Executive Summary

Results from:

HPV Provider Survey: Knowledge, Attitudes, and Practices About Genital HPV Infection and Related Conditions

Submitted by:

Daniel E. Montaño, Ph.D.
Danuta Kasprzyk, Ph.D.
Linda Carlin, Ph.D.
Crystal Freeman, Ph.D., MPH

Battelle
Centers for Public Health Research and Evaluation
1100 Dexter Avenue North, Suite 400
Seattle, WA 98109-3598

Submitted to:

Kathleen Irwin, M.D., M.P.H., Chief
Nidhi Jain, M.D., M.P.H.
Health Services Research and Evaluation Branch
Division of STD Prevention, Mailstop E-80
National Center for HIV, STD, TB Prevention
Centers for Disease Control and Prevention
1600 Clifton Road NE
Atlanta, Georgia 30333

June 14, 2005

Statement of the Problem

Infection with genital types of human papillomavirus, or genital HPV, is very common in sexually active populations. It is estimated that 20 million people in the U.S. have HPV infection, and 6.2 million new HPV infections are diagnosed annually, making this the most common sexually transmitted infection. An estimated 80% of sexually active women and men will acquire HPV infection at some point in their lives. Data accumulated over the last two decades indicate that genital HPV infection is transmitted through skin-to-skin contact during penetrative sexual intercourse and non-penetrative anogenital and orogenital contact. Thus, persons who are sexually active are at risk for acquiring infection; persons with several sex partners during a lifetime are more likely to acquire infection than persons with few sex partners during a lifetime. Thus, abstaining from sexual activity is the most effective way to prevent infection. For persons who do not abstain from sexual activity, reducing the number of sex partners during a lifetime will reduce risk of HPV exposure. Condoms may prevent transmission of HPV to or from sites covered by or protected by a condom, but condoms do not cover or protect all anatomic sites from which HPV may be shed or through which HPV may be acquired. Although the effect of condoms in preventing HPV transmission is inconclusive, several studies indicate that condom use can reduce the risk of the two most common clinically important HPV-related conditions, genital warts and cervical cancer. Little is known about the extent to which U.S. clinicians are aware of this relatively new information about genital HPV prevalence, natural history, transmission, and prevention.

Fortunately, most genital HPV infections are transient, do not produce recognizable signs, and do not result in clinically recognizable or clinically important conditions. Moreover, most HPV infections clear without any medical intervention within two years of infection. In contrast to transient HPV infection, persistent HPV infection may result in anogenital warts, a non-malignant condition, or in precancerous cellular changes of the cervix, typically recognized as an abnormal Papanicolaou (Pap) test, or in precancerous cellular changes of other anogenital organs. If these precancerous changes are not detected, they may progress to anogenital cancer, the most common of which is cervical cancer. However, cervical cancer is an uncommon consequence of HPV infection in women, especially if women are screened regularly with Pap tests and have appropriate followup of Pap test abnormalities. Treatments for genital HPV infection are directed to genital warts or precancerous cellular changes of the cervix (abnormal Pap tests) and not the HPV infection itself. Currently, there is no curative treatment for genital HPV infection.

In the last decade, sensitive and reliable assays for detecting oncogenic and non-oncogenic types of HPV DNA have been developed. In 2000, the U.S. Food and Drug Administration (FDA) approved the use of one HPV DNA test to guide management of patients with borderline abnormal Pap tests, known as Atypical Squamous Cells of Undetermined Significance (ASC-US, ASCUS), a Pap test result found in about 3 million U.S. women per year. In 2001, the American Society for Colposcopy and Cervical Pathology (ASCCP), the Centers for Disease Control and Prevention (CDC), the American College of Obstetricians and Gynecologists (ACOG), and several other clinical organizations issued clinical practice guidelines that stated that HPV DNA testing could be used as one option to manage patients with ASC-US Pap test results. These recommendations were based on data showing that women with ASC-US Pap tests who were infected with genital HPV were more likely to develop higher-grade cervical cell abnormalities

