

CHAPTER 13

# CERVICAL CANCER

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*\*The National Cancer Institute (NCI) affiliation is provided for identification purposes only and does not indicate official NCI endorsement of the document.*

# CERVICAL CANCER

Cervical cancer incidence and mortality rates in the United States have been declining since the introduction of the Pap test, but cervical cancer rates worldwide remain high. Cervical cancer is the leading cause of cancer deaths among women in developing countries.

In 2000, nearly 500,000 cases of cervical cancer were diagnosed worldwide, second only to breast cancer for number of cancers diagnosed among women. About 230,000 deaths were caused by cervical cancer in 2000, making it the fifth leading cause of cancer deaths among women worldwide. About 80% of the new cases and deaths were in developing nations.<sup>1</sup>

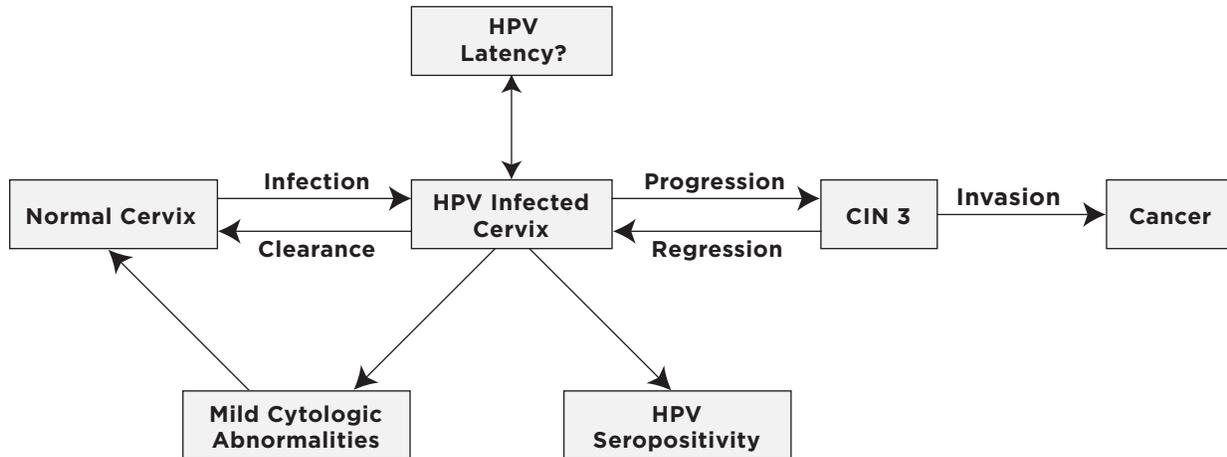
To a greater extent than with many cancers, effective tools for the control of cervical cancer have been identified. Since the development of the Pap test (Pap smear) in 1943, the number of women dying from cervical cancer in the United States has decreased by 75%.

Of the 50 million Pap tests done in the United States each year, approximately 7% will have an abnormal result. Although 85% of United States women report having a Pap test in the last three years, one half of the newly diagnosed cases of invasive cervical cancer occur in women who have never had one. An additional 10% of the cases occur in women who have not had a Pap test in the last five years. Certain strains of the human papilloma virus (HPV) of the cervix have been associated with an increased risk of developing invasive cervical cancer.<sup>2,3</sup>

The lower part of the uterus is known as the cervix and it connects the uterus with the birth canal. Cervical cancer originates when cells on the surface of the cervix begin to grow uncontrollably. Initially the uncontrolled growth is not cancerous and may be referred to as cervical dysplasia, carcinoma in situ, or SIL (squamous intraepithelial lesions). If left untreated, the dysplasia may worsen and become carcinoma in situ. This is the earliest stage of cancer, when the tumor has not yet spread or invaded surrounding tissues. At this stage, dysplasia and carcinoma in situ can often be removed by a colposcopy-directed biopsy, or LEEP (loop electrosurgical excision).<sup>4</sup>

Invasive cancer develops when abnormal cells begin to invade normal cells. If the squamous epithelial cells in the lining of the ectocervix (outer part of the cervix) are invaded, a squamous cell carcinoma develops. Approximately 80% of all cervical cancers are squamous cell carcinoma. If the cells of the endocervix (inner part of the cervix) are affected, the cancer is called adenocarcinoma. If both the ectocervix and the endocervix are involved, the cancer is known as adenosquamous carcinoma. This occurs in 3%–5% of

**Figure 13.1**  
**Natural History of Cervical Cancer**



Source: Mark Schiffman, MD, MPH, National Cancer Institute.

all cervical cancers. Other types of cervical cancer exist, but they are extremely rare.<sup>5,6,7</sup>

Figure 13.1 describes the natural history of cervical cancer. Changes in the cells of the cervix form a continuum divided into low- or high-grade SIL or CIN 1, 2, and 3 that reflects increasingly abnormal changes of the affected epithelium. These lesions can persist, regress, or progress to an invasive malignancy. High-grade SIL (CIN 2–3) is more likely to persist or progress and less often regresses spontaneously, while low-grade SIL (CIN 1) often regresses without treatment. The average time for progression of CIN 3 to invasive cancer has been estimated to be 10–15 years, based on the mean age of diagnosis of these two conditions. There is a small subset of rapidly progressive cervical cancers that are diagnosed within three years of a confirmed negative Pap test. These tumors occur in younger women. One third of these cancers are adenocarcinomas of endocervical origin which may not be adequately screened by conventional Pap test methods.<sup>8</sup>

## Risk Factors

### Age

Rates of cervical carcinoma in situ (cervical cancer that has not spread to other parts of the body) reach a peak in both black and white women between the ages of 20 and 30 years. In contrast, rates of invasive cervical cancer increase with age in white women and black women, but rates increase more rapidly in black women. The

chance of dying from cervical cancer increases as women get older.<sup>9</sup>

### Pap Test History

Women who have never had a Pap test or who have not had one for several years have a higher-than-average risk of developing cervical cancer.<sup>10</sup>

