative	ASC-US	Cotest in 3 years
Positive	ASC-US	Colposcopy
Negative	Pap $\geq$ LSIL	Repeat cotesting in 1 year preferred; colposcopy acceptable
Positive	Pap $\geq$ LSIL	Colposcopy
Any	HSIL	Colposcopy or immediate loop electrosurgical excision
Positive	Negative	Option 1: Cotest in 12 months Option 2: Reflex to genotyping for HPV 16/18. If positive, colposcopy. If negative, cotest in 12 months

User friendly tool to apply 2012 ASCCP Guidelines; One page simplified chart, AHRP (2014)

2012 Consensus Conference Guidelines

In March 2013, updated consensus guidelines were published for the management of women with abnormal cervical cancer screening tests and cancer precursors. These guidelines were simultaneously published in the April 2013 issues of *Journal of Lower Genital Tract Disease* (17:S1-S27) and *Obstetrics and Gynecology* (121:829-46).

On this page you can enter data for particular patients -- including age, cytology and HPV results, and pregnancy or menopausal status -- to read specific recommendations on how to manage the test results. Please note cytology diagnosis and age are required. If HPV status is not entered, the software will assume HPV testing was not performed or the result is unknown. Also, if the patient is not identified as being pregnant or postmenopausal, then the software assumes she is neither.

These recommendations are based on the references cited above and their accuracy depends on the accuracy of the input data. Also, the recommendations assume the test results were obtained in the course of routine cervical cytology screening and may not apply to patients with preceding abnormalities who are undergoing diagnostic testing. Finally, as stated in the guidelines: "Clinical judgment should always be applied when applying guidelines to individual patients."

Enter patient data below:

Cytology ("Pap") diagnosis:

Patient age: years old

☐ Pregnant

☐ Postmenopausal

HPV result: ☐ Negative ☐ Positive ☐ Unknown

Questions or comments? Contact admin@pathologyresources.com

User friendly tool to apply 2012 ASCCP Guidelines;

Free web based application <http://www.pathologyresources.com> (Ghofrani, 2014).

WIN Poster Abstract

**DECREASING UNNECESSARY PAP TESTS AND COLPOSCOPIES
USING 2012 ASCCP GUIDELINES**

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Purpose: The purpose of this evidence-based project is to decrease unnecessary procedures using provider education and user friendly tools to apply the 2012 American Society for Colposcopy and Cervical Pathology (ASCCP) Guidelines at a Military Treatment Facility Family Practice Clinic.

Background: Currently, in the United States, despite clear cervical cancer screening guidelines, it is reported that 58% of women over the age of 65 have had a Pap test in the past 3 years and 34% of women with a hysterectomy report a Pap test within the past 1 year. Additionally, 57% of adolescents age 18-21 were still receiving Pap testing as of 2011. Women are continuing to have annual Pap testing regardless of negative HPV status, partly because 31% of providers are still recommending annual testing to their patients. This over screening can result in an increase in false positive results, leading to rising healthcare costs, additional office visits, and psychological stress to the patient with annual exams or incorrect procedures that yield little useful information or decrease in morbidity. Although consensus guidelines and algorithms detailing screening guidelines, management and follow up recommendations have been published by the

ASCCP, providers are still performing unnecessary colposcopies, biopsies, and repeat Pap tests prior to recommended follow up.

Methods: This project will utilize the Catalyst Model by Brown & Ecoff, also referred to as the Evidence Based Practice Institute Model. According to this model, after identifying the catalyst and describing why the problem is important, we develop a PICO question, search the literature for evidence, and appraise the evidence to determine if there is enough to support a practice change. Problem assessment in the setting will be done by identifying unnecessary procedures by comparing management of abnormal PAP results over 3 month period to the 2012 ASCCP guideline recommendations. Next, provider's knowledge and comfort level with guidelines will be assessed using a survey on the frequency of screening, use of co-testing with HPV, and management of abnormal cytology results. Once this data is obtained, the data will be applied by outlining the practice to be changed, identifying desired outcomes, and implementing change into practice through provider education. Educational sessions will be developed and conducted using multiple tools to help providers apply the algorithms for abnormal cytology algorithms including a web-based tool, mobile app, and simplified one-page algorithm.

Outcomes Achieved: A second chart review will be conducted 3 months after the intervention in the same manner to identify the number of inappropriate management of Pap results according to the ASCCP guidelines.

Conclusions: If successful, implementation will increase provider comfort level and knowledge of the guidelines, which will in turn lead to decreased numbers of appointments and follow-up procedures, therefore a decrease in cost to the clinic. It may also increase patient satisfaction by decreasing unnecessary patient anxiety.