than women with ASC-US Pap test results who were not infected with genital HPV. Under this option, women with ASC-US Pap tests and positive HPV DNA tests would be advised to have immediate colpolscopy, a procedure that allows clinicians to inspect the cervix under magnification and to obtain cervical biopsies needed for pathologic diagnosis that would guide followup, treatment options, or both. The guidelines stated that women with ASC-US Pap test results and negative HPV DNA tests should be followed with repeat Pap tests, not colposcopy. The option of using HPV DNA tests to "triage" patients for colposcopy was made in part because colposcopy is a painful, anxiety-provoking, and costly procedure that is in short supply in the U.S. Therefore, methods to identify women who are most likely to benefit from colposcopy are needed. HPV DNA testing is not currently recommended for patients with higher grade Pap test abnormalities of ASC-H (atypical squamous cells of undetermined significance; cannot exclude high-grade intraepithelial lesion), or with LSIL (low-grade squamous cell intraepithelial lesion) and HSIL (high-grade squamous cell intraepithelial lesion), because studies indicate that a very high proportion of women with these abnormalities likely have an HPV infection. Current guidelines recommend that women with these higher grade abnormalities should have immediate colposcopy, making HPV DNA testing to guide colposcopy triage decisions unnecessary.

In 2003, the FDA approved the HPV DNA test as an adjunct to Pap tests to better screen women aged 30 and older for cervical cancer. Also in 2003, the American Cancer Society (ACS) and ACOG issued guidelines that stated that HPV tests could be used as an adjunct to Pap tests as one option to screen women 30 and older. The FDA approval and subsequent ACS and ACOG guidelines were based on scientific data showing that a positive HPV DNA test in women older than 30 was likely to indicate persistent HPV infection that might increase the risk of precancerous cellular changes of the cervix. The use of HPV tests as an adjunct to Pap tests of women younger than 30 was not recommended because most HPV infection in younger women is transient, clears without medical intervention, and does not result in clinically important conditions. Under this option, a woman with a normal Pap test and a positive HPV test would be well advised to have more frequent Pap tests than a woman with a normal Pap test and a negative HPV test. In addition, women at lowest risk of precancerous cervical cell changes would be well advised to get less frequent Pap tests than women at highest risk of such changes.

Little is known about the extent to which clinicians are aware of these newly approved HPV tests and various guidelines about their use. There is also limited information about the extent to which clinicians are currently using HPV DNA tests in their practices and about how knowledge of HPV infection or HPV tests may influence sexual risk assessment, testing, followup and management of HPV-related cervical cell abnormalities, patient counseling and education practices, and prevention messages for patients. Moreover, recent reviews of printed and web-based information about genital HPV infection and HPV-related conditions that are available to clinicians, patients, and the general public indicate that while some available information is very consistent with the latest scientific evidence, other information is incomplete and inconsistent, or too complex for many patients or the public to understand. Little is known about the information sources that clinicians are aware of, use, and value to learn more about genital HPV infection and to guide their cervical cancer screening and abnormal Pap management practices.

Persistent HPV infection with non-oncogenic types of HPV may result in anogenital warts, a common condition that results in more than 500,000 new cases a year and more than 600,000

health care visits per year in the U.S. Little is known about the knowledge, attitudes, and practices of U.S. clinicians concerning HPV types related to warts, including followup and management of patients with anogenital warts, and including counseling, education, and prevention messages used with patients with anogenital warts.

Survey Objective

In 1999, a consultation of genital HPV experts convened by CDC recommended that a survey of clinician knowledge, attitudes, and practices about genital HPV infection was a moderately high research priority. CDC was also mandated by Public Law 106–554—Appendix A SEC. 317P.b.1.C. to conduct a national survey of physicians in the U.S. In response, CDC contracted with Battelle to conduct a nationally representative survey of clinicians in nine selected specialties who care for sexually active patients at risk for genital HPV infection and HPV-related conditions: family and general practice physicians, general internal medicine physicians, adolescent medicine physicians, obstetrician and gynecologists, dermatologists, urologists, nurse practitioners, certified nurse midwives, and physicians' assistants. Non-physician mid-level clinicians were included in the survey because they also provide prevention and care services linked to HPV-related conditions.