### HPV Infection

There are over 80 types of human papillomavirus (HPV). At least two dozen types are transmitted sexually and can infect the cervix and about half of these have been linked to cervical cancer. Cervical infection with HPV is the primary risk factor for cervical cancer. However, HPV infection is very common and only a very small percentage of women infected with HPV will develop cervical cancer.<sup>11</sup>

### Human Immunodeficiency Virus (HIV) Infection

Women who have been infected with HIV have a higher-than-average risk of developing cervical cancer.<sup>12</sup>

### Sexual History

Women who had sexual intercourse at an early age or who have had many sexual partners have a higher-than-average risk of developing cervical cancer.<sup>13</sup>

### Smoking

Cigarette smoking by women is associated with an increased risk for squamous cell carcinoma.<sup>14</sup>

**Table 13.1**  
**Cervical Cancer Incidence and Mortality Rates by Race**  
**in Maryland and the United States, 1999**

<b>Incidence 1999</b>	<b>Total</b>	<b>Whites</b>	<b>Blacks</b>
New Cases (#)	226	130	73
Incidence Rate	8.2	6.7	10.8
U.S. SEER Rate	8.0	7.4	13.3
<b>Mortality 1999</b>	<b>Total</b>	<b>Whites</b>	<b>Blacks</b>
MD Deaths (#)	77	49	26
MD Mortality Rate	2.8	2.4	4.2
U.S. Mortality Rate	2.9	2.6	5.5

Rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population.  
 Source: Maryland Cancer Registry, 1999; Maryland Division of Health Statistics, 1999; SEER, National Cancer Institute, 1999.

## Burden of Cervical Cancer in Maryland

Invasive cervical cancer represents about 2% of all newly diagnosed cancers among Maryland women. In 1999, 226 Maryland women were diagnosed with invasive cervical cancer (Table 13.1). The overall age-adjusted incidence rate for invasive cervical cancer in Maryland for 1999 was 8.2 per 100,000, similar to the National Cancer Institute's (NCI) Surveillance, Epidemiology, and End Results (SEER) national estimates of 8.0 per 100,000. Cervical cancer incidence rates are higher among black women than white women in Maryland and the U.S.

Age-specific invasive cervical cancer incidence rates for black women are higher than those for white women starting at age 40 (Figure 13.2). Cervical cancer incidence rates decreased an average of 6% per year from 1995 to 1999 in Maryland,<sup>15</sup> however the decline in the incidence rate among white women is greater than the decline among black women (Figure 13.3). White women are diagnosed at the local stage more frequently than black women (55% vs. 45%) in Maryland, while a large proportion of black women are diagnosed at regional and distant stages (Figure 13.4).

Currently, the Maryland Cancer Registry does not calculate survival rates, but SEER data show that the overall five-year survival rate for invasive cervical cancer is 72% for white women and 60% for black women. Black women have lower five-year survival rates than

white women at each stage (Table 13.2).<sup>16</sup>

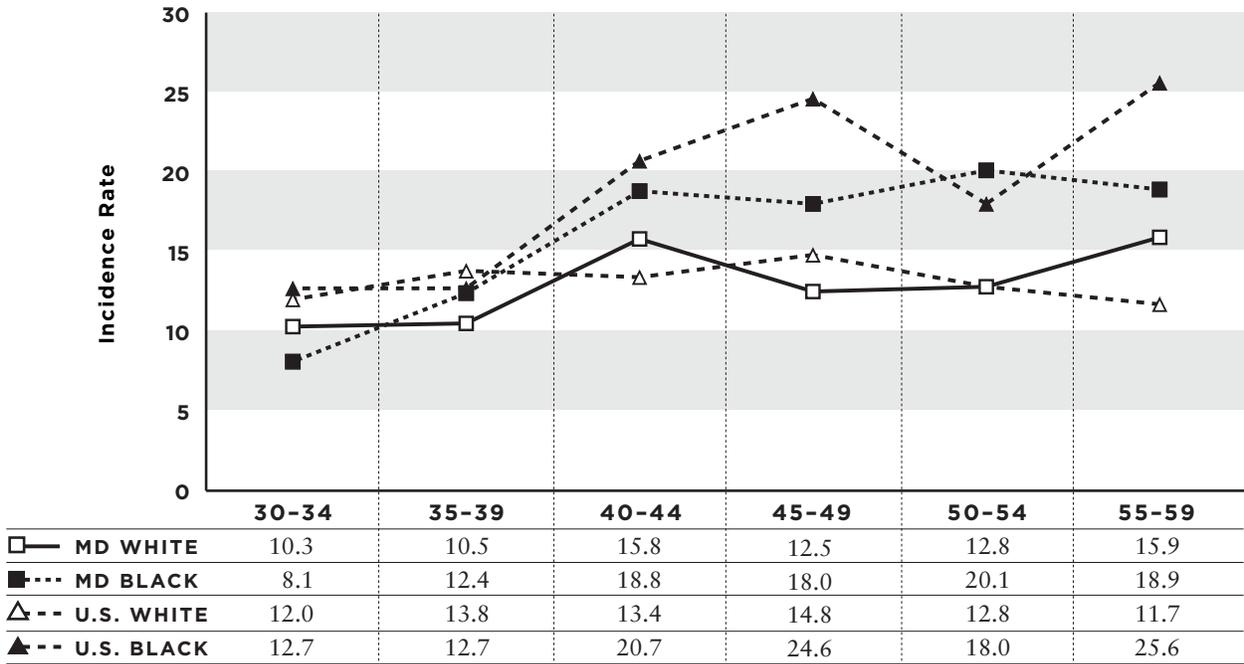
In 1999, 77 Marylanders died from invasive cervical cancer (Table 13.1). The age-adjusted invasive cervical cancer mortality rate in Maryland was 2.8 per 100,000, which is similar to the U.S. rate of 2.9 per 100,000 in 1999. Mortality rates among white women in Maryland and the United States have remained fairly constant from 1995 through 1999, but rates among black women have declined sharply since 1997 (Figure 13.5). Although mortality rates for black women are still significantly higher than rates for white women, the recent decline may indicate that this gap is closing and a health disparity is being reduced.

