

# Cervical Cancer in New Mexico

A Handbook for  
Health Care Providers





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### The Cancer Prevention and Control Advisory Council of the New Mexico Breast and Cervical Cancer Program

Dorothy Barbo, MD	Catherine Logan-Carrilo
Sandra Buhl	David Mills, PhD
Nathaniel Cobb, MD	Lydia Pendley, MHS
Linda Dominguez, NP	Gloria Sarto, MD, PhD
Carla Herman, MD, MPH	Arnold Thompson, MD
Carol Johnson, MPH	Alan Waxman, MD

### New Mexico Breast and Cervical Cancer Detection and Control Program Staff Reviewers

Anita Salas, MPA	Jane Cotner, MS
Barbara Hickok, MPH	Pam Harris, RN, BFA
Bobbie Peppers, MS	Elaine Jimenez, RN
Margarita Archibeque, MS	Barbara Waggoner, BSN
Heather McAadoo, MPA	Patricia Royston, RN
Jayne Bukowski, BSN	Jill St. Pierre, BSN

### Additional Content Contributions and Review

Melissa Schiff, MD	Nancy Joste, MD
Cosette Wheeler, PhD	Mark Geneson, MD
John Robertson, MD, MPH	

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## CHAPTER

## 1

# Cervical Cancer

## What is Cervical Cancer?

Cervical cancer (*cervical carcinoma*) is an uncontrolled growth of abnormal cells on the cervix. Epidemiological studies have estimated that these changes can progress over a period of years from low grade to carcinoma *in situ* to more advanced invasive cervical cancer.

The impact of cancer in a population is measured and described by looking at incidence rates (the number of new cases per 100,000 persons per year), mortality rates (the number of deaths per 100,000 persons per year), and survival rates (the proportion of patients alive at some point after their diagnosis).

## The United States

There are more than 14,500 new cases of and 4,800 deaths from invasive cervical cancer each year in the United States, with striking differences in incidence and mortality rates among racial/ethnic groups. In fact, on a national level, incidence rates among African Americans have consistently been about twice those for Caucasians (American Cancer Society [Facts and Figures], 1997).

The National Cancer Institute began the Surveillance, Epidemiology and End Results (SEER) Program in 1973 in order to estimate cancer incidence and patient survival in the United States. For the years 1989-1993, the incidence rate among African American women was 12.6 per 100,000 persons per year, compared with 7.9 for Caucasian women. This disparity is greatest for women aged 65 and older. In this group, the incidence rate among African American women is 2.3 times the rate among Caucasian women (35.0 per 100,000, compared with 14.9 per 100,000). Cervical cancer is generally detected earlier in Caucasian women than in African American women. For this reason, Caucasian women diagnosed with regional disease have a 51.9% five-year survival rate, as compared with 41% for African American women diagnosed with regional disease.

In the United States, incidence and mortality rates for cervical cancer are also higher among American Indian women than among other racial or ethnic groups. The cervix is one of the most common sites of cancer for American Indian women, and invasive cervical cancer represents 7% of all new malignancies found. In addition, American Indian women tend to have more advanced stages of the disease at the time of diagnosis, are less apt to receive treatment, and have a poorer chance for survival, when compared with other racial or ethnic groups.

## National Objective to Reduce Mortality

In 1991, the U.S. Department of Health and Human Services published objectives of a national strategy for significantly improving the health of the nation by the year 2000 through health promotion and prevention of major chronic illnesses, injuries, and infectious diseases (U.S. DHHS [*Healthy People 2000*], 1991).

The national objective related to cervical cancer is to reduce the rate of deaths from the 1987 age-adjusted baseline of 2.8 per 100,000 to no more than 1.3 per 100,000 women. This objective is based upon the hypothesis that mortality reduction since the 1970s has been due primarily to the widespread use of the Pap smear for early detection. The greatest risk of cervical cancer mortality is known to be among older women, who are the least likely group to be screened for cervical cancer. Awareness of the prevention potential of regular screening, coupled with the observation that a significant proportion of women is not receiving Pap tests regularly, led to the development of this national objective.

## Cervical Cancer is Preventable and Curable

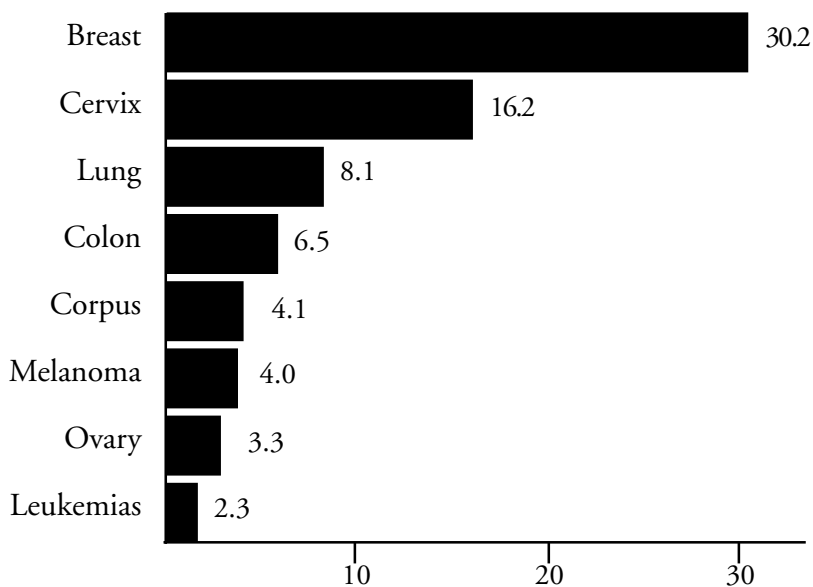
If Pap smears are obtained routinely and accurately, and if appropriate follow-up is done, the vast majority of deaths from cervical cancer can be prevented. The key intervention is to make the diagnosis early—when dysplasia and *in situ* cancer are nearly 100% curable. Generally, in the absence of intervention, it takes years to progress from mild dysplasia to invasive cervical cancer. There are, however, a small number of women who progress to invasive cancer in approximately 3 years. These women may have had a false negative Pap smear.

# New Mexico

## New Mexico's Cervical Cancer Problem

This handbook reflects concern about continued mortality from cervical cancer in New Mexico. It offers recommendations for attacking cervical cancer and preventing, if not completely eradicating, the disease.

**Leading Cancers Diagnosed in 1995 for Women\***



\*Includes *in-situ* cancers

Percent of Total

Source: New Mexico Tumor Registry, 1997.

**Incidence** It is estimated that 70 new cases of invasive cervical cancer will be diagnosed in New Mexico in 1997. By contrast, 400 to 500 *in situ* cases will be diagnosed. The majority of the *in situ* cases is detected in women under age 35, while invasive cases occur among women of all ages (NM Tumor Registry, 1997). Incidence is increased in women who are HIV positive. In a recent 2 year period (1992-93) at the University of New Mexico (UNM) Health Sciences Center, the Cytopathology Laboratory determined that 8.6% of all Pap smears screened showed evidence of mild dysplasia or higher grade lesions. In 1995, the Lab examined 15,978 smears; of those 2.1% were low-grade intraepithelial lesions (LGSIL), 1% were high-grade intraepithelial lesions (HGSIL) and 0.13% were cancer.

**Mortality** Older women are more likely to die from cervical cancer than are younger women. In New Mexico there were approximately 20 cervical cancer deaths in 1994 (New Mexico Selected Health Statistics, 1994). The mortality rates increase with age, but a preventable number of deaths occur among women less than 50 years of age.

**Survival** The 5-year survival rate for all women in New Mexico with invasive cervical cancer is 68.7%. For those diagnosed when the cancer is at a localized stage, however, the survival rate is 91.3%. If the disease is diagnosed *in situ*, the 5-year survival rate is almost 100%.



## CHAPTER

## 2

*“I find significant resistance to screening due to fear of cancer and discomfort with invasive tests including Paps. It’s difficult and time consuming to educate.”*

New Mexico Family Physician

# Populations at Risk for Cervical Cancer

## Who is at Risk?

The epidemiologic risk factors for developing cervical dysplasia are different than those for invasive cervical cancer. Women who are older and have not received regular screening and follow-up are at higher risk for invasive cervical cancer. Younger women, due to a variety of behaviors, are more likely to have exposure to Human Papilloma Virus (HPV) and to develop precancerous lesions.

# Risk Factors

## Women at Greatest Risk for Developing Cervical Dysplasia

Although the exact causes of cervical dysplasia are not fully understood, all women with a cervix are at some risk. There are, however, factors that elevate the risk. These include:

- **Women exposed to Human Papilloma Virus (HPV).** Certain HPV subtypes are more commonly associated with dysplasia. (See Chapter 4).
- **Women who initiated intercourse at an early age.** The younger the age at initiation of intercourse, the greater the risk of cervical dysplasia. Early onset of sexual activity is thought to be associated with high risk because, during puberty, cervical tissue undergoes physiologic changes which may make this area more vulnerable to development of dysplasia.
- **Women with multiple sexual partners.** The more sexual partners a woman has, the greater the likelihood that she will develop cervical dysplasia. Also, the more sexual partners a woman's partner has, the greater her risk. Several studies indicate that there may be an important "male component" to this disease, as husbands of patients with cervical cancer report considerably more sexual partners than husbands of unaffected women. (NIH/NCI Cancer Statistics Branch, Div. of Cancer Prevention and Control, 1996).
- **Women with compromised immune systems.** The overall strength of the immune system appears to play a role in susceptibility to cervical dysplasia. Recent studies confirm that the prevalence of cervical dysplasia is increased in Human Immunodeficiency Virus (HIV) infected women and that their disease progresses more rapidly. It is difficult, however, to distinguish the effect of HIV infection from the effect of increased HPV exposure.

- **Women of low socioeconomic status.** It is possible that women of low socioeconomic status are vulnerable to a diet and behavior that place them at risk for cervical dysplasia.
- **Women who smoke.** Several studies looking at the effect of smoking on health confirm that smokers develop cancerous changes of the cervix more often than nonsmokers. These studies have reported a dose-response relationship between smoking and cervical dysplasia and, further, that cigarette smoking at the time of diagnosis is associated with high-grade cervical dysplasia.
- **Women with deficiencies of Vitamins A, C or  $\beta$ -carotene and deficiencies of folacin (one of the B complex vitamins).** The association of vitamin deficiencies with increased risk is under investigation. (See Chapter 4).