Methods

Three different survey instruments were developed using a three-stage formative process, consisting of 1) interviews and group discussions with HPV experts at CDC and several governmental and non-governmental organizations; 2) interviews and focus groups with primary and specialty care clinicians who care for sexually active patients at risk for genital HPV infection and HPV-related conditions; and 3) review of several drafts of survey instruments by HPV experts at CDC, several governmental and non-governmental organizations, and clinicians belonging to specialties targeted by the survey. All three survey instruments addressed clinicians' demographic, patients', and practice characteristics; STD diagnosis experience; general STD and cancer prevention practices; knowledge about genital HPV and HPV-related conditions; and sources used to guide practices for these conditions. The survey instrument for primary care clinicians (e.g., family and general practice physicians, general internal medicine physicians, adolescent medicine physicians, nurse practitioners, and physicians' assistants) also addressed cervical cancer screening practices for female patients and genital wart management for female and for male patients. The survey for obstetrics and gynecology clinicians (obstetrician and gynecologist physicians and certified nurse midwives) also addressed cervical cancer screening and genital wart management of female patients. The survey instrument for specialists (e.g., dermatology physicians, and urology physicians) addressed genital wart management in female and in male patients. Respondents were asked to provide answers regarding their attitudes and usual practices by providing best estimates rather than obliging clinical researchers to review records.

A disproportionate sampling design was used, selecting approximately equal numbers of clinicians from each specialty. The primary goal was to obtain accurate point estimates of various survey measures for each clinical specialty, and weighted estimates of the nine specialties. This design was chosen because CDC expected that knowledge, attitudes, and practices might vary substantially by specialty and that interventions to align knowledge and

practice with the latest scientific evidence might be disseminated through clinical specialty organizations. Surveys were mailed in May 2004 to 6,906 clinicians who were randomly selected within each of the specialty strata from the American Medical Association Masterfile, the American Association of Physician's Assistants Masterfile, and national registries of Certified Nurse Midwives and Nurse Practitioners. Each survey was sent by Federal Express and included a CDC cover letter, a cash incentive of $50, a postage-paid return envelope, and a reply postcard. The cover letter indicated that the survey findings would be used to develop or update clinical training curricula, clinical decision support tools, and materials that clinicians could use to inform and counsel their patients regarding HPV. The reply postcard was designed for clinicians to indicate ineligibility or for an office manager to indicate that the clinician was deceased, retired, or that the clinician had moved. A reminder postcard was mailed to all clinicians 10 days after the initial mailing. Repeat survey packets were sent to non-respondents approximately 5, 8, 11, and 15 weeks after the initial mailing.

Survey instruments included several questions to determine eligibility for the survey. Clinicians were eligible to complete the survey if they reported practicing at least 8 hours per week at their principal practice site and if at least 20% of their patients were between the ages of 13 and 65 years. Additionally, primary care clinicians, obstetrician and gynecologists, and nurse midwives, were eligible to complete the survey only if they provided routine checkups to patients.

Data from surveys received before September 30, 2004, were double-entered into an electronic data file to ensure accuracy, and were cleaned so as to identify and resolve inconsistencies in response ranges, skip patterns, and related variables. Descriptive analyses using these cleaned data file were carried out after assigning case weights to adjust for disproportionate sampling and non-response bias.

Major Findings and Recommendations

Response rate and respondent characteristics

After the response rate was adjusted to exclude clinicians who were deceased, not locatable, or not eligible, the overall adjusted response rate was 81%. Response rate differed by specialty, ranging from 59% to 96%. On average, clinician respondents were 47 years old, had been in practice 16 years, and spent 37 hours per week on direct patient care. Forty-two percent of respondents were female, and 83% were white. Most (85%) clinicians reported that their primary practice site was in a private practice (73%) or in an ambulatory care clinic of a hospital or medical center (12%).