Baltimore City and the Eastern Shore have significantly higher cervical cancer mortality rates than the U.S. Montgomery County and the Baltimore Metropolitan areas (excluding Baltimore City) have statistically significantly lower mortality rates than the United States (Figure 13.6).

## Disparities

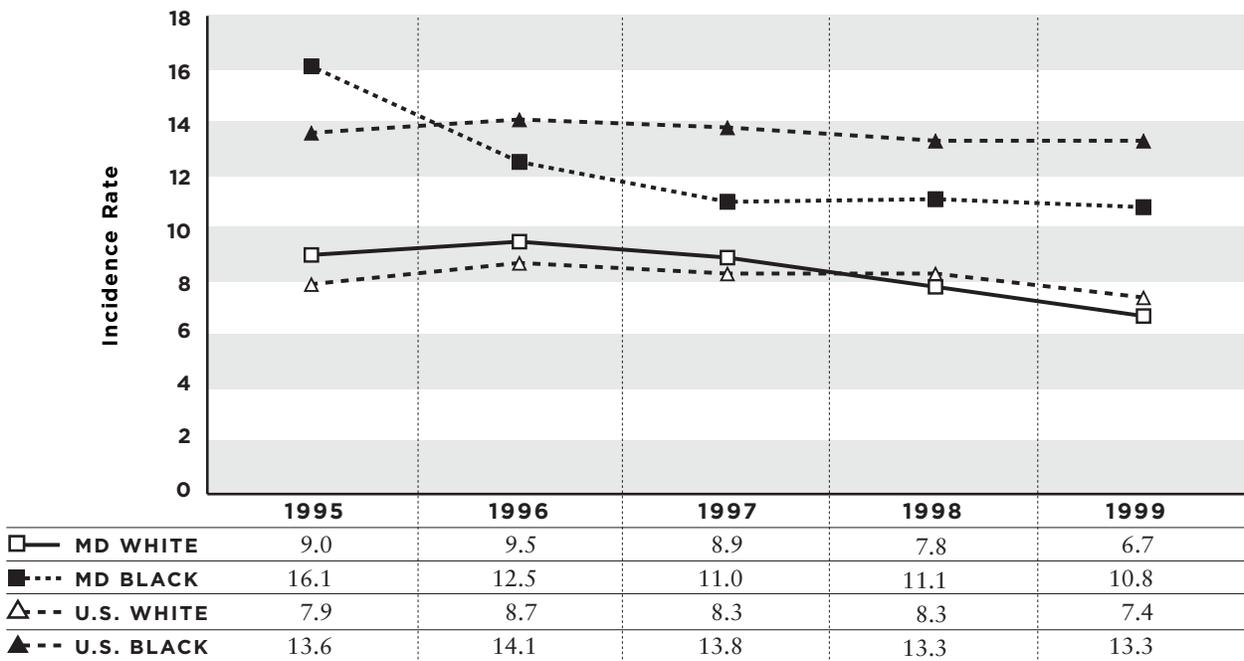
- Black women have a significantly higher incidence rate and mortality rate for invasive cervical cancer than white women.
- For each stage, black women have lower five-year survival rates than white women.

**Figure 13.2**  
**Invasive Cervical Cancer Age-Specific Incidence by Race**  
**in Maryland and the United States, 1995-1999**



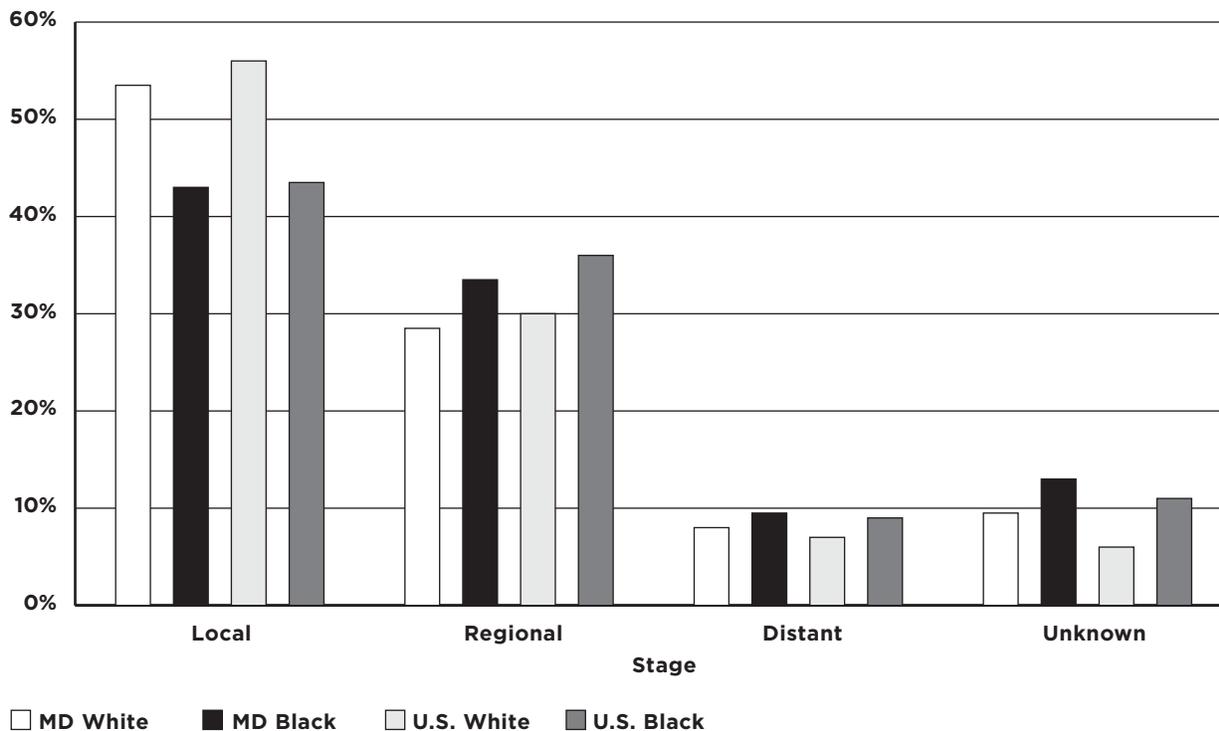
Rates are per 100,000 population.  
 Source: Maryland Cancer Registry, 1995-1999; SEER, National Cancer Institute, 1995-1999.