Improving utilization of 2012 ASCCP guidelines in a Family Practice setting

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BACKGROUND

- Women still being over screened for cervical cancer
- 58% women >65 report Pap in past 3 years
- 34% women with hysterectomy had Pap in past 1 year
- 57% adolescents age 18-21 have had a Pap
- Women continuing to have annual Pap testing
- 31% of providers still recommend yearly Pap
- Overtesting with Pap means results in more false positives leading to:
 - Rising healthcare costs
 - Unnecessary office visits for colposcopies, biopsies, and repeat Pap tests prior to recommended follow up
 - Increased psychological stress for women
 - Increased morbidity from overzealous treatment of benign conditions
- All resulting in **no decrease in mortality**
- Consensus guidelines and algorithms for screening, management, and follow up published
 - 19 Pages of algorithms
 - Complex decision trees with multiple options for management
 - Difficult to follow if not utilized frequently

AIM/PURPOSE

- The purpose of this evidence-based project is to decrease unnecessary referrals for colposcopies through provider education and user friendly tools to apply the 2012 American Society for Colposcopy and Cervical Pathology (ASCCP) Guidelines in a military treatment facility primary care setting.

PRACTICE INNOVATION

- Educational sessions for providers tailored to setting based on survey results identifying specific barriers and areas of knowledge gaps.
 - Prepared using resources from ASCCP and Association of Reproductive Health Professionals (ARHP)
 - Includes case studies of patients with varying cytology and HPV results
- User friendly tools and resources to help providers apply the algorithms for abnormal cytology results including a web-based tool, mobile app and simplified one-page algorithm.

EVIDENCE FOR INTERVENTION

- According to multiple systematic reviews, evidence supports the following:
- Multifaceted approach more effective vs. single interventions such as provider education alone
 - Reminder systems one effective component
 - Manual or computerized decision making tools
 - Easy-to-use models
 - Use targeted interventions actively involving providers
 - Combinations of practical recommendations, educational material, and educational meetings
 - Important to identify barriers and adapt intervention

EVALUATION METHODS

- Evaluation of barriers to implementation, provider's knowledge and comfort level of guidelines utilizing a survey, including frequency of screening, co-testing with HPV, and management of abnormal cytology results using patient scenarios.
- Assess number of unnecessary referrals over 3 month period pre and post intervention, obtained by comparing cytology and HPV results to management recommendations based on 2012 ASCCP guidelines.

NURSING MODEL

Problems with project implementation:

- ASSESSING stage
 - Problem identified important at clinic level
 - Higher administrative levels had mixed feelings due to competing needs
- APPLYING stage
 - Further need to consider risks and benefits with input from leadership
 - Understand resources prioritization in setting

RESULTS

- Data collection and delivery of educational session was ultimately not implemented due to multiple project barriers including:
 - Staff turnover/deployments of key personnel and stakeholders
 - Changes to IRB approval and formation of formal PDSA process during project implementation
 - Importance of site of colposcopies for resident training and sustainment
 - Perception of project mismatch with current Healthcare Effectiveness Data and Information Set (HEDIS) measure: Pap within last 3 years for all eligible patients

CONCLUSIONS

- When planning Evidence Based Practice Project implementation, consider benchmarking improvement goals, mission and vision of organization
- Anticipate more levels of approval, larger number of stakeholders in military health systems.
- Frequent turnover of leadership, personnel create additional challenges to organizational change in this setting

REFERENCES

- See handout provided
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Improving Utilization of 2012 ASCCP Guidelines

Michelle McCormick
Mary Barger, Faculty Chair

Background

- ▶ Nationwide, women still being over screened
 - 58% women >65 report Pap in past 3 years
 - 34% of women with a hysterectomy report Pap in last 1 year
 - 57% of adolescents age 18–21 have had Pap testing
 - Women continuing to have annual Pap testing
 - 31% of providers still recommending annual testing to their patients
- ▶ Although consensus guidelines and algorithms for screening, management and follow up published, providers are still performing unnecessary colposcopies, biopsies, and repeat Pap tests prior to recommended follow up

Practice setting

- ▶ 3 different practice settings – frustration, confusion with algorithms
- ▶ Ultimately, chose Military Treatment Facility Family Practice Clinic
 - Pt has Pap smear in FP
 - If abnormal refer to colposcopy clinic
 - Colposcopy clinic 2 days a week
 - Residents perform colposcopy with Staff MD