Health care providers are more likely to find the listed risk factors for cervical **dysplasia** in women age 50 and younger. The risk factors for cervical **cancer** are typically issues for women age 50 and older. These **age groups should be considered as two distinct populations.**

## Women at Greatest Risk for Developing Invasive Cervical Cancer

- Women who get Pap smears infrequently or not at all.
- Women who do not receive adequate and appropriate follow-up of abnormal Pap smears.
- Women who are past childbearing age.
- Women 50 years and older. They have more than three times the risk of women under 50.
- Women of color. They have 2.5 times the risk for developing cervical cancer as white women.

## Women at Greatest Risk for Dying from Cervical Cancer

- Women who have not been screened.
- Women who do not get appropriate follow-up care.
- Low-income women and women residing in rural counties. They represent a higher incidence of advanced disease.
- Women who are older. From 1989-1993, the mortality rate for women over age 65 was 4.3 times greater than for younger women.

### Who is at Risk for Cervical Cancer?

- Any women 18 or over and women of any age who have been sexually active run a risk of developing cervical cancer.
- The risk of developing cervical cancer increases with age, especially in women past their childbearing years.
- Women with less formal education — regardless of race — have a higher risk of dying from this disease than do women who are college graduates.
- African American women are three times as likely to develop cervical cancer and more than twice as likely to die from it as are Caucasian women.
- Cervical cancer is the third most common cancer among Hispanic women in the United States, compared to sixth among non-Hispanic whites.

# Addressing the Needs of Special Populations

## Women of Color

Women of color comprise about half of New Mexico's female population. Hispanic women represent the largest percentage of the population, followed by American Indian women, with African American and Asian American women comprising the smallest groups in New Mexico's diverse population.

Poverty and low literacy—two factors which pose barriers to early detection of cervical cancer and recognition of risk behaviors—are more common among women of color.

## Hispanics

Hispanic women in New Mexico represent 37% of the total female population. Approximately 30% of the Hispanic population resides in Bernalillo County with access to the University of New Mexico Hospital (UNMH). UNMH has made it a priority to provide cervical screening regardless of ability to pay. The majority of the population resides in rural areas within the state, and rural residence places it at higher risk for infrequent screening due to decreased access to care. The Breast and Cervical Cancer Program of the New Mexico Department of Health has been active in providing increased screening in rural areas statewide.

While rates of invasive cervical cancer have declined in the Hispanic population, the incidence of high-grade cervical dysplasia remains higher in this group than in non-Hispanic white women. A larger proportion of cervical cancer cases was diagnosed at a more advanced stage among minority women in New Mexico (Chao, 1996).

## American Indians

In New Mexico, 9.3% of the female population are American Indian. Cancer incidence in New Mexico is reported with a designation of “American Indians,” with tribal-specific data to allow for comparisons with other tribes nationally. Historically, attention has been focused on American Indians because their rates of cervical cancer have been high, particularly in women over the age of 50. Risk factors for cervical cancer in this population have not been well characterized in analytic epidemiologic studies. Although age-adjusted incidence rates for invasive cervical cancers have declined 66% over the past 25 years, data from the NM Breast and Cervical Cancer Control Program still identify American Indian women as the highest risk group for cervical dysplasia.

Culture influences use of the health care system and adherence to recommended screening and treatment programs. Limited knowledge of cancer prevalence and prevention, poverty, minimal and unpleasant experiences with the health care system, and communication problems present challenges to American Indians and to their health care providers.

## African Americans

African Americans comprise about 2% of the total population in New Mexico. Nationally, they continue to experience incidence rates of invasive cervical cancer which are nearly two times higher than those in Caucasians, in spite of the decline in cases nationwide. Racial differences are also evident in lower survival rates for African American women.

Access to health care, age at onset of sexual activity, and educational attainment—all risk factors identified for this population—place them at increased risk for cervical dysplasia and invasive cancers of the cervix.

## Lesbians

Research suggests that lesbians are less likely than heterosexual women to receive regular screening for cervical cancer. This is true even among lesbians with a past or current history of heterosexual intercourse, multiple sexual partners, or sexually transmitted diseases. Therefore, lesbians may be at higher risk for cervical cancer than assumed.

Reasons for this low screening rate include misinformation among lesbians and health care providers about lesbian health care needs and the false assumption that lesbians do not engage in behaviors that put them at risk for cervical cancer. Also, because Pap screening and other preventive care services are most often linked to reproductive health care, lesbians may less frequently receive these routine services. Lesbians should receive regular cervical cancer screening and bimanual pelvic examinations. The frequency of screening should be based on an evaluation of each patient's risk and specific medical history (Rankow, 1995).

## Women Incarcerated in Jails and Prisons

Many women incarcerated in New Mexico's jails and prisons are women of color. Their medical histories may include multi-substance abuse, inadequate health care, multiple sexual partners, a history of sexually transmitted disease and heavy cigarette smoking. Many of these factors, taken with irregular use of Pap smears, place them in a higher risk category for cervical dysplasia.

## Strategies for Reaching Women Who Underutilize Screening Services

- Increase public education about early detection and treatment success.
- Include high quality training for health care providers on eliciting a thorough health history, improving communication with patients, and obtaining an adequate cervical smear sample.
- Increase the use of culturally sensitive messages targeted to populations not receiving adequate screening.
- Increase access of patients to female healthcare providers.
- Increase primary prevention efforts including women's modification of sexual behavior and smoking cessation.
- Increase secondary prevention efforts by increasing screening through regular Pap smears.

## Barriers to Screening: The Patient's Perspective

Barriers to cervical cancer screening operate in different combinations for women. Certain factors, however, have been identified consistently. Underutilization of Pap smear screening is associated with poverty or near poverty, little formal education, and inadequate health care and health insurance. Furthermore, not all women know about cervical cancer, its detection, or its treatment. Women most commonly report that they:

- Find it difficult to talk about their reproductive system, and therefore, will not consult health care providers about cervical cancer screening.
- Have to wait too long before the health care provider sees them.
- Are embarrassed to have a gynecological examination.
- Find the test unpleasant and uncomfortable.
- Do not like to be examined by male health care providers.
- Believe they are not susceptible to cancer.
- Fear the test results will be positive.
- Believe cancer cannot be cured.
- Have no personal health care provider or regular health care.
- Can only afford to go to a health care provider when sick.

## Availability, Accessibility, and Affordability of Screening

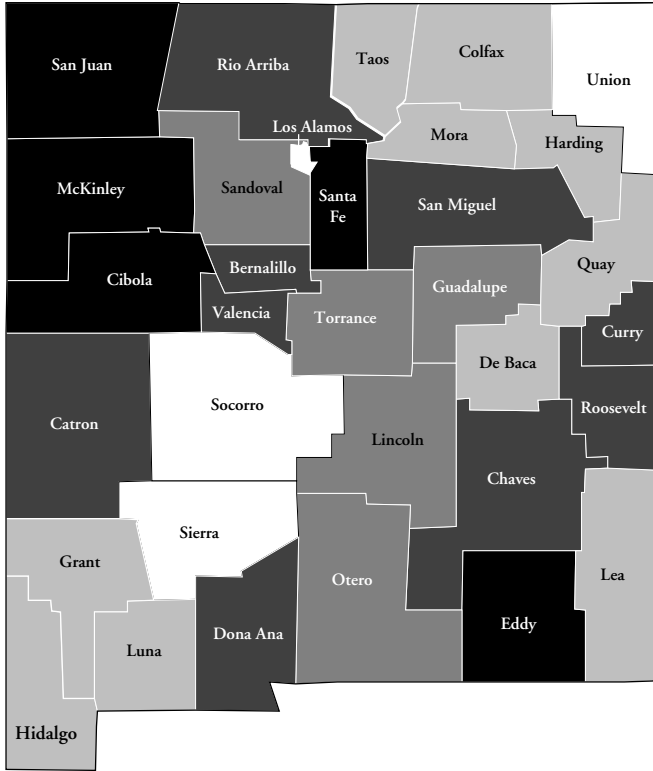
Many women at highest risk of cervical cancer do not have a source of private health care. Some of these women use the public health sector, while others do not access any services—private or public.

Since 1992, the Centers for Disease Control and Prevention (CDC) have provided federal funding for New Mexico's Breast and Cervical Cancer Detection and Control Program (B&CCP). All 33 counties in New Mexico and the Indian Health Service provide free or reduced cost screening for cervical cancer for eligible women. The B&CCP provided cervical screening services to over 60,500 women during a 6 year period. Unfortunately, available funding serves only a small portion of the eligible New Mexico women. The introduction of managed care to the Medicaid eligible women of New Mexico may result in some initial decreased access due to enrollment schedules. Providers should attempt to track those Medicaid eligible patients who do not return for screening or follow-up.

In a survey of the 33 county health departments, most health departments and public clinics offer Pap smear screening. However, the number of clinics that offer cervical screening, the number and ages of clients they are able to serve, and the frequency with which these screenings are offered vary considerably. Many private providers also participate in the B&CCP. Despite public and private efforts, Pap smear screening is less available in certain geographic areas, particularly in rural areas.

The results of national surveys show that between 20-60% of women felt they could only afford to seek health care when sick, not for a screening test. Women who live in poverty or near poverty cannot afford and/or do not avail themselves of cervical cancer screening or follow-up treatment.

## Percent of Eligible Women in New Mexico Receiving Pap Smears, 7/94-6/95, by County

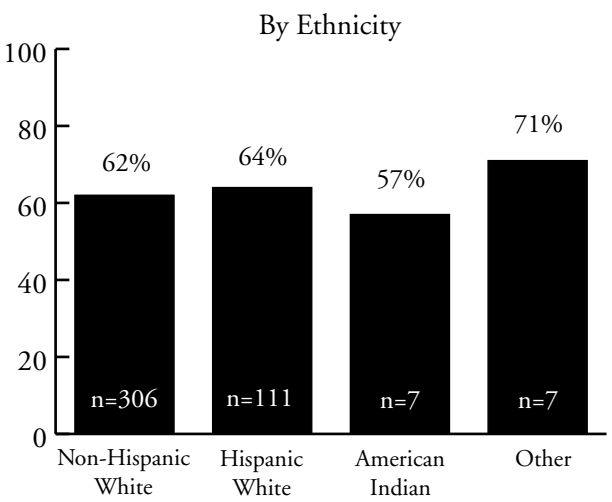
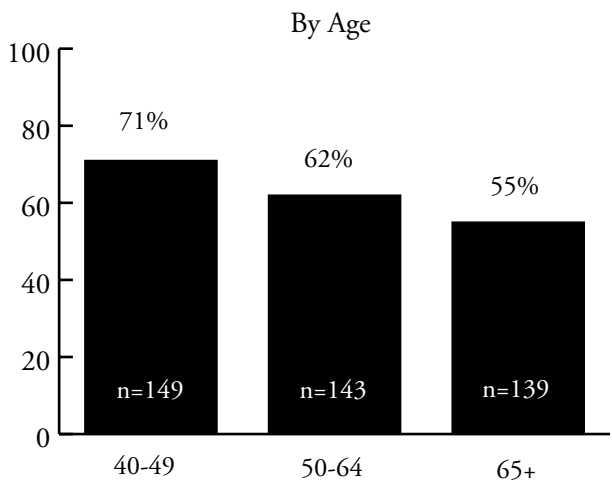


Percent Screened through the B&CCP



Source: New Mexico Department of Health, Public Health Division, Bureau of Vital Records and Health Statistics, 1996.