Knowledge of HPV infection and HPV-related conditions

The majority of clinicians reported that they were aware that genital HPV infection is fairly common in sexually active adults (89%), that most persons with genital HPV infection may never show symptoms or signs of infection (95%); that persistent HPV infection increases risk of cervical dysplasia, cervical cancer (98%), and anogenital warts (87%); and that treatment of cervical dysplasia or cervical cancer (91%) and treatment of anogenital warts (92%) may not permanently eliminate the causative infection; beliefs that are consistent with the latest scientific evidence. However, fewer than half of clinicians reported believing three statements that are

consistent with latest scientific evidence: that most genital HPV infections clear without medical intervention (35%); that genital HPV types usually associated with anogenital warts differ from types usually associated with cervical dysplasia and cancer (47%); and that anogenital warts do not increase the risk of cancer at the same anatomic sites where warts are located (38%). These beliefs varied by clinician specialty. Only 63% believed that genital HPV infection in men increases risk of penile and other anogenital cancers.

Use of HPV DNA tests

Overall, 54% of clinicians indicated that they have used HPV DNA testing at their practice, while 13% indicated that they were not aware of the test. Reported use of HPV tests varied by clinical specialty. A number of clinicians reported using HPV DNA tests for female patients for indications that are not currently approved by FDA or recommended by clinical practice guidelines of national organizations. These included checking the infection status of patients with a diagnosis of genital warts (33%) or an STD other than HPV (34%), and checking infection status of sex partners of persons with a diagnosis of anogenital warts (23%) or an STD other than HPV (21%). In addition, some clinicians reported using the HPV DNA test for male patients, including those with a diagnosis of genital warts (21%), or with an STD other than HPV (18%), and for male sex partners of patients with a diagnosis of genital warts (20%), an abnormal Pap test result (17%), or an STD other than HPV (16%). Reported use of HPV tests for non-approved, non-recommended reasons varied by clinical specialty.

Cervical cancer screening practices

Nearly 90% of primary care clinicians reported offering Pap testing at their principal practice site. Of these, 77% reported using liquid-based cervical cytology for Pap tests at least sometimes, a method that can facilitate the collection of an HPV DNA test specimen by using the same endocervical sample. Many Pap test providers reported ordering HPV tests for patients if their Pap test result was abnormal or borderline (59%) or recalling patients with abnormal or borderline Pap tests to collect an HPV DNA test (43%). Obstetrician and gynecologists and nurse midwives were much more likely than other specialists to report using HPV DNA tests for patients with abnormal or borderline Pap test results.

Of Pap test providers who used HPV DNA tests for patients with abnormal or borderline Pap test results, 98% reported having ever using the test for patients with ASC-US Pap test results, an indication approved by FDA and recommended by clinical guidelines of national organizations. A higher proportion of respondents reported that they would recommend colposcopy for patients with ASC-US Pap test results and a positive HPV test (95%) than for patients with ASC-US Pap test results and a negative HPV test (27%), evidence that HPV test results were being used to triage women with ASC-US Pap results for colposcopy, one HPV test use supported by the FDA and national organizations. However, high proportions of clinicians who reported using HPV DNA tests for patients with abnormal or borderline Pap results reported using HPV tests for patients with higher grade abnormalities, including ASC-H (90%), LSIL (78%), and HSIL (68%). The survey instrument did not distinguish whether respondents who reported HPV testing for patients with ASC-H, LSIL or HSIL were using HPV tests to guide colposcopy triage, which is not recommended by guidelines of national organizations, or for followup of patients after

treatment for these lesions, which is recommended by some guidelines (ACOG, 2005; ASCCP, 2001; Wright, et al, 2002).