Problem Identification

- ▶ Inefficiencies with referral process
 - Providers not comfortable with algorithms – spending additional time determining management
 - Colposcopy clinic needing to spend time screening appropriateness of referrals
 - Patient confusion, anxiety with plan of care
- ▶ Training for new residents, not referring providers that perform Pap only

Objectives

- ▶ Improve provider usage of the 2012 ASCCP guidelines.
- ▶ Decrease of unnecessary colposcopy referrals
- ▶ Ultimately (unmeasured)
 - Decrease cost
 - Decrease patient anxiety due to less unnecessary procedures
 - Increase patient satisfaction

PICO statement

- ▶ In women ages 21 to 65 in a military treatment facility, does implementation of 2012 ASCCP guidelines through provider education and utilization of a user friendly tool decrease the number of unnecessary referrals for colposcopy?

Evidence for Intervention

- ▶ Multifaceted approach vs. single interventions such as provider education alone
- ▶ Targeted interventions actively involving providers
 - Combinations of practical recommendations, educational material, and educational meetings
- ▶ Reminder systems
 - Manual or computerized decision making systems
 - Developed from clinical practice guidelines
 - pre-intervention study of barriers to change
 - Easy-to-use model
- ▶ Important to identify barriers and adapt the intervention

Setting/Baseline Assessment

- ▶ Data to be collected as a two step process:
 - Step 1–Over a 3 month period, assess the number of unnecessary referrals by comparing cytology and HPV results to management recommendations based on 2012 ASCCP guidelines
 - Step 2– Assess barriers to implementation, provider’s knowledge and comfort level of guidelines utilizing a survey including frequency of screening, co-testing with HPV, and management of abnormal cytology results using patient scenarios.

Initial Project Timeline

However...Project Barriers Arose

- ▶ Loss of Clinical Investigative Head position and formal IRB and QA/PI approval
 - changing number of stakeholders
- ▶ Staff turnover/deployments
- ▶ Lack of project urgency/priority within chain of command
 - Mismatch of HEDIS measure–Pap within 3 years, perception of mixed message–no measure to decrease unnecessary procedures
 - Residents need colposcopies for training and sustainment
 - Cost not issue

Lessons Learned

- ▶ Helpful if project aligns with benchmarking data for clinic
- ▶ Anticipate more levels of approval, larger number of stakeholders in Military health systems
- ▶ Reluctance for identification of deficiencies especially from outside sources—concern for visibility at command level

References

- Chaillet, N., Dube, E., Dugas, M., Audibert, F., Tourigny, C., Fraser, W. D., & Dumont, A. (2006). Evidence-based strategies for implementing guidelines in obstetrics: A systematic review. *Obstetrics & Gynecology*, 108, 1234–1245. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0022913/>
- Francke, A. L., Smit, M. C., de Veer, A. J., & Mistiaen, P. (2008). Factors influencing the implementation of clinical guidelines for health care professionals: A systematic meta-review. *BioMed Central Medical Informatics and Decision Making*, 8(38), 1–11. doi: 10.1186/1472-6947-8-38.
- Grimshaw, J. M., Shirran, L., Thomas, R., Mowatt, G., Fraser, C., Bero, L., ... O'Brien, M. A. (2001). Changing provider behavior: An overview of systematic reviews of interventions. *Medical Care*, 39, 112–1145.
- Hirth, J. M., Tan, A. T., Wilkinson, G. S., & Berenson, A. B. (2012). Compliance with cervical cancer screening and human papillomavirus testing guidelines among insured young women. *American Journal of Obstetrics & Gynecology*, 209, 200–207. doi: 10.1016/j.ajog.2013.05.058
- Kepka, D., Breen, N., King, J. B., Bernard, V. B., & Saraiya, M. (2014). Overuse of papanicolaou testing among older women and among women without a cervix. *Journal of American Medical Association Archives of Internal Medicine*, 174, 293–296. doi:10.1001/jamainternmed.2013.12607.
- Masaad, L. S., Einstein, M. H., Huh, W. K., Katki, H. A., Kinney, W. K., Schiffman, M., ... Lawson, H.W. (2013). 2012 Updated consensus guidelines for the management of abnormal cervical cancer screening tests and cancer precursors. *Journal of Lower Genital Tract Disorders*, 17(5), S1–S7. doi: 10.1097/LGT.0b013e318287d329
- Meissner, H. I., Tiro, J. A., Haggstrom D. A., & Coughlin, S. S. (2010). Too much of a good thing? Physician practices and patient willingness for less frequent Pap test screening intervals. *Medical Care*, 48, 249–59. doi: 10.1097/MLR.0b013e3181ca4015