### Percent of New Mexico Women in Selected Ethnic and Age Groups Who Reported Having a Pap Smear in the Past Year



Source: New Mexico Behavioral Risk Factors Survey, 1995.

## Summary of Barriers to Cervical Cancer Screening

Information about barriers to cervical screening suggests that no single factor will explain why some women are not appropriately screened. However, certain factors have been consistently identified regardless of the data source or the data collection.

- **Income** Underutilization of Pap smear screening is associated with low income, low formal education, and lack of health insurance (i.e., poverty or near poverty).
- **Age** Older women are not adequately screened—an observation which appears to be somewhat independent of formal education, income, and other markers of low socioeconomic status.
- **Perceptions and Beliefs** Embarrassment, pain, and discomfort associated with the pelvic examination and the Pap smear are consistently identified as important barriers to cervical screening. Other significant barriers include fear of finding cancer, the long waiting period before being seen by a health care provider, dislike being examined by a male health care provider, lack of understanding of the Pap smear, belief that being asymptomatic means no test is necessary, and belief that cancer cannot be cured regardless of how early it is detected.
- **Resources** Lack of money for preventive care is the most important barrier. Lack of time and transportation are also important. Lack of time is particularly important for women with paid employment.



*“Cancer screening is one of our most effective tools against cancer.”*

New Mexico Ob/Gyn

CHAPTER

# 3

# Cervical Cancer Screening

## Screening Method and Guidelines

### Pap Smears

Pap smear screening is a rapid method for detecting cervical dysplasia and *in situ* cancer, as well as invasive cancer. A Pap smear evaluates cells harvested from the ectocervix and endocervix for abnormal changes associated with the development of cervical cancer. The introduction of the Pap smear 50 years ago is largely responsible for the national decline in cervical cancer mortality.

## Frequency of Pap Smear Screening

In 1988, consensus recommendations were developed by the American College of Obstetricians and Gynecologists, the American Nurses Association, the American Cancer Society, the National Cancer Institute, the American Medical Association, the American Academy of Family Physicians, and the American Medical Women's Association. Recommendations include:

- All women who have been sexually active or who have reached 18 years of age should have an annual cervical smear (Pap) and pelvic examination.
- After a patient has had three or more consecutive, satisfactory, normal annual examinations, the cervical smear may be performed less frequently at the discretion of her health care provider. The U.S. Preventive Services Task Force (USPSTF) recommends that the Pap test be performed at least every three years, depending on the presence of risk factors for cervical cancer (1996). Pelvic exams should continue as routine practice.
- There is insufficient evidence to recommend for or against an upper age limit for screening, but recommendations can be made on other grounds to discontinue regular testing after age 65 in women who have had regular previous screening in which the smears have been consistently normal (USPSTE, 1996).
- When considering the effectiveness of Pap smear screening after total hysterectomy for benign disease, there are conflicting guidelines. However, "the practice of vaginal cytology screening after hysterectomy for benign disease does not meet the criteria of the US Preventive Services Task Force as indicated by the low burden of suffering of vaginal carcinoma, the lack of mortality data suggesting vaginal cytology screening alters the natural history of disease, and unfavorable test characteristics," (Fetters et al., 1996). A review of vaginal smear supported the recommendation that routine surveillance should be considered only for women with a history of cancer of the genital tract or *carcinoma in situ* because of their increased risk of disease (Pearce et al., 1996).

# Recommendations for Screening

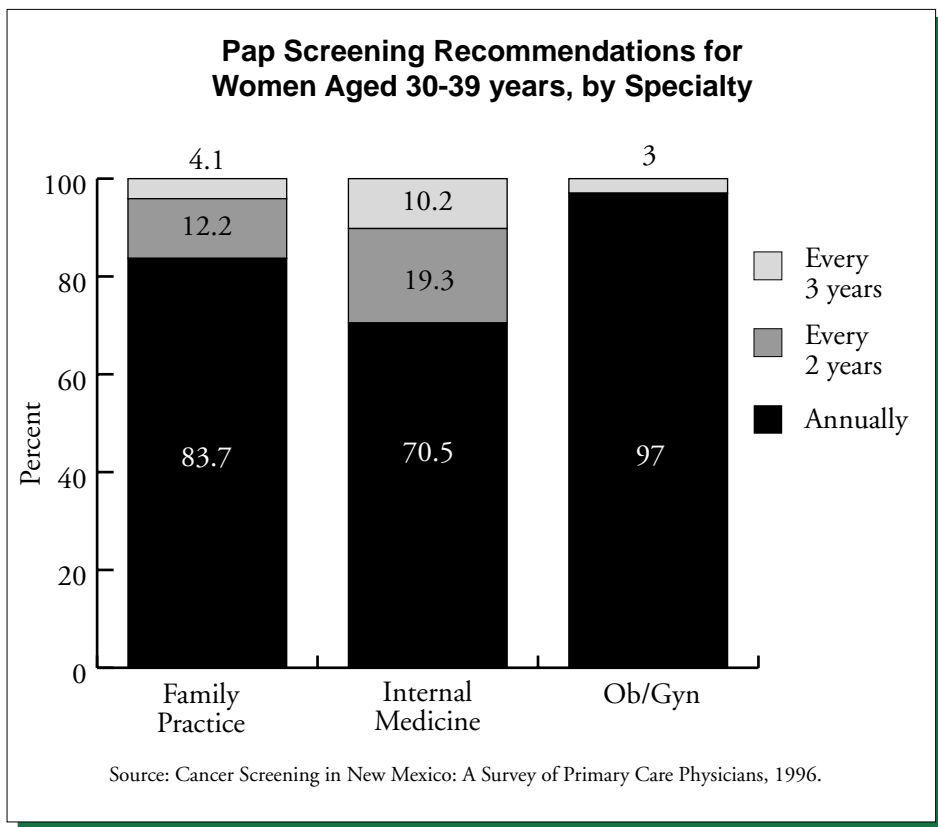
## The New Mexico Health Care Provider's Perspective

The following information on pages 24-28 is taken from “Cancer Screening in New Mexico: A Survey of Primary Care Physicians” conducted in 1996. Because primary care physicians play an essential role in cancer prevention and screening, their recommendations and practice have major implications for New Mexico's women.

Eligible respondents were practicing physicians specializing in internal medicine, family medicine and obstetrics and gynecology (Ob/Gyn). Eligible respondents spent greater than 30% of their time in primary care and had graduated from medical school in 1993 or earlier. Of the 592 eligible physicians, 89 internal medicine, 123 family practice and 67 Ob/Gyn responded for an overall response rate of 47%. Recommendations for cervical cancer screening varied by specialty and patient's age.

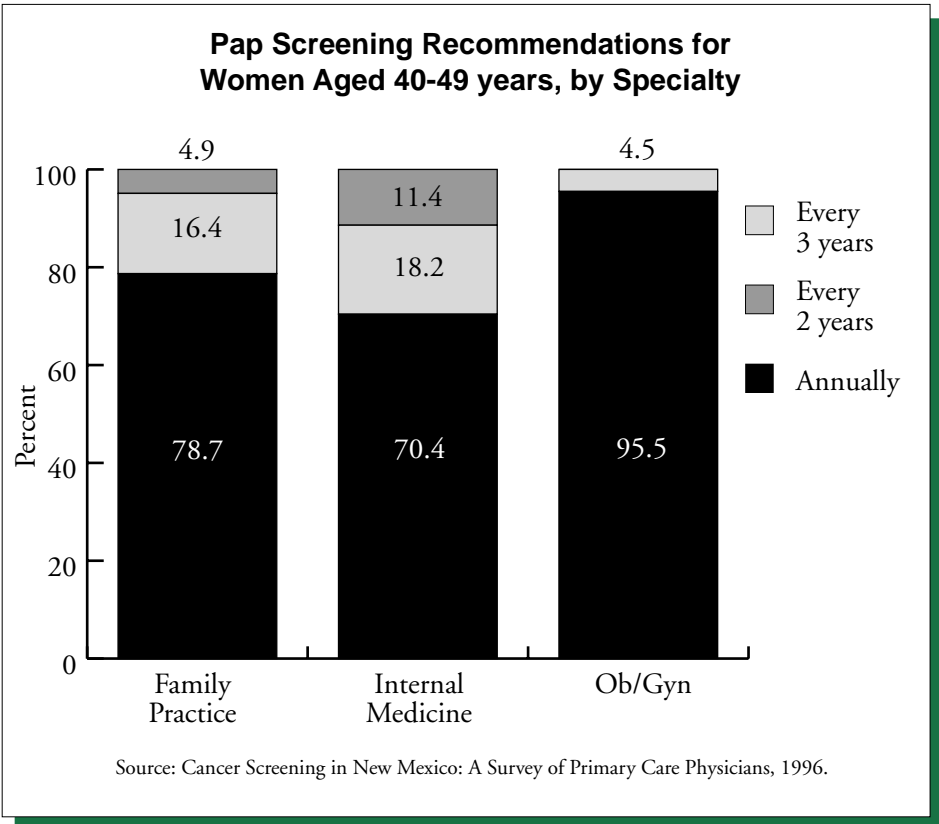
### Pap Screening Recommendations for Women Aged 30-39 Years, by Specialty:

The vast majority (97%) of Ob/Gyns recommended annual screening compared to 70.5% of internists and 83.7% of family practice physicians.