**Figure 13.3**  
**Invasive Cervical Cancer Incidence by Race**  
**in Maryland and the United States, 1995-1999**



Rates are per 100,000 and age-adjusted to the 2000 U.S. standard population.  
 Source: Maryland Cancer Registry, 1995-1999; SEER, National Cancer Institute, 1995-1999.

**Figure 13.4**  
**Invasive Cervical Cancer Stage of Disease at Diagnosis**  
**by Race in Maryland and the United States, 1992-1997**



Source: Maryland Cancer Registry, 1992-1997; SEER, National Cancer Institute, 1992-1997.

## Cervical Cancer Among Other Ethnic and Cultural Groups in Maryland

Historically reliable data have only been available on cancer rates for whites and blacks. The numbers of cancer cases and deaths among other minority groups have been small, making rates unreliable for comparisons. With demographics in Maryland constantly shifting, including growing numbers of other ethnic minorities (due to both immigration and birth), it will be more and more important to have accurate data on all ethnic groups. Recent improvements in national and state standards for accurately recording information and vital statistics data about all ethnic groups in cancer data will improve our ability to monitor the health of these groups.

During the last decade, a large influx of immigrants has settled in Maryland. According to the 2000 Census, the number of Hispanics in Maryland has increased by 6.5 times and the number of Asians in Maryland has increased by 5.5 times since the 1990 Census. Nearly half of the total number of Hispanics and Asians in the

Maryland are living in Montgomery County, where they comprise about 22% of that county's total population. Some of these immigrants are from Central America and Southeast Asia, areas that have very high cervical cancer incidence and mortality rates. Central America has cervical cancer incidence and mortality rates about 5 times the U.S. rates; Southeast Asia about 2.5 times the U.S. rates. If the women in these groups are unable or unwilling to receive screening, diagnosis, and treatment, there may be an epidemic of cervical cancer in Maryland, centered in Montgomery County. The potential for a significant disparity and a public health problem for cervical cancer may exist in Maryland and should be considered despite the lack of data at the moment.

## Primary Prevention

Avoiding risk for HPV infection is the most important strategy for primary prevention of cervical cancer. Epidemiologically, women who have first sexual intercourse at an early age and those who have multiple sexual partners have been shown to be at increased risk

**Table 13.2**  
**Cervical Cancer Five-Year Survival Rates by Race in the United States, 1992-1999**

Stage	Total	White	Black
Overall	71%	73%	61%
Local	92%	93%	87%
Distant	17%	18%	12%

Source: SEER, National Cancer Institute, 1992-1999.

for infection. In addition, barrier methods of contraception, and possibly spermicides,<sup>17</sup> may prevent the spread of HPV between partners.

In addition to HPV infection, other factors may reduce or increase the risk for the development of cervical cancer. For example, tobacco exposure and HIV infection increase risk for cervical cancer and dietary factors may have a preventive effect. Several case-control studies have investigated the effects of various micronutrients on risk and have found that high dietary carotene and possibly vitamins C and E and folate are associated with reduced risk for cervical cancer.<sup>18</sup> Education regarding risk factors for cervical cancer may lead to behavioral modification resulting in diminished exposure.

## Screening and Evidence of Benefit

Early detection, using cervical cytology, is currently the only practical means of detecting cervical cancer in localized or premalignant stages.<sup>19</sup> The widespread use of the Pap test in the U.S. makes the possibility of testing the efficacy of cervical cytology by randomized trials remote. There is, nevertheless, substantial evidence from observational studies that screening can reduce mortality from cervical cancer. Cervical cancer mortality rates have decreased in several large populations following the introduction of well-run screening programs. Data from several large Scandinavian studies show sharp reductions in incidence and mortality following the initiation of organized screening programs. Iceland reduced mortality rates by 80% over 20 years, and Finland and Sweden reduced their mortality by 50% and 34%, respectively. Similar reductions have been found in large populations in the United States and Canada.<sup>20</sup>

Reductions in incidence and mortality seem to be proportional to the intensity of screening efforts as evi-