A minority (21%) of Pap test providers reported ordering HPV tests as an adjunct to Pap tests when screening women for cervical cancer. Obstetrician and gynecologists and nurse midwives were much more likely than other specialists to report this use. Of respondents reporting this use, 29% reported usually or always using HPV tests as a Pap test adjunct for women aged 30 and older, a practice approved by FDA and supported by guidelines issued by national organizations. However, 35% reported usually or always using HPV tests as a Pap test adjunct for women aged less than 30, a practice not supported by FDA approval or guidelines of national organizations.

Of Pap test providers, those reporting counseling messages about cervical cancer and HPV infection varied by clinical situation. When collecting Pap tests, about two thirds reported they asked about sexual behavior to assess STD risk and discussed methods to prevent STDs. However, fewer than half of clinicians reported that they discussed methods to prevent cervical cancer, HPV as a risk factor for cervical cancer, or ways to prevent HPV acquisition. Reported counseling messages varied by clinical specialty; adolescent medicine physicians were more likely to address all of these topics than other specialties.

Of Pap test providers who do not use HPV tests for management of patients with ASC-US Pap test results, about two thirds reported telling their patients with ASC-US Pap test results that HPV may be a cause of the Pap result (67%) and that HPV is a risk factor for cervical cancer (70%). The majority of these clinicians reported explaining methods to prevent STDs in general (70%) and methods to prevent cervical cancer (66%) to patients with ASC-US Pap results. Most recommended follow-up Pap testing within 4-6 months (93%), or recommended cervical colposcopy (66%), two practices advised for such patients by national organizations. Of those Pap test providers who reported using HPV tests for management of patients with ASC-US Pap test results, their counseling messages varied by the HPV test result. Compared to patients with negative HPV tests, clinicians were more likely to indicate to patients with positive HPV tests that HPV infection caused the Pap test result (99% if HPV+ vs. 73% if HPV-); or to address methods to prevent cervical cancer (90% if HPV+ vs. 73% if HPV-); or to describe ways to prevent HPV acquisition (91% if HPV+ vs. 73% if HPV-); or to recommend that patients get tested for other STDs (73% if HPV+ vs. 47% if HPV-); or to recommend that patients inform sex partners of test results (74% if HPV+ vs. 40% if HPV-); or to recommend colposcopy (95% if HPV+ vs. 27% if HPV-). This suggests that HPV testing influences colposcopy triage practices as intended by the FDA test approval and guidelines of national organizations and that such testing is affecting patient counseling messages.

Of Pap test providers, the majority reported that when they speak to patients whose test results indicate HPV infection or Pap test results likely to be HPV-related, they tell patients that the cause of their Pap test result is probably a virus (92%); that the virus is sexually transmitted (95%); that the virus is common in sexually active persons (92%); that they can transmit the virus to sex partners (91%); that if their sex partners also are infected with HPV, unprotected sex may increase the risk of future abnormal Pap tests (77%); and that the virus may cause cervical cancer that can be prevented with regular Pap tests and followup (95%). When discussing methods to reduce HPV transmission risk with such patients, most clinicians reported advising correct condom use (84%), monogamy or limiting lifetime partners (79%), and talking with

partners about preventing the infection (65%). Fewer than half reported advising abstaining from sex (41%). Adolescent medicine physicians were more likely than other clinician specialists to report discussing correct condom use, monogamy, and abstinence with their patients.

Most clinicians indicated that they value guidelines, materials, or information about cervical cancer screening and management from a few sources: their specialty or professional organizations (78%), the American College of Obstetricians and Gynecologists (ACOG) (74%), the Centers for Disease Control (63%), and the American Cancer Society (59%). Between 88% and 99% of clinicians rated topics related to determining intervals between HPV infection and abnormal Pap results; causes and consequences of abnormal Pap tests, including consequences for fertility or pregnancy outcomes; infectiousness of HPV to sex partners; methods to prevent HPV transmission; and followup and treatment of abnormal Pap tests as important for clinician training or for patients' information materials.