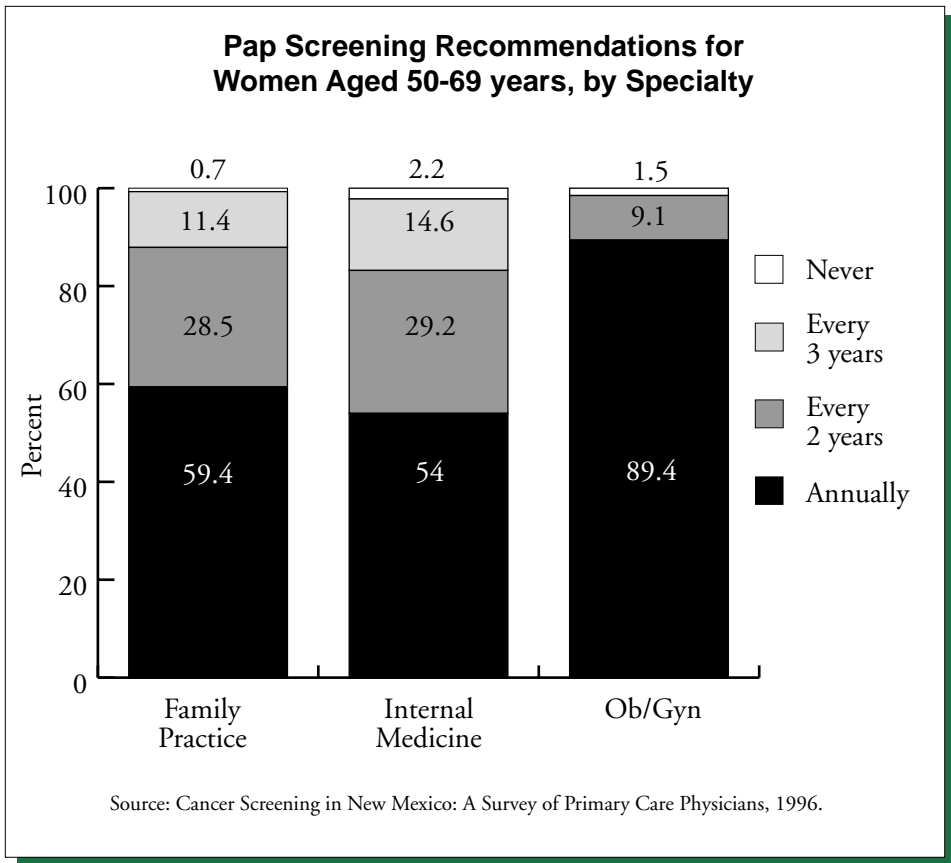
**Pap Screening Recommendations for Women Aged 40-49 Years, by Specialty:**

This variation by specialty continued with this age group of women. Ob/Gyns continued to recommend annual screening while only 78.7% of family practice and 70.4% of internal medicine physicians recommended annual screening for their patients.



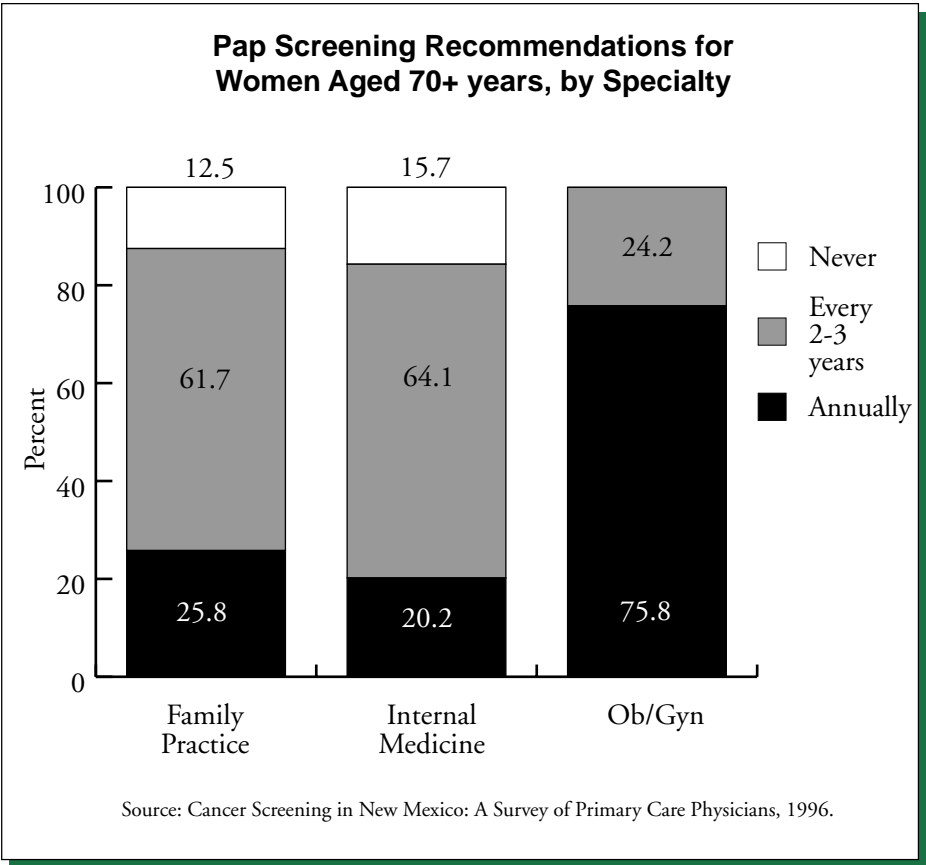
**Pap Screening Recommendations for Women Aged 50-69 Years, by Specialty:**

As a patient ages, family practice and internal medicine physicians increasingly recommend less frequent Pap smear screening. This is consistent with the recommendations that screening can be performed less frequently at the discretion of the health care provider and based on the patients' risk factors. A small percent (2.2% of internal medicine and 0.7% of family practice physicians) no longer recommend any screening for women in this age group.



**Pap Screening Recommendations for Women Aged 70+ Years, by Specialty:**

Physicians were asked “If a woman has consistently normal Pap smears, at what age do you stop Pap smears?” Almost all (97%) Ob/Gyns and over half of family physicians (52%) and internists (51%) reported that they did not stop screening. For those who continued to screen for cervical cancer over the age of 70, 75.8% of Ob/Gyns continued to recommend annual screening while the majority of internists (64.1%) and family practice physicians (61.7%) recommended less frequent screening.



Overall, the majority (77%) of physicians reported they had cancer screening policies or protocols in their practices. Only 6.3% reported that they did not need policies. Ob/Gyns most frequently reported having a screening policy for cervical cancer (73.1%), followed by internists (67.8%) and family practitioners (57.7%). Several studies have shown that those physician practices that have screening policies in place are more likely to use them. However, tracking and reminder systems may play a more important role in increasing preventive care in busy primary care practices. With the trend toward increased quality assurance monitoring with managed care, practices should develop consistent standards that are measurable and supported by the medical literature.

For further information on the survey results contact:

Carla Herman, MD, MPH  
Department of Internal Medicine  
University of New Mexico  
(505) 272-6082

# Screening Methods

## Patient Preparation before the Appointment

When an appointment is scheduled for a Pap smear, the patient should be advised that the likelihood of getting a high quality Pap smear is increased by putting nothing in the vagina for 48 to 72 hours prior to the examination.

### Patient Preparation for a Pap Smear

- No intercourse or other penetrative sex
- No tampons
- No douching
- No vaginal medications or lubricants
- No vaginal contraceptive

*The Patient Education Page at the end of this handbook provides first step information to patients who are scheduled for or are considering a Pap smear.*

## Patient Preparation before the Examination

Knowing what will occur during the examination helps the patient relax, reduces anxiety, and makes performing the examination easier. Helping the patient keep warm and comfortable also helps her relax, easing the examination. As physical discomfort and embarrassment have often been stated as reasons women do not return for regular screening or recommended follow-up, the following information should be considered when preparing the patient for the exam.

- ✓ Conduct the sexual history and as much of the education and other discussion as possible while the patient is fully clothed. Under these circumstances she is likely to be more open and comfortable in her discussion.
- ✓ Ask the patient whether she has had a Pap smear before. Explain that the examination includes inspection of the external genitalia, vagina, and cervix, as well as performance of a Pap smear and a bimanual examination. Make sure the patient understands the terminology.
- ✓ Show the speculum to the patient. Explain how it works and the sounds it makes—the rattle of the metal speculum's knob, the clicks of the plastic speculum.
- ✓ Explain that the examination should not be painful, although it may be uncomfortable.

- ✓ Ask the patient to let the health care provider know if she experiences pain; the technique may be altered or the problem may be solved by something as simple as removing a hair caught in the speculum.
- ✓ Encourage the patient to ask questions at any time before, during, or after the examination. Many patients are unlikely to raise questions or concerns unless explicitly invited to do so by their health care provider.
- ✓ Introduce any additional persons in the room. Explain their purpose for being there, and in the case of students, ask permission.
- ✓ Be explicit about how much to disrobe. This will prevent the patient from fully disrobing unnecessarily.
- ✓ Draw curtains (especially if the table faces the door) and provide drapes to ensure modesty.
- ✓ Cover metal footrests with cloth—socks or oven mitts may be used—to protect bare feet.
- ✓ Provide a blanket if the patient is cold and especially if she must wait for the health care provider.
- ✓ Provide a pillow for lower back or head support.
- ✓ Inquire if the patient would be more comfortable sitting with the back of the table raised up slightly. With the table at a 33 degree angle, the health care provider and patient will be able to see each other's faces without constricting the abdomen.

# Pap Smear Collection

The most important step in cervical cancer detection is obtaining a quality Pap smear by using correct collection techniques. Always label the slide with a graphite pencil with the patient's name before the Pap smear is taken. Warm the speculum with either a heating pad or warm water. Avoid the use of lubricants since they can inhibit the proper staining of cellular material on the slide. Proceed at a relaxed pace and explain each step of the procedure to the patient.

To ease insertion of the speculum, have the patient relax the vaginal muscles. Ask the patient to squeeze her vaginal muscles around the inserted finger as if she's holding back urine and then ask the patient to relax these muscles (Kegel exercise). Pull down gently on the perineum, enlarging the vaginal opening. Insert the speculum over the inserted finger at a 45° angle. Then adjust closer to 90° to locate cervix, as finger is removed. Maintain downward pressure on the speculum throughout the examination. After inspecting the cervix, if necessary, gently and carefully use a large cotton applicator to remove excess mucous secretions from the cervical os. Do this without disturbing the epithelium and prior to obtaining the smear.

When removing the speculum, return it to a 45° angle before it exits the vagina.

Effective collection and evaluation are not inseparable. Approximately two-thirds of “false negative” Pap smears of the cervix are due to sampling (i.e., collection) problems while one third is due to laboratory error.