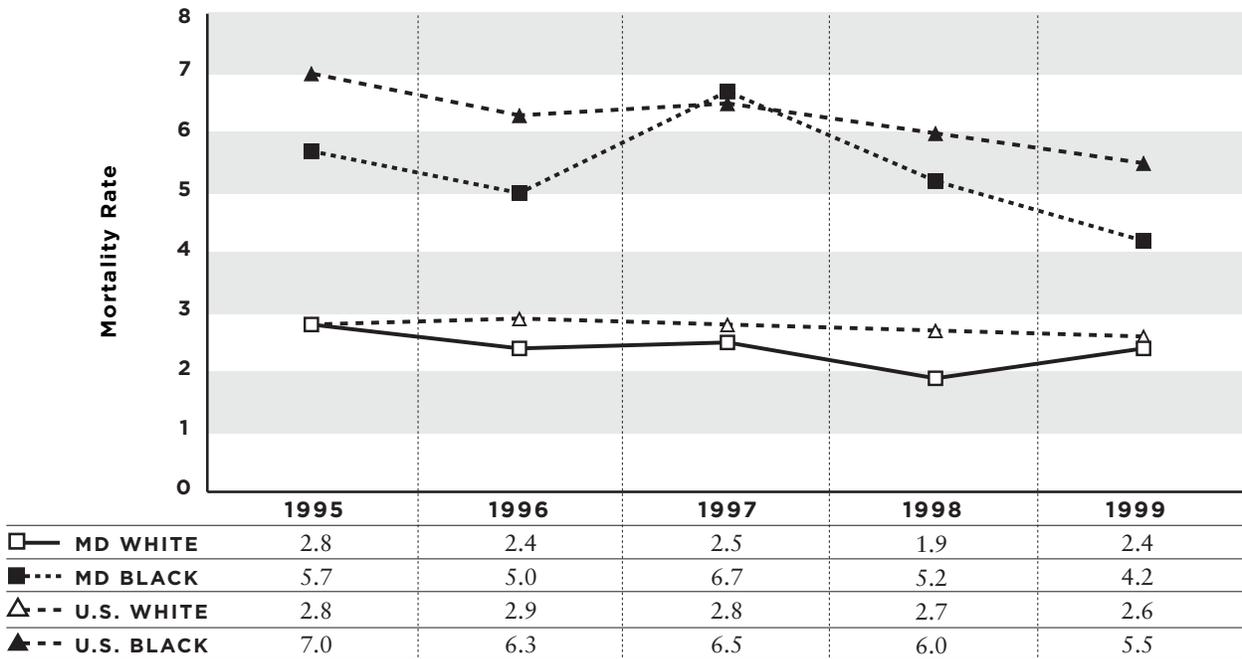
denced by the Scandinavian countries with the highest rates of screening activity reporting greater reductions in mortality than those countries with lower rates of screening. Mortality in Canada was reduced most remarkably in British Columbia, which had screening rates of 2 to 5 times those of the other provinces. Case-control studies have found that the risk of developing invasive cervical cancer is 3 to 10 times greater in women who have not been screened. Risk also increases with longer duration following the last normal Pap test, or similarly, with decreasing frequency of screening. Screening every two to three years, however, has not been found to increase significantly the risk of finding invasive cervical cancer above the risk expected with annual screening.<sup>21</sup>

Although vaginal smears are often done for follow-up of women who have had a hysterectomy for malignancy, a retrospective study suggests little or no benefit of routine vaginal screening for women who have had a hysterectomy for benign conditions. Investigators found a low prevalence of vaginal dysplasia (0.1%) and a high false-positive rate for vaginal smears from women who have had a hysterectomy for benign disease.<sup>22</sup>

## Targeting High-Risk Patients

In order to reduce cervical cancer mortality, the percentage of cervical neoplasms discovered in the precancerous or localized stages must increase. This can be accomplished most effectively by screening women at greatest risk for developing cervical cancer (i.e. those who have not had a Pap test or those who have not had one for several years). Often, these women are older, of lower socioeconomic status, may be members of minority groups, and are often seen by physicians for a variety of acute and chronic conditions unrelated to preventive medical care. Women infected with the human immunodeficiency virus (HIV) represent another important

**Figure 13.5**  
**Invasive Cervical Cancer Mortality Rates by Race**  
**in Maryland and the United States, 1995-1999**



Rates are per 100,000 and age-adjusted to the 2000 U.S. standard population.  
 Source: Maryland Division of Health Statistics, 1995-1999; SEER, National Cancer Institute, 1995-1999.

group at increased risk for development of cervical cancer. They have been shown to have a 2.28-fold increased risk of invasive cervical cancer compared to women without HIV. HIV-seropositive women also show an increased frequency of abnormal Pap test results (12.5 times higher than seronegative women) and a concomitant increase in cervical and anal human papillomavirus.<sup>23</sup>

After the age of 25, the incidence of invasive cancer in black women increases rapidly with age, while in white women the incidence rises more slowly. Mortality also increases with advancing age, with dramatic differences between black and white women. Thus, extra effort is warranted to reach older women who have not been screened or who are not screened on a regular basis. Over 25% of the total number of invasive cervical cancers occur in women older than 65, and 40% to 50% of all women who die from cervical cancer are over 65 years of age. A large proportion of women, particularly elderly black women and middle-aged poor women, have not had regular Pap tests in their lifetimes. These patterns underscore the importance of special screening efforts targeted to reach women who do not receive regular screening.<sup>24</sup>