External Anogenital Wart Practices

Providers who had ever diagnosed genital warts reported that they usually or always tell patients that warts are sexually transmitted (97%) and that warts are caused by a type of HPV (96%). However, 74% reported telling patients that warts increase anogenital cancer risk, a statement that is not consistent with most current scientific evidence. More than half reported recommending to female patients with warts that those patients have a Pap test promptly (82%) or that they have future Pap tests at more frequent intervals (52%), two recommendations that are not supported by CDC guidelines for genital wart management. Clinicians frequently reported usually or always telling patients to notify sex partners (87%); discussing STD prevention (92%); discussing ways to prevent HPV transmission to sex partner (89%); assessing patients' sexual risk behaviors (85%); and testing for other STDs (71%). Respondents reported usually or always explaining that wart transmission may be prevented by condom use (90%), monogamy or limiting the number of sex partners (79%); avoiding wart contact during sexual foreplay (61%); and by abstinence (43%). More than 60% of respondents indicated that explaining to patients that HPV caused anogenital warts would have positive effects. These effects included encouraging patients to notify sex partners (60%); increasing likelihood that patients would follow wart treatment plan (64%); assuring patients they are getting complete information (76%); and increasing the likelihood that female patients would return for future Pap tests (82%). However, many cited challenges to counseling wart patients, including providing definitive answers about when and from whom infection was acquired (86%); dealing with patients' psychosocial and relationship issues (76%); obtaining reimbursement for time needed to counsel patients (73%); and motivating patients to adopt prevention measures (67%). Respondents rated the following sources as most valuable to guide their anogenital wart practices: their own specialty organization (68%); CDC (60%); ACOG (53%). More than 92% rated topics related to wart diagnosis and treatment, transmission, and methods to prevention transmission as important for training materials for clinicians and for materials for informing patients.

General counseling and education about STD prevention, including HPV

The majority of clinicians reported that they have been asked by at least some of their patients how to prevent STDs (84%), cervical or other anogenital cancers (70%), genital warts (61%), and genital HPV infection (69%). Most clinicians reported that during routine check-ups for

sexually active patients, the clinicians personally provide information about STD prevention (68%), cervical cancer screening (82%), and general STD prevention (68%) and that about 37% of clinicians have been asked about a vaccine. However, only 48% reported personally discussing genital HPV or HPV-related conditions with their patients during routine checkups. Use of written informational materials and other staff members to provide information were infrequent for all clinician types.

Of these clinicians who provided routine check-ups to adolescents, the majority reported usually or always assessing behavioral risk for STDs (81%); recommending condoms to prevent STDs (90%); recommending monogamy or limiting sex partner number to prevent STDs (76%); and recommending abstinence to prevent STDs (54%).

Most respondents agreed or strongly agreed that the following methods would be highly effective to prevent HPV acquisition by their sexually active adolescent and adult patients: monogamy or limiting the number of sex partners if partners are uninfected (95%); abstinence (90%); and consistent and correct condom use (79%). The majority said it was worthwhile to recommend condom use (89%) or monogamy or limiting sex partner number (79%) to their patients; a minority said that it was worthwhile to recommend abstinence (41%). However, few said that these measures would be adopted long-term by most of their patients (24% for condom use; 21% for monogamy/limiting sex partner number; and 6% for abstinence). Two commonly cited concerns about using condoms to prevent HPV acquisition included concerns that condoms may not be 100% effective because of slippage, breakage, leakage, or pore size (96%), and that condoms cannot prevent HPV transmission during skin-to-skin contact in areas not covered by the condom (97%).

Recommendations

Survey findings support several recommendations regarding content of clinician training and clinical decision support tools; content of messages and materials clinicians can use to counsel and inform patients about HPV infection and HPV-related conditions; priority topics for interventions to align current HPV testing practices with indications approved by FDA and supported by national organizations that have issued guidelines; and regarding national organizations that are valued by clinicians for developing and disseminating information about genital HPV and HPV-related conditions.