## Interacting with the Patient During the Examination

- ✓ Explain each step before and during the examination (“I’ll be inserting the speculum now. You’ll feel some pressure.”).
- ✓ Each time contact is initiated, warn the patient that she will be touched (“I’m going to touch you now.”). Touch in a neutral spot, such as the thigh, before proceeding to the genitals. This practice conveys respect and sensitivity and helps the patient relax.
- ✓ Minimize touching, in general.
- ✓ Make a “V” in the drape. This facilitates interaction between the patient and health care provider during the examination and allows the health care provider to see facial expressions that may reveal symptoms not expressed verbally.
- ✓ Maintain frequent eye contact.
- ✓ Do not interact with an assistant or student *about* the patient in front of her. Always include the patient in any discussions about her examination.
- ✓ Avoid language that has painful, violent, or sexual connotations and medical terminology that might not be understood:
  - Speculum *bills*, rather than *blades*.
  - Tighten the knob* on the speculum, avoiding the word *screw*.
  - Examine*, rather than *feel* or *palpate*.
  - Insert* or *place*, rather than *stick in* or *put in*.
  - Remove* rather than *withdraw* or *pull out*.
  - Table*, not bed.
  - Footrests*, not *stirrups*.
  - Relax your legs open*, not *spread your legs*.
- ✓ Point out anatomy to the patient and explain anatomical terms that may not be fully understood, such as cervix and urethra.
- ✓ After the examination, explain that there may be some spotting as a result of the Pap smear.

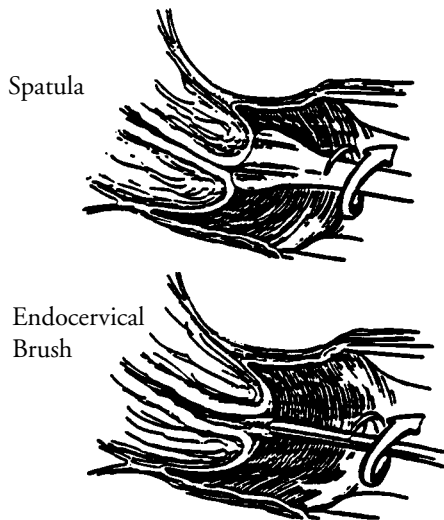
## Obtaining the Pap Smear

It is most important that an adequate sample be taken from the squamocolumnar junction (the transformation zone), transferred to the cytology slide, and immediately fixed with a commercial fixative.

The location of the squamocolumnar junction can be identified by a change in color and texture between the squamous and columnar epithelia. The squamous epithelium appears pale pink, shiny, and smooth. The columnar epithelium appears reddish with a granular surface.

- ✓ Have the slide, endocervical brush, and spatula in hand. Collect the ectocervical sample before the endocervical sample. Wait to fix the slide until both specimens have been collected. Use a commercially prepared cytology fixative. Avoid the use of hair spray or other fixatives.
- ✓ If the squamocolumnar junction cannot be identified, place the elongated edge of the spatula into the cervical os; press firmly and rotate 90-180 degrees.
- ✓ If the squamocolumnar junction is identified on the ectocervix, obtain the sample using the same end of the spatula. Make sure that the spatula stays in contact with the ectocervical surface.
- ✓ Obtain the endocervical sample using the endocervical brush. Place the brush gently in the cervical os and rotate 90-180 degrees to ensure that all of the endocervical canal is sampled. This is particularly important if the health care provider finds an enlarged or gaping endocervical os.

### Obtaining a Sample Using the Spatula and Endocervical Brush



## Special Considerations

- For a patient who has had a **hysterectomy**, use the regular elongated tip of the spatula to scrape the area of the vaginal cuff with special attention to the crypts of the cuff.
- For a patient who has a **lesion** on the vaginal wall, use a **separate spatula** to scrape the margins to secure cells. **Prepare a separate slide and laboratory form.** Describe the lesion and location. Refer for evaluation.
- For a patient who has **vaginal/cervical dryness**, moisten the cervical spatula with normal saline.
- For a patient who is **pregnant**, use the regular elongated tip of the spatula, the endocervical brush for endocervical collection, or a cotton tip applicator moistened in saline to collect the endocervical specimen. Do not force the brush into the os.
- Collect the Pap smear prior to other samples for wet mounts or testing for **sexually transmitted diseases**.
- For a patient who is menstruating, if it is unrealistic for her to return at another time, clean the blood off the cervix using gauze or sponge forceps.

In the presence of frank bleeding, the Pap smear should be obtained as cancer cells may be present. However a negative Pap smear does not exclude cancer in this situation. Symptoms that may be due to neoplasia should be completely evaluated.

If the patient has an active vaginal infection, the accuracy of the Pap smear may be significantly reduced.

An inadequate Pap smear should be repeated, particularly for a patient who has previously had an abnormal Pap test.

## Slide Preparation

When using one slide for Pap smear collection, transfer material to the slide as follows:

- ✓ Transfer the cellular material from the spatula down the length of the slide.
- ✓ Turn the spatula over to superimpose material in the same manner.
- ✓ Transfer the cellular material from the endocervical brush onto the same slide by rolling the endocervical brush from left to right.

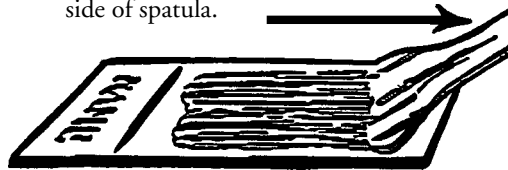
Avoid zigzagging motions with all samples.

Proper fixing is vital. Spray with fixative **immediately** since air-dried cells cannot be interpreted. Use commercially prepared cytology fixatives (hair spray is not a fixative and should not be used). Hold the spray container at least 10 inches away to ensure coating and to prevent dispersal and destruction of the cells by the propellant. No more than 5-10 seconds should elapse between smearing and spraying of the slide. When fixing the slide, leave the slide flat to avoid washing cells down one side. If fixative leaks off the slide while lying flat, too much fixative may have been used. **Protect the frosted end of the slide** with your thumb or paper while spraying (the preliminary lab number can wash off during processing if fixative is applied to the frosted end of the slide).

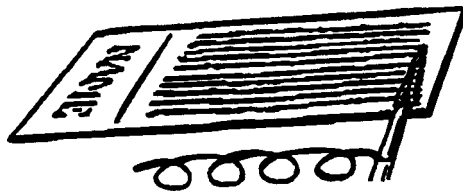
Air dry the slide completely before wrapping. Slides should be flat while drying. Place the slide in the center of the mailer.

### The Two-Step Method for Spatula and Endocervical Brush

- 1 Spread material from each side of spatula.



- 2 On same slide, roll endocervical brush.



# Reporting Systems and Terminology

## The Bethesda System

As our understanding of cervical cancer and its precursor lesions has evolved, a variety of reporting systems for cervical cytology has emerged. When large-scale cervical cytology screening was introduced in the 1950s, the reporting system devised by Dr. Papanicolaou was used almost exclusively. This consisted of a numerical reporting system of five classes, expressed as the Roman numerals I through V with Class I denoting no cytologic abnormality and Class V denoting cells diagnostic of malignancy. The classification system was based upon the detection of malignant cells on cervical smears; the issue of precancerous lesions was not addressed.

As cytology gained acceptance as a diagnostic method, cytopathologists advocated replacing the numerical system with readily understandable diagnostic terms. With the emergence of the concept of cervical precursor lesions, James W. Reagan, MD, promulgated the use of the term “dysplasia” to designate these intraepithelial lesions. Morphologic criteria were delineated for slight, moderate, and severe dysplasia and for squamous cell *carcinoma in-situ* (CIS), based upon the assumption that dysplasia and CIS were separate lesions in behavior and, possibly, in etiology.

Although some cytopathologists claim diagnostic success with use of this system, studies have shown a lack of interobserver reproducibility in subdividing cervical intraepithelial lesions into the five separate diagnostic categories:

- I. Human Papilloma Virus (HPV) effect
- II. Slight
- III. Moderate
- IV. Severe dysplasia
- V. *Carcinoma in situ* (CIS)

As the reporting terminology became more complex, laboratories that were unwilling to abandon the Papanicolaou classification system modified it and created their own versions of the Papanicolaou numerical classes. Thus, communication among pathologists was often confusing at best. In December 1988, the National Cancer Institute sponsored a workshop to address this “diagnostic confusion” and to develop a uniform reporting system for cervicovaginal cytology which became known as The Bethesda System.

Subsequently, modifications were made after a second meeting convened in 1991. The Papanicolaou numerical class system is **no longer acceptable** for reporting diagnoses.

The Bethesda System is considered to have the following advantages:

- A uniform diagnostic terminology to improve communication both among cytopathologists and between cytopathologists and health care providers.
- A descriptive diagnosis of atypical squamous cells of undetermined significance (ASCUS) and of atypical glandular cells of undetermined significance (AGUS).
- The inclusion of changes associated with Human Papilloma Virus (HPV) such as koilocytosis along with cervical intraepithelial neoplasia (CIN) within the category of low-grade squamous intraepithelial lesion (LGSIL). In other words, use of terminology that reflects current understanding of the pathogenesis and biology of cervical neoplasia.
- Evaluation of specimen adequacy as an integral part of the report.
- Consideration of the report as a clinical consult.

The terms “low-grade squamous intraepithelial lesion” (LGSIL) and “high-grade squamous intraepithelial lesion” (HGSIL) are used to describe the categories of squamous cell precursors of cancer. These were previously categorized as dysplasia (with the degree described), CIS, and cervical intraepithelial neoplasia (CIN).

## Pap Smear Terminology Comparison Chart

Expected Histology	Bethesda System	CIN System
Unknown	Unsatisfactory (Reason Given)	Unsatisfactory
Normal	Within Normal Limits Benign Cellular Changes: Infection, Reactive Change	
Squamous Metaplasia		
Atypia Squamous Metaplasia	Atypia (ASCUS) (AGUS)	
Mild Dysplasia	Low Grade SIL: HPV Mild Dysplasia	CIN1
Moderate Dysplasia	High Grade SIL: Moderate Dysplasia	CIN2
Severe Dysplasia		Severe Dysplasia CIS
Carcinoma In Situ (CIS)	Squamous Cell Carcinoma Adenocarcinoma	CIN3
Invasive Cancer		

# Quality Control in the Laboratory

Effective Pap smear collection is extremely important for detecting cervical abnormalities and providing timely treatment. Effective collection includes:

- ✓ Appropriate timing in the menstrual cycle to collect a sample of cervical and endocervical cells (including the zone of transformation) without excessive debris.
- ✓ The proper application and fixation of that sample to a slide.
- ✓ The proper (including labeling) and timely submission of the slide to a qualified laboratory.

Effective evaluation is dependent upon the adequacy of information about the patient's history as well as current information (e.g., last menstrual period, hormonal therapy) provided with the smear(s). In addition, accurate reading (as measured by false positive and false negative rates) of adequately collected smears and the timely reporting of clearly written results to the submitting health care provider are important.

## Cytotechnology Laboratory Quality Assurance

### Laboratory Effectiveness

Accurate statistics about quality of cytology laboratories in New Mexico are not available. Laboratories in the state have, however, informally reported "false negative" rates from 10% to 25%. These rates correlate well with national rates reported in the medical literature. Laboratory-associated "false negatives" most frequently occur with low-grade lesions.