## Screening Guidelines

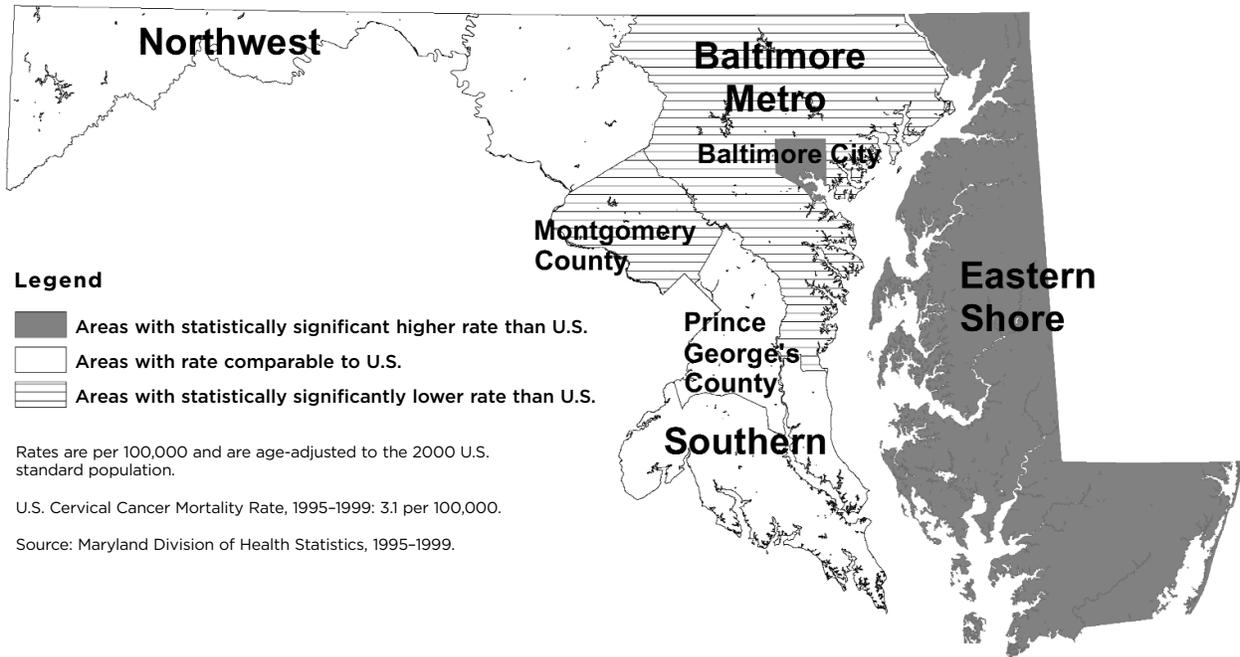
The recommendations for the initiation of cervical cancer screenings and the interval between cervical cancer screenings have changed recently. Guidelines from the American Cancer Society, the U.S. Preventive Services Task Force, and the National Cancer Institute are very similar.

The American Cancer Society recommends beginning cervical cancer screening three years after first vaginal intercourse and no later than age 21. The ACS also recommends that women age 30 and older who have had three consecutive negative Pap tests can be screened every two to three years.<sup>25</sup>

The National Cancer Institute's summary points for cervical cancer screening are:<sup>26</sup>

- Cervical cancer screening should begin approximately three years after a women begins having sexual intercourse, but no later than 21 years old.
- Experts recommend waiting approximately three years following the initiation of sexual activity because transient HPV infections and cervical cell changes that are not significant are common

**Figure 13.6**  
**Maryland Cervical Cancer Mortality Rates by Geographical Area:**  
**A Comparison to Rates in the United States, 1995-1999**



and it takes years for a significant abnormality or cancer to develop. Cervical cancer is extremely rare in women under the age of 25.

- Women should have a Pap test at least once every three years.
- Women 65 to 70 years of age who have had at least three normal Pap tests and no abnormal Pap tests in the last 10 years may decide, upon consultation with their health care provider, to stop cervical cancer screening.
- Women who have had a total hysterectomy (removal of the uterus and the cervix) do not need to undergo cervical cancer screening unless the surgery was done as a treatment for pre-cancerous cervical lesions or cervical cancer.
- Women should seek medical advice about when they should begin screening, how often they should be screened, and when they can discontinue cervical screenings, especially if they are at higher than average risk of cervical cancer due to factors such as HIV infection.

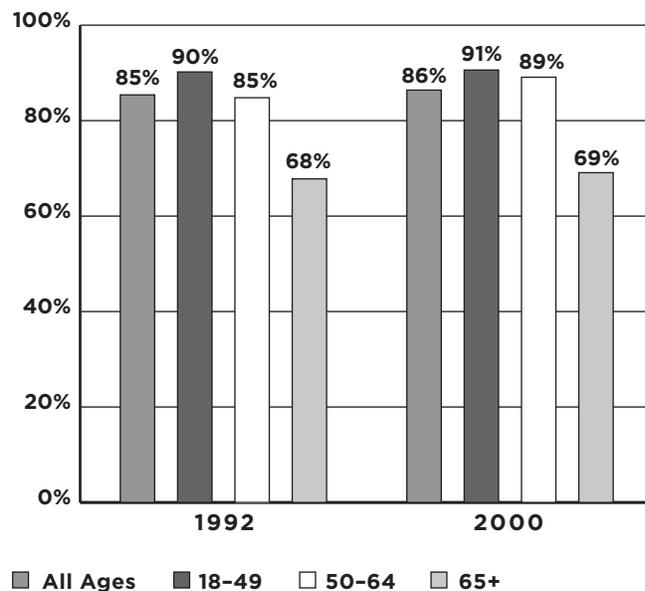
The U.S. Preventive Services Task Force (USPSTF)

strongly recommends screening for cervical cancer in women who have been sexually active and still have a cervix. Indirect evidence suggests most of the benefit can be obtained by beginning screening within three years of onset of sexual activity or age 21 (whichever comes first) and screening at least every three years. The USPSTF recommends against routinely screening women older than age 65 for cervical cancer if they have had adequate recent screening with normal Pap tests and are not otherwise at high risk for cervical cancer. The USPSTF recommends against routine Pap test screening in women who have had a total hysterectomy for benign disease.<sup>27</sup>

## Use of New Cervical Cancer Screening Technologies

The USPSTF concludes that the evidence is insufficient to recommend for or against the routine use of new technologies such as liquid-based cytology, computerized rescreening, and algorithm-based screening to screen for cervical cancer. The USPSTF found poor evidence to determine whether these new technologies are more effective than conventional Pap test screening in reducing the incidence of, or mortality from, invasive cervical

**Figure 13.7**  
**Percent of Women Reporting a Pap Test in the**  
**Past Three Years by Age in Maryland, 1992 and 2000**



Source: BRFSS, 1992 and 2000.

cancer. Evidence to determine both sensitivity and specificity of new screening technologies is limited. As a result, the USPSTF concluded that it cannot determine whether the potential benefits of new screening devices relative to conventional Pap tests are sufficient to justify a possible increase in potential harms or costs.<sup>28</sup>