Clinician training and clinical decision support tools

Interventions should inform clinicians of the most recent scientific evidence in order to counter key erroneous opinions that may affect clinical practice. Owing to large specialty differences in knowledge, the content and emphasis of such information should be designed and targeted to clinicians' specialties. Key information areas include the extent to which HPV infections clear without medical intervention; whether anogenital warts increase risk of cancer at the same anatomic site as the warts; whether HPV types associated with anogenital warts are the same as the types associated with cervical dysplasia; and the association between genital HPV infection and risk of penile and other anogenital cancers in men. Informative interventions with clinicians who care for wart patients should include information about distinctions between high-risk oncogenic HPV types and low-risk types associated with benign anogenital warts.

Interventions should be designed to increase clinician discussion and notification of HPV testing with patients when Pap or HPV testing is offered. These interventions should be designed through consideration of how different methods of notifying patients or obtaining their consent when ordering HPV testing might affect the patient acceptance of testing or reactions of patients when test results are provided. Interventions should be designed to improve clinicians' counseling about prevention and other topics for patients with HPV-related conditions. This should include counseling scripts and informative materials for clinicians to use with patients, and should address barriers to counseling, including insufficient reimbursement for counseling time.

Priorities for interventions to encourage HPV testing for approved and recommended purposes

Training clinicians and developing clinical decision support tools should be prioritized to promote use of HPV testing for FDA-approved and -recommended reasons in the context of cervical cancer screening and management of abnormal Pap test results and to discourage use for non-approved, non-recommended reasons. Informative materials should clearly outline the rationale for HPV testing under all approved and recommended indications and the lack of justification for HPV testing of patients who have screening Pap test results of ASC-H or higher grade; for use as an adjunct to Pap tests in women less than 30 years old, and for use for patients with genital warts, as a general STD screening test; or for sex partners of persons with abnormal Pap tests, genital warts, or other STD. Informational materials should address the potential disadvantages of using HPV tests for non-approved, non-recommended indications for patients (e.g., unnecessary cost, anxiety or feelings of stigma), clinicians (counseling burden for HPV infection that is often transient and clinically unimportant), and health systems (unnecessary cost and complexity).

Priority materials for counseling and informing patients

Print, audiovisual, and web-based materials should be developed to assist clinicians in informing patients about HPV and about prevention of HPV acquisition with HPV-related Pap abnormalities. Clinicians would also benefit by having materials designed to reduce patients' anxiety, psychosocial distress, and relationship issues. Such materials should highlight the high prevalence of asymptomatic HPV infection in sexually active adults, that the majority of HPV infection is transient and that such infection clear without medical intervention; uncertainties about the timing of acquisition of HPV; and topics for patients to address when communicating with sex partners.

Priority organizations for partnerships with CDC to train clinicians and develop materials for patients' information

Interventions and informative materials about prevention of HPV infection and management of HPV-related conditions should be developed through partnerships with organizations that were ranked by clinicians as most valuable. For cervical cancer screening and abnormal Pap management, the most valued sources were national specialty organizations represented by the surveyed specialties. Those would include ACOG (a source also rated highly by non-obstetrician/gynecologist clinicians), American Academy of Family Practice, American Academy of Pediatrics, American College of Physicians, American Association of Physician's

Assistants, American Association of Certified Nurse Midwives, and American Association of Nurse Practitioners. In addition, the American Cancer Society (ACS) was rated as a valued information source by many clinicians. For management of genital warts, the most valued sources were national specialty organizations represented by the surveyed specialties: ACOG, American Academy of Family Practice, American Academy of Pediatrics, American College of Physicians, America Urological Association, American Academy of Dermatology, American Association of Physician's Assistants, American Association of Certified Nurse Midwives, and American Association of Nurse Practitioners.

References

American College of Obstetricians and Gynecologists A. Human Papillomavirus. ACOG Practice Bulletin No. 61 105 (4): 905-918, 2005.

American Society for Colposcopy and Cervical Pathology, ASCCP. Consensus Guidelines 2001, 2001.

Wright TC, Cox JT, Massad LS, Twiggs LB, Wilkinson EJ. 2001 Consensus guidelines for the management of women with cervical cytological abnormalities. JAMA 287 (161): 2120-2129, 2002.