In a large national study, the quality of 74% of smears was considered "satisfactory," 25% "satisfactory with limitations" that often required repeating, and 1% "unsatisfactory" that definitely required repeating (Curtis, 1993).

## Current Regulations for Laboratory Quality Assurance

The final regulations for the Clinical Laboratory Improvement Act of 1988 (CLIA 1988) were published in the Federal Register on February 28, 1992. These regulations defined the minimum quality assurance requirements. Cytology laboratories in the state report performing repeat readings on a randomly selected 10% of specimens read each day. As in all areas of health care, laboratories are under pressure to cut their costs while improving quality assurance through the addition of new technologies. Although cost does increase with the addition of automated technology, several labs expressed the opinion that this will become a standard of care in the near future. Providers should be aware of quality assurance.

### Cytotechnologists in New Mexico

Current guidelines exist that limit the number of slides read daily by a cytotechnologist to a maximum of 100. Cytotechnologists in the state prefer reading a maximum of 60 to 70 slides daily to assure accuracy. Some laboratories, using new technology, provide additional support for their technologists and patients by re-reading large samples of specimens (as much as 25%) as an additional safety measure.

## Recommendations to Improve Sample Quality

- ✓ Encourage private laboratories to provide regular feedback on the quality of Pap smears submitted by health care providers.
- ✓ Establish a method of monitoring the quality of smears from individual health care providers.
- ✓ Estimate the rate of suboptimal or unsatisfactory Pap smears and the frequency with which health care providers recommend that patients return for a second Pap smear. Estimate the frequency with which those patients actually return for repeat screening.
- ✓ Conduct continuing education seminars for health care providers to improve the quality of Pap smears.
- ✓ Establish an active surveillance system to detect and investigate sentinel cases of invasive cervical cancer. This would include a review of previous negative Pap smears from such patients, thereby assisting in accurately estimating the rate of false negatives.
- ✓ Monitor false-positives, since cost of follow-up of these results is increasing.

## To Improve Sample Quality and Reading

At least three large laboratories in the state reported that they repeatedly offer provider training on current collection techniques and the best techniques to use. They also report that few providers access this training in spite of increased incidence of “unsatisfactory” or “limited” specimens. Providers most frequently request training on the correct form to use or other administrative tasks. Recognition that sample quality is every bit as important as laboratory quality should encourage providers to seek this training.

## New Technologies

New technologies provide adjuncts to cervical cancer screening.

**Autopap** provides automated cytology scanning with interpretation. It is primarily used as a secondary screening to enhance laboratory quality control. Autopap rescreens all satisfactory slides read as “within normal limits” and selects 10% of the slides most likely to be false negatives for review by cytotechnologists.

**Papnet** provides computerized selective rescreening of all slides read as “within normal limits,” creates a digitized image of the entire slide, and selects 128 of the most questionable fields of each slide for review by a cytotechnologist or pathologist.

**Cervicography** is a visual adjunct to cervical screening. Because one limitation of the Pap smear is the false-negative rate, cervicography is being considered for screening and/or secondary triage. The advantages include the following: it is simple to perform, less expensive and noninvasive than colposcopy and biopsy. If cervicography is performed concomitantly with a screening Pap smear, it may improve the false-negative rate. If it is used to distinguish women with an abnormal Pap who should be referred for immediate colposcopy from those for whom follow-up with repeat Pap smears is appropriate, it may also effectively decrease the false-negative rate. However, Nuovo et al. concluded that before this test is accepted as a useful screening adjunct, further study is needed (In press). Cervicography is not currently FDA approved for primary screening.



CHAPTER

# 4

*“Screening is only the first half of the equation. Knowledge of and access to effective treatment options are required to complete the equation.”*

New Mexico Internist

# Diagnosis, Treatment and Prevention

## Improvements in Care

With the widespread use of colposcopy, improved techniques for excisional therapy and aggressive treatment of preinvasive lesions, invasive cervical cancer has decreased over the past twenty years. Future research should enable us to prevent this disease through vaccination and a greater understanding of nutrition’s role and of the benefits of tobacco control for women.

# Diagnostic Procedures and Treatment Modalities

## Colposcopy

Colposcopy is the procedure of viewing the cervix, vagina, and vulva with a magnifying lens (colposcope) to identify abnormal epithelial patterns. The colposcopy procedure begins by wiping away cervical mucus with normal saline. Inspection of the cervix is done with a colposcope that magnifies the tissue with filtered and unfiltered light. A 3% - 5% acetic acid solution is then applied to the cervix and upper vagina. The solutions may cause burning or irritation. These areas are then reinspected. If an epithelial abnormality is identified, a biopsy is done. If the entire lesion is not visualized, an endocervical curettage is indicated. Following a cervical biopsy, either Monsel's solution or silver nitrate may be applied to the cervix with pressure to control bleeding. If done, this can result in a muddy or brownish discharge.

If a biopsy shows either persistent LGSIL or HGSIL, or if there is a question of invasive cancer, further evaluation and/or treatment is indicated. Therapeutic modalities are both ablative and excisional. The ablative techniques include laser and cryosurgery. The excisional modalities include cold knife conization, laser conization, loop electrocautery excision, and hysterectomy.

## Ablative Techniques

- **Laser Ablation** Laser ablation is a procedure in which a carbon dioxide laser directed through a microscope is used to vaporize the cervical transformation zone. The procedure is done under local anesthetic and takes 15 to 20 minutes to perform. Post-therapy, the patient may experience some uterine cramping and bloody discharge/vaginal spotting.

- **Cryotherapy** Among ablation techniques, cryotherapy is a procedure performed under direct visualization in which a probe is placed against the cervix. The probe freezes the affected tissue, which in turn results in the destruction and sloughing of cervical cells. The entire procedure takes about 15 minutes. During the procedure, the patient may experience uterine cramping. Subsequently, the patient may expect to have a profuse watery discharge for 7 to 10 days.

## Excisional Techniques

- **Electrosurgical Excision (LEEP)** Electrosurgical excision of the transformation zone is a procedure in which an electrical current generating a radio frequency is passed through a wire loop which excises the tissue and cauterizes the base. The procedure usually can be performed in an outpatient setting with the use of local anesthetic.

Depending upon the size of the loop and the lesion, either the transformation zone or a “cone-like” specimen can be obtained. The patient must be grounded for safety purposes, because an electrical current is used. The electrical current also generates heat, which can cause distortion of the surgical margins, thus making accurate interpretation of the regions difficult, if not impossible. Risks of all excisional procedures include bleeding, cervical stenosis, cervical incompetence, decrease in cervical mucus, and possible infertility.

- **Laser Conization** Laser conization is an operative procedure requiring an anesthetic in which the carbon dioxide laser is used as a knife to generate the same type of specimen obtained with cold knife conization. Postoperatively, the patient will experience cramping and some bleeding.
- **Cold Knife Conization** A cold knife conization (CKC) is an operative procedure requiring either a regional or general anesthetic. During the procedure, the involved ectocervix and endocervix are excised using a circumferential excision. Postoperatively, the patient may have cramping and bleeding. Postoperative infection requiring antibiotic therapy also may occur.

## Follow-Up for Excisional /Ablative Treatment

Following excisional/ablative treatment, a woman will need a follow-up Pap smear in three to four months. If the cytology report is normal at subsequent visits, the Pap smear should be repeated every six months for the first two years and then annually thereafter as long as the cervical smear is normal. If, however, a cervical smear is reported abnormal (based upon the Bethesda Classification), the patient should be reintroduced into the observation/treatment protocol.

## Hysterectomy

Historically, hysterectomy was performed either vaginally or abdominally for CIN III of the cervix. Currently, with the advent of colposcopy and good excisional therapy, hysterectomy is indicated in only 5-10% of patients.

There are still situations where hysterectomy is acceptable management of the patient. In the presence of the more aggressive recurrent high-grade squamous intraepithelial lesions (HGSIL) in women who have coexisting gynecologic disease and have completed childbearing, hysterectomy may be an option.

If hysterectomy is performed for cancerous lesions, the patient's postoperative follow-up care should include a vaginal smear of the upper 1/3 of the vagina every six months for two years and then annually. Once the patient has had her first postoperative return visit (which should occur within six weeks of treatment), she should follow an observation or follow-up protocol.

# Tracking Systems

## Impacts on Appropriate Follow-up Care

Tracking is the act of effectively following a patient to assure that appropriate care is provided. Tracking is appropriate for individuals with identified disease and precursors to disease and for other individuals for whom rescreening is recommended. The mechanism for following many individuals in an organized manner is a tracking system.

An ideal tracking system takes into account the interdependence of the health care provider, clinic, laboratory, and patient. In addition to organizing information, the system must also ensure processes for communication among these entities. Communication includes sending, receiving, and understanding relevant information and is, therefore, critical to the success of screening efforts.

## Paper Versus Computerized Electronic Data Base

For many years, handwritten tickler files and logs were used for tracking. More recently, these paper systems have been replaced or supplemented by electronic systems. The information in these electronic systems ranges from a very small amount ( e.g. a tickler card system) to extensive data (e.g. lifetime medical records). With telecommunications technology, timely communication among appropriate parties is possible, and communication with patients is prepared and documented more readily.

Electronic systems surpass paper systems in their potential usefulness, timeliness, flexibility, and in most cases, acceptability. However, for many users, particularly in small clinics or practices, paper systems are still simpler and less costly.

Preventive Care Flow Sheets provide screening guidelines with cues for action on a single page in the patient's chart. These flow sheets significantly increase pap smear screening rates as well as other cancer screening procedures.

Studies of preventive services in primary care identified factors that impede or facilitate the integration of these services. The most promising approaches for increasing preventive care are organizational features such as chart flow sheets, feedback about performance, computer-based systems and patient -held mini-records.

In summary, the more effective the communication among the patient, health care provider, and laboratory, the more effective the tracking system in assuring that patients receive the care needed to prevent cervical cancer.

## Barriers To Follow-Up

Patients with abnormal screening results, particularly those suggestive of cancer or the presence of Human Papilloma Virus (HPV), are at increased risk for developing invasive cervical cancer. They need to be evaluated and treated with appropriate follow-up care. Approximately 60% of patients with abnormal Pap smears carry through on their health care providers' recommendations for follow-up and treatment (Koss, 1989).

In health care settings that made no special efforts to increase return rates for recommended follow-up care and treatment, patients returned at rates ranging from 20-74% (Lane, 1983). Studies of interventions with aggressive and costly follow-up techniques have achieved rates ranging from 33-95% (Frisch, 1986).