The USPSTF concludes that the evidence is insufficient to recommend for or against the routine use of human papillomavirus (HPV) testing as a primary screening test for cervical cancer. The USPSTF found poor evidence to determine the benefits and potential harms of HPV screening as an adjunct or alternative to regular Pap test screening. The use of HPV testing for primary population-based screening is not recommended due to low specificity, particularly among young sexually active women.<sup>29</sup> Trials are underway that should soon clarify the role of HPV testing in cervical cancer screening.<sup>30</sup>

The best use of HPV testing may be as a secondary test following an abnormal Pap test result (ASC-US), allowing the focus of work-up and treatment of those women who are most likely to progress to advanced disease. The American Society for Colposcopy and Cervical Pathology recommends that an HPV high-risk panel test be performed after a Pap test with the result of ASCUS. HPV testing could also be used post-treatment where a positive test may indicate residual disease.<sup>31,32,33,34,35</sup>

HPV infection is well established as a necessary but not a sufficient condition for development of cervical cancer.<sup>36,37,38</sup> Only a few types of HPV are associated with the majority of cervical cancer.<sup>39</sup> Eventually it may be possible to vaccinate against HPV infection.<sup>40</sup>

## Screening Rates

Data from the Behavioral Risk Factor Surveillance System (BRFSS) show that the proportion of Maryland women 18 years and older who report having a Pap test in the past three years has increased slightly from 84% in 1992 to 87% in 2000.<sup>41</sup> Maryland's Pap test screening rates are slightly higher than those for the United States. Pap test screening rates for white and black women are similar but screening rates for women 65 years of age and older are much lower than those for younger women (Figure 13.7).<sup>42</sup> The lower screening rates among older women are of concern given that the incidence of cervical cancer is higher in these women.

## Screening Behavior, Beliefs, and Barriers

In 1997 and 1998, six focus groups were conducted of Maryland women, ages 50 to 75, who had not had a

regular Pap test in the past year and had not had more than two Pap tests in the past five years. The following were key findings:<sup>43</sup>

- Most women only go to the doctor when something is wrong and do not go on a regular basis.
- Participants were concerned with many health problems but none mentioned cervical cancer among their top health concerns.
- Few women knew why they should have a Pap test or anything about cervical cancer.
- Barriers to getting Pap tests included: embarrassment, discomfort, fear, test inaccuracy, cost, lack of perceived need, inconvenience, motivation, insurance issues, absence of a doctor's recommendation, and general negative feelings about doctors.
- Participants said they would be motivated by the following to get regular Pap tests: being reminded to do so, convenience, low cost, less embarrassment, knowing someone who had cancer, and increased public awareness.
- Participants suggested the following to make women more aware of the importance of getting regular Pap tests: television, newspapers, magazines, radio, posters, health fairs, billboards, videos, and materials from their insurer.

## Screening in the Hospital Setting

In 1977, the Maryland legislature passed Senate Bill 59, which requires hospitals to offer a Pap test to all female inpatients. The law does not provide any funds for implementation and enforcement. A survey by Johns Hopkins University in 1986 indicated that 25% of women who had been hospitalized there reported never having a Pap test.<sup>44</sup> Another survey by Johns Hopkins University in 1995 indicated that hospitals do not object to offering Pap tests to patients and suggested that an education component and linkages to referrals should be provided to patients. In the past, some hospitals employed nurses whose job was to visit female inpatients and offer them Pap tests. This seems to have been successful.<sup>45</sup>

## Physician Practices and Barriers

Physicians play an important role in recommending and providing cancer screening. A study in North

Carolina showed that obstetrician/gynecologists recommend annual Pap test screening more frequently than physicians in other specialties.<sup>46</sup>

Compliance with screening recommendations was greater among those women who received a reminder letter for a Pap test and mammogram.<sup>47</sup> A physician reminder letter combined with telephone counseling from a health educator significantly increased women's use of both mammograms and Pap tests in a low-income population in a managed care setting.<sup>48</sup> However it is worth noting that implementation of an office chart reminder system and use of patient health maintenance cards to improve cancer screening was feasible for the Pap test and clinical breast exam, but not for mammography.<sup>49</sup>

In addition, male physicians reported that patients requested a referral to a female physician to perform Pap tests and CBE more often than any other tests. Male physicians perceived patients' embarrassment as a stronger barrier to performing Pap tests and CBE than female physicians.<sup>50</sup>

## Ideal Model for Cervical Cancer Control

There are five steps in the ideal cervical cancer control process, depicted in Figure 13.8. The process begins with a woman who is aware of the recommended screening guidelines, has access and availability to screening, diagnosis and treatment, and, if she is a survivor, has discussed survivorship issues (e.g., childbearing, fertility). Every woman should have a primary care provider who either performs an adequate Pap test or refers her to another provider to perform the Pap test. Next, the provider, who has kept abreast of current clinical guidelines, follows up with the woman regarding her test results. Then, the Pap test is sent to a lab in compliance with the Clinical Laboratory Improvement Act (CLIA) and is read by a cytotechnologist or cytopathologist who reports the results using the Bethesda System. If a diagnosis is required, various diagnostic procedures are carried out by a trained colposcopist, and treatment is performed by a gynecologist or other trained specialist to remove precancerous or cancerous lesions of the cervix.