### Beliefs

Studies of patient follow-up with recommendations for treatment after an abnormal Pap smear do not explain why women do not return for repeat testing after an abnormal smear. The aim of a study by Paskett et al. (1990) was to understand why women with abnormal Pap smears fail to get the recommended follow-up Pap smear. Issues and beliefs found to significantly affect follow-through included:

- Health care provider's opinion
- Perceived accuracy or seriousness of the result
- Perceived value of early detection
- Familiarity with the procedure
- Time pressures
- Perceived risk of cancer
- Fear of cancer

## Recommendations

The following strategies may improve patient follow through on health provider recommendations after an abnormal Pap smear.

- Health care providers should use a tracking system, preferably computerized or at least on paper, that identifies and follows up results of abnormal Pap smears and patient follow-through. This system allows health care providers to determine follow-up rates and to locate patients in need of reminders.
- Efforts should be targeted at two levels. First, information should be offered to patients with abnormal results to address their concerns about test results. Second, facilitating conditions such as cost, transportation, access to colposcopy services, and clinic friendliness should be considered.
- Strategies should be “stepped” to increase cost to health care providers and intensity only with the more recalcitrant patients. Educational materials should be sent to all patients when notified of an abnormality. Patients who do not return for follow-up after abnormal results should receive a phone call from clinic personnel. If patients do not return to the clinic, they should then receive certified letters and/or visits from public health personnel. This strategy first encourages patients through simple, inexpensive, and practical efforts.

## Nutritional Aspects of Women's Cancers

Over the last ten years, several studies have reported a “protective” effect of Vitamins A, C, beta ( $\beta$ )-carotene, E, and folacin against cervical cancer and its precursors. In one case-control study investigating nutrient status and invasive cervical cancer using dietary and serologic indicators, the results showed a strong effect of Vitamin C and a lesser effect of carotenoids on reducing the risk of invasive cervical cancer. Preformed Vitamin A and folacin were not related to risk. The authors stated that Vitamin C, as an antioxidant, is essential to the synthesis of collagen, the major component of the extracellular matrix and the body's first barrier against tumor cell invasion. (Herrero et al., 1991 and Potischman et al., 1991).

In a Latin American case-control study, a trend of decreasing risk was also associated with higher levels of  $\beta$ -carotene (Verreault et al., 1989). Higher  $\beta$ -carotene levels have been associated with a multitude of immune responses, including enhanced responses of T and B lymphocytes, cytotoxic T-cell capacities, natural killer cell activity and interleukin-2 receptors. Alpha ( $\alpha$ )-carotene has also shown enhanced tumoricidal activity and may function in this role in combination with, or in addition to,  $\beta$ -carotene.  $\beta$ -carotene also has antioxidant capacities that may be relevant to quenching radicals produced during infection or inflammation of the cervix or released during phagocytosis of tumor cells. These studies provide strong support for a protective effect of Vitamin C and  $\beta$ -carotene but little effect from preformed Vitamin A, E and folacin.

A review article of the epidemiologic literature from 1985 to 1993 assessed the relationship between antioxidants and cancer risk (Flagg et al., 1995). After careful examination of five dietary assessments and two serum evaluations, they report the strongest protective effects from Vitamin C and mixed effects from carotenoids and Vitamin E.

The following table summarizes these findings:

**Summary of Results for Uterine & Cervical Cancer**

Antioxidant	Measure	Studies	Protection (1)	Strength (2)	Dose Response (3)
Carotenoids	Diet	5	2	2	1
	Serum	1	1	1	1
Vitamin C	Diet	5	5	4	2
	Serum	0	0	0	0
Vitamin E	Diet	3	1	1	1
	Serum	2	1	1	0

1. Number of studies demonstrating an inverse association between the specified antioxidant and cervical cancer.
2. Number of studies revealing at least a 50% reduction in risk of cervical cancer with increasing levels of the specified antioxidants.
3. Number of studies demonstrating decreasing risk of cervical cancer across at least 3 levels of the specified antioxidant.

Source: "Epidemiologic Studies of Antioxidants and Cancer in Humans" by Flagg et al. (1995) *Journal of the American College of Nutrition*, 14: 419-427.

One of the problems in nutritional epidemiology research is that certain foods contain a number of potentially beneficial components. Determining which components provide the most significant contribution is the challenge. It is possible that nutrients or phytochemicals other than carotenoids or Vitamin C are responsible for reducing the risk of lung, upper aerodigestive tract, or cervical cancers (Potischman et al., 1993). The only way to demonstrate definitive cancer prevention through antioxidant consumption may be through randomized clinical trials.

Potischman reported that the majority of serologic and dietary studies indicate no relation between Vitamin A and cervical neoplasia (Potischman, 1993). Her conclusions indicated that dietary carotenoids are important at all stages of cervical neoplasia, but these studies were not consistent. The majority of studies showed that higher levels of dietary and serologic Vitamin C were associated with reduced risk for all stages of cervical neoplasia. Two of the serologic studies reported lower Vitamin E levels with higher grade cervical lesions. Women with invasive cancers had even lower concentrations of Vitamin E than those with dysplasia. However, more data is required to support this protective effect. Folate also appeared to be important in the studies of cervical dysplasia more so than in studies looking at advanced lesions. The author concluded her review of folate by stating that further work is needed to evaluate this nutrient across all grades of preinvasive cervical disease.

University of Arizona Cancer Center researchers investigated the role of folic acid supplementation on the natural history of cervical intraepithelial neoplasia (Childers et al., 1995). They concluded that daily supplementation with 5 mg. of folic acid does not enhance the regression of early epithelial abnormalities of the cervix. The question remains whether correction of folate deficiency, prior to epithelial changes, could influence the outcome.

The above cited studies offer information on the nature of the investigations in micronutrient impact on cervical epithelial abnormalities. The studies indicate how difficult it is to isolate and attribute effects to any particular micronutrient. Experts conclude that nutrition is an important component from which health and disease arise. Continued research in this area is critical to cancer control efforts.

### **Dietary Sources of Vitamins**

- Dietary sources of carotenoids are dark-green, leafy vegetables and yellow, red and orange fruits and vegetables.
- Dietary sources of Vitamin C include citrus fruits, dark-green leafy vegetables, tomatoes and potatoes.
- Dietary sources of Vitamin E include vegetable oils (the richest source), whole grains, wheat germ, nuts and seeds.

# Human Papilloma Virus and Risk of Cervical Invasive Neoplasia

Human Papilloma Virus (HPV) has been implicated in the etiology of cervical dysplasia leading to cancer *in situ*, cervical intraepithelial neoplasia and invasive cervical neoplasm. Reports indicate that HPV is diagnosed in 93% of all cervical neoplasms (Schiffman, 1993). These findings are important in the triage and management of cervical dysplasia.

HPV comprises a family of viruses that includes more than 60 viral types (International Agency for Research on Cancer, 1995). These viruses are known to cause warts at diverse sites. About 20 viruses infect the genital area. Genital HPV infection may involve large areas of urogenital, perineal, perianal, and anal epithelium. In men, a common site of genital warts is the base of the shaft of the penis, a site that is not easily covered by a condom. Therefore, even consistent and correct use of condoms may not protect against transmission of genital HPV.

Given the high prevalence of HPV infection relative to the incidence of cervical cancer, HPV alone is not capable of inducing cervical cancer. Exposure to other factors, called “cofactors,” is important in the development of disease. Possible “cofactors” include smoking, oral contraceptive use, diet, parity and sexually transmitted diseases. Other host factors include immunologic compromised states, with those infected with HIV at higher risk (IARC, 1995).

Younger, rather than older, women are more likely to have HPV DNA detected in genital tract specimens. HPV DNA is rarely detected in genital tract specimens of women who report no previous sexual activity. These findings help target those at higher risk for being HPV infected.

The typical epidemiologic profile of women with cervical intraepithelial neoplasia includes: women with more sex partners, more cigarette smoking, earlier ages at first sexual intercourse, and lower socioeconomic status (Schiffman, 1993). HPV infection was associated with over 76% of cervical cancer cases. An association of parity with risk of CIN was observed in both HPV negative and HPV positive cases. The authors concluded that the majority of all grades of CIN can be attributed to cancer-associated types of HPV infection. The natural history of HPV has **preventive**, as well as **etiologic** importance.

## Natural History

- Although most individuals with genital HPV infection do not develop signs or symptoms brought to the attention of the health care provider, it is likely many infections cause microscopic intraepithelial lesions that are never detected.
- Within a few years of initial infection, the molecular, microscopic and clinical signs of the initial infection are no longer present in most individuals.
- Severely impaired cell-mediated immunity appears to enhance replication of the virus, thereby increasing the probability of an individual developing new or recurrent lesions.
- Only a small percentage of individuals infected with an oncogenic type of HPV develop cancer.
- Cervical cancer is a common HPV-associated malignancy, perhaps in part because cells capable of proliferation at the junction of columnar and squamous epithelium are exposed to the surface and are therefore, most susceptible to infection and transformation by HPV.

## Vaccination

A **therapeutic** vaccination is currently being tested to treat patients with established HPV-associated precancer or cancer. **Prophylactic** vaccination may potentially protect against HPV infection. Theoretically, protection can be achieved by induction of virus-neutralizing antibodies prior to exposure. Successful therapeutic vaccination depends on stimulation of cellular immune response. Efforts are currently being made to develop and test a safe vaccine to prevent the development and spread of infection.

# Diagnosis, Treatment and Prevention

*“BCCC P has enabled women in our area to have Pap smears for the first time ever. We have diagnosed many cervical cancers, and these women are alive now.”*

New Mexico Community  
Health Center Physician

CHAPTER


# 5


# Resources for Information and Referral


# Support Groups and Health Care Information Services for Women with Cervical Cancer

Health care providers and patients have learned the value of mutual support among women with cancer. When someone with a serious illness feels frightened or depressed, it often helps to discuss these feelings with another person who has been through the same experience. In addition, many organizations offer practical advice on accessing health care information, cancer rehabilitation, family counseling, and diet and exercise information for women with cervical cancer.

## The American Cancer Society (ACS) Southwest Division

 Tel: (505) 260-2105

 WWW: <http://www.cancer.org/>


 Addr: 5800 Lomas Blvd., NE, Albuquerque, NM 87110


The ACS is a nonprofit, nationwide organization which supports research, conducts educational programs, and offers a variety of services to people with cancer and to their families. ACS helps women with cancer through various patient services and support groups.

- **Patient Services** include *Road to Recovery*, through which volunteers *transport* patients to and from treatment and help with *housing* for out-of-town patients.
- **Visiting and Support Groups** include *I Can Cope*, an educational program for patients, loved ones and friends.
- **RIG** (Resources, Information, and Guidance) is a community clearinghouse offering *resources*, *information*, and *guidance* to anyone contacting ACS with questions about cancer.

The ACS has field staff in counties throughout the state, although **not all programs are supported at all offices**. Call the Albuquerque office for information about services and support groups in your city or county.

## People Living Through Cancer (PLTC)

 Tel: (505) 242-3263

 Fax: (505) 242-6756


 Addr: 323 Eighth Street SW, Albuquerque, NM 87102


PLTC was founded by and for those coping with a cancer diagnosis or with the cancer of a friend or loved one. PLTC's cervical cancer resources include:


- *Peer support groups* for survivors and family members
- *One-to-one matching* with others who have had cervical cancer or have similar concerns
- *Living Through Cancer Journal*, a quarterly publication
- *Training* for those wishing to improve their skills at giving support
- *The largest cancer-related library* for health care consumers in New Mexico

PLTC includes Hispanic, American Indian, African American and Caucasian cervical cancer survivors serving their communities.

## The National Coalition for Cancer Survivorship (NCCS)

 Tel: (301) 650-8868

 Fax: (301) 565-9670

 Addr: 1010 Wayne Blvd., Silver Spring, MD 20910

The NCCS is a network of cancer survivors and their organizations across the United States. The NCCS helps cancer survivors and their families start local support groups or contact existing ones, sponsors a clearinghouse of national resources for support and information on life after a cancer diagnosis, provides advice to reduce cancer-based discrimination, and serves as a unified voice of cancer survivors. To find a local NCCS group, contact the national office at the above number.

# Additional National and State Resources

Health care providers may want more general information for themselves, their patients, and their patients' families. The services listed below will help them obtain what they need. Additional information is available from local libraries, bookstores and support groups.

The National Cancer Institute (NCI), one of the National Institutes of Health, supports the following services: the **Cancer Information Service**, **CancerFax**, **Physician Data Query**, and **CancerNet**. These and other resources are highlighted below.

## Cancer Information Service (CIS)


 Tel: 1-800-4-CANCER (1-800-422-6237)

The CIS provides a nationwide telephone service for cancer patients and their families, the public and health care professionals. CIS can provide specific information in understandable language about particular types of cancer as well as information on state-of-the-art care and the availability of clinical trials.

Callers' questions are answered by Certified Information Specialists trained by the NCI. **Bilingual information specialists are available.** CIS offices can be reached anywhere in the country by dialing 1-800-422-6237, Monday through Friday, 9 a.m. to 4:30 p.m. **local time.** Persons with TTY equipment can call 1-800-332-8615 for cancer information.

The CIS also coordinates state and regional outreach and cancer education efforts of the NCI.

## CancerFax

 Tel: (301) 402-5874

The NCI's CancerFax service provides up-to-date cancer treatment information including treatment and supportive care information summaries from the *Physician Data Query* database (see below). CancerFax is available in English and **Spanish** and operates 24 hours a day, seven days a week. Call the phone number above to have information sent directly to a fax machine.


## Physician Data Query (PDQ)

The PDQ is a computer database which contains cancer information statements, listings of research studies (clinical trials), and directories of physicians and organizations involved in cancer care. PDQ was developed by the NCI and contains information statements on state-of-the-art cancer treatment, screening, and prevention; supportive care for cancer patients; and investigational and newly approved chemotherapy.

There are a number of ways people can obtain information from PDQ. *Cancer patients*, their *families*, and the *public* can call the Cancer Information Service (CIS) at 1-800-422-6237. CIS Information Specialists use PDQ information to answer callers' questions.


*Physicians* and *other health professionals* can obtain customized PDQ information through the PDQ Search Service (Tel: 1-800-345-3300, Fax: 1-800-380-1575). The e-mail address is: [pdqsearch@icic.nci.nih.gov](mailto:pdqsearch@icic.nci.nih.gov). In addition, the Health Sciences Library at the University of New Mexico has PDQ access. Selected PDQ materials are also available on the NCI's World Wide Web site: <http://www.icic.nci.nih.gov/>.


## CancerNet

 E-mail: [Cancernet@icic.nci.nih.gov](mailto:Cancernet@icic.nci.nih.gov)

CancerNet is a way to obtain PDQ information summaries and other NCI information via Internet and selected electronic information services. To use CancerNet, send a mail message to the address above. Enter the word "HELP" as the text of the message to receive materials in **English**; enter "SPANISH" to receive the information in **Spanish**.

## The New Mexico Breast & Cervical Cancer Detection and Control Program (B&CCP)

 Tel: (505) 841-8330


 Addr: 2329 Wisconsin NE, Suite A, Albuquerque, NM 87110

The B&CCP of the New Mexico Department of Health endeavors to increase screening, early detection, and follow-up care among low income, high risk women, *particularly minority and older women*. The program provides evaluation and follow-up and promotes increased public knowledge and awareness about breast and cervical cancer. Professional education is also an important component of the B&CCP.

*All counties* in New Mexico and the Indian Health Service (IHS) provide *free* cervical cancer screening for income- and age-eligible women. Unfortunately, available funding serves only a portion of the eligible New Mexico women.

For referral to a *local B&CCP provider*, call the Cancer Information Service at 1-800-422-6237. Information on the B&CCP is available on the World Wide Web at: <http://www.unm.edu/~bcnetwrk/>.

## The Cancer Research and Treatment Center (CRTC)

 Tel: (505) 272-4946

Statewide toll-free number: 1-800-432-6806

 Addr: 900 Camino de Salud, NE, Albuquerque, NM 87131-5306

The CRTC is New Mexico's only cancer center formally recognized by the NCI. The CRTC serves the entire state and the Navajo Nation. Breast and cervical cancer are the focus of much ongoing research and clinical activity at the CRTC.

The New Mexico Tumor Registry, a department of the CRTC, monitors cancer incidence rates statewide and serves as the NCI's resource for data on cancer incidence in American Indian and Hispanic populations.

# Professional Education

The following organizations are available to health care providers in search of professional education materials, practice guidelines and recommendations and educational resources for patients with special needs.

<b>Organization</b>	<b>Phone</b>	<b>Web Site</b>
American Academy of Family Physicians	(816) 333-9700	<a href="http://www.aafp.org">http://www.aafp.org</a>
American Association of Retired Persons	(703) 550-9708	<a href="http://info-ren.pitt.edu/universal-service/reply-comments/html/aarp.html">http://info-ren.pitt.edu/universal-service/reply-comments/html/aarp.html</a>
American Cancer Society	(800) 227-2345	<a href="http://www.cancer.org/">http://www.cancer.org/</a>
American College of Ob/Gyn	(202) 638-5577	<a href="http://www.surgeon.org/pages/contacts/acog.htm">http://www.surgeon.org/pages/contacts/acog.htm</a>
American College of Physicians	(215) 351-2400	<a href="http://www.acponline.org">http://www.acponline.org</a>
American Medical Association	(312) 464-5000	<a href="http://www.ama-assn.org">http://www.ama-assn.org</a>
American Medical Women's Association	(703) 838-0500	<a href="http://www.amwa-doc.org">http://www.amwa-doc.org</a>
American Nurses Association	(202) 554-4444	<a href="http://www.nursingworld.org">http://www.nursingworld.org</a>
Cancer Information Service	(800) 422-6237	<a href="http://web.kcr.uky.edu/cis/cis.html">http://web.kcr.uky.edu/cis/cis.html</a>
Coalition of Hispanic Health & Human Service Organizations	(202) 387-5000	<a href="http://www.cossmho.org/">http://www.cossmho.org/</a>
Food & Drug Administration	(800) 838-7715	<a href="http://www.fda.gov/">http://www.fda.gov/</a>
National Health Information Center	(800) 336-4797	<a href="http://nhic-nt.health.org/">http://nhic-nt.health.org/</a>
Native American Women's Health Education Resource Center	(605) 487-7072	<a href="http://www.rapidnetcom/urls/sdsites.html">http://www.rapidnetcom/urls/sdsites.html</a>
Office of Minority Health Resource Center	(800) 444-6472	<a href="http://www.omhrc.gov/">http://www.omhrc.gov/</a>

# Electronic Resource Directory

## Organization

## Electronic Address

American Cancer Society  
(ACS)

World Wide Web at: <http://www.cancer.org/>

Cancer FAQ Gopher

Internet at: [gopher://nysernet.org](http://gopher://nysernet.org)

CancerNet

e-mail at: [cancernet](mailto:cancernet)  
World Wide Web at: <http://cancernet.nci.nih.gov>

Cansearch  
(National Coalition  
for Cancer Survivorship)

World Wide Web at: <http://www.access.digex.net/~mkragen/index.html>

National Cancer Institute  
(NCI)

World Wide Web at: <http://cancernet.nci.nih.gov/occdocs/cis/cis.html>

NM B&CCP

World Wide Web at: <http://www.unm.edu/~bcnetwrk/>

OncoLink

World Wide Web at: <http://oncolink.upenn.edu/>

NCI Physician Data Query  
(PDQ)

e-mail at: [pdqsearch@icic.nci.nih.gov](mailto:pdqsearch@icic.nci.nih.gov)  
<http://cancernet.nci.nih.govpdq.html>

Women's Medical Health Page

World Wide Web at: <http://www.best.com/~sirlou/wmhp.html>

# Patient Education Page

The following page may be photocopied and used as patient education material. It describes patient preparation for a Pap examination and answers a few basic questions about cervical cancer and Pap smears. It may be appropriate for patients considering an examination or those scheduled or referred for an examination.

Space is provided for health care providers to include contact information for themselves and their practices.

## What is a Pap test?

It is a test that is used to find cancer of the cervix. If it is found early, it can be treated. The test is simple. The health care provider will wipe a brush on the cervix inside the vagina. This takes only a few seconds. Material taken from the cervix is then examined under a microscope to make sure it's healthy.

## Who needs a Pap test?

All women over 18 years old need a Pap test each year. Women under 18 years old who have had sex also need a Pap test each year. There is no upper age limit. Older women who have gone through the change of life (menopause), some women who have had a hysterectomy, and women who are not sexually active still need regular Pap tests.

## How do I get a Pap test?

You can contact your health care provider to schedule a Pap test. Or you can call the Cancer Information Service for help in finding someone who can perform a Pap test. Their number is 1-800-4-CANCER (800-422-6237).

You should schedule the Pap test before or after your period (not during your period). If you are not having periods, the exam can be done any time. During the 3 days before the test:

- Don't douche or put anything inside your vagina (including medications, tampons, or contraceptives).
- Don't have intercourse or other penetrative sex.

## Did You Know?

A Pap test can find cervical cancer early. If it's found early, it's easier to cure.



Cancer of the cervix may not be noticeable to you. Only a Pap test can find it early.



If you are over 18, or if you are younger than 18 and have had sex, you need a Pap test each year.



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