The following barriers to the ideal cervical cancer control process were identified by the Cervical Cancer Committee:

- The Maryland Breast and Cervical Cancer

**Figure 13.8**  
**Ideal Model for Cervical Cancer Control**

<b>Women in Need</b>	<b>Long-Term Preventive Care by Primary Care Provider</b>	
Are aware of recommended screening guidelines for age, risk factors, sexual activity, and previous Pap test results.	Takes adequate history and performs adequate Pap test or refers to a provider who takes a history and performs a Pap test.	Repeats Pap test if “unsatisfactory.”
Have access and availability to screening, diagnosis, and treatment.	Prepares adequate Pap test.	Recommends repeat Pap at a specified interval.
Have survivorship issues addressed for survivors (e.g., childbearing, fertility, and psychosocial issues).	Collects sample for HPV test (when appropriate).	Keeps abreast of clinical guidelines related to cervical cancer.
	Receives cytology report and communicates with lab.	Makes appointment for subsequent Pap tests and other follow-up.
	Understands cytologist’s report.	Is aware of low-cost or free programs for screening, diagnosis, or treatment and makes referrals to programs for the financially needy.
	Notifies woman of Pap result regardless of outcome.	

Program has enough funds to screen 10%–15% of uninsured women aged 40–64 in the state for cervical cancer. This leaves significant numbers of women who are uninsured or underinsured who cannot afford cervical cancer screening.

- Accessibility to screening services may be limited because of hours of operation, availability of public transportation, or lack of knowledge among patients and providers about the availability of existing services, especially for the socioeconomically disadvantaged.
- Cultural and language barriers prevent women from seeking screening and treatment. Few hospitals and even fewer physicians have staff who are able to speak to patients in their native languages and must resort to using family members or friends of the patient as translators.
- Written information available to patients is often only provided in English and Spanish and is rarely

written at a reading level that is easy for all patients to understand.

- An increasing number of providers refuse Medicare or Medicaid patients because of limited reimbursements.
- Funds available in the Breast and Cervical Cancer Diagnosis and Treatment Program are insufficient to serve all uninsured or underinsured women diagnosed with cervical cancer in Maryland.
- There is a need to educate physicians (particularly primary care providers) regarding screening and follow-up guidelines and new technologies for performing Pap tests.
- Studies have shown that many older women do not go for cervical cancer screenings because their physicians fail to recommend that they go and the women underestimate their risk of getting cervical cancer. Many older women never see a gynecolo-

**Cytology Interpretation by Laboratory**

Has passed Maryland Cytology Proficiency Testing and is in compliance with CLIA.

Reads Pap test with high degree of sensitivity and specificity.

Reports results to the provider using the current Bethesda System.

Performs HPV test on all ASC-US Pap tests.

Educates provider on Bethesda System and management of abnormalities, documents communication with primary care provider.

Keeps abreast of clinical guidelines related to cervical cancer.

**Diagnosis by Trained Colposcopist**

Carries out diagnostic procedures, which might include repeat Pap tests, colposcopy, and biopsy.

Sends biopsy specimen to pathologist.

Receives pathologist’s report.

Keeps abreast of clinical guidelines related to cervical cancer.

**Treatment by Gynecologist and/or Other Specialist**

Removes pre-cancerous lesion with most appropriate state-of-the-art treatment.

Provides follow-up care as needed.

Keeps abreast of clinical guidelines related to cervical cancer.

Source: Developed by the Cervical Cancer Committee of the Maryland Comprehensive Cancer Control Plan.

gist and their primary care provider may not perform a Pap test.<sup>51,52</sup>

- There are some counties in Maryland where residents must wait four months to have a colposcopy because there are a limited number of providers in Maryland who are trained as colposcopists.
- Many women who lack insurance and the financial means to pay for their care may go without diagnostic tests and treatment.

**Current Efforts in Maryland**

The Maryland Department of Health and Mental Hygiene (DHMH) Breast and Cervical Cancer Program (BCCP) is a statewide program that provides breast and cervical cancer screening services to uninsured or underinsured low income (less than 250% of the federal poverty level) women 40–64 years of age. Across the state, the DHMH awards funds to each jurisdiction to coordinate

the provision of breast and cervical cancer outreach, patient and public education, screening, referral, follow-up, and case management services for its residents. The DHMH formed a Cervical Cancer Medical Advisory Committee, which developed guidelines, “Minimal Clinical Elements for Cervical Cancer Screening.” This document provides guidance for public health programs that screen for cervical cancer.

Since 1992, the BCCP has provided 29,244 initial Pap tests and 32,164 subsequent Pap tests. Thirty percent of the women screened in the BCCP indicated that they were never or rarely screened (not in the past five years) for cervical cancer. In 2001, BCCP provided services for approximately 10% of eligible women in the state.

In addition to the BCCP, funding from the Cigarette Restitution Fund has been awarded to the University of Maryland Medical System/University Care to provide breast and cervical cancer screening for low income

uninsured or underinsured women who live in Baltimore City. Several other Maryland jurisdictions also offer cervical cancer education and screening services under this program. As of January 2004, 1212 women had been screened for cervical cancer through these local programs and over 8,608 had received breast and cervical cancer educational services.

There are several other programs in Maryland that provide testing, diagnostic, treatment, and support services for women. The Maryland Family Planning Program is funded by federal Title X Family Planning funds and state funds. With over 90 family planning sites in Maryland, the mission of this program is to decrease the incidence of unintended pregnancies and improve pregnancy outcomes. Grants are given to all local health departments and two Planned Parenthood affiliates. The program offers all forms of birth control, treatment for minor gynecological problems, sexually transmitted infection screening, annual Pap tests and colposcopy services. The program serves approximately 70,000 patients each year, including 2,000–3,000 men. It is open to women of reproductive age and will accept undocumented aliens and teenagers as patients. Services are provided under a sliding fee scale and there is no charge for teenagers or other individuals whose income levels are below designated points on the sliding fee scale. The program also accepts women with Medical Assistance and insurance. However, the target population is teens and uninsured/underinsured low-income women.

The Maryland Breast and Cervical Cancer Diagnosis and Treatment Program is state-funded and reimburses participating medical providers for breast and cervical cancer diagnostic and treatment services for Maryland residents who are diagnosed with either breast or cervical cancer, meet income guidelines (250% of the poverty level), and are either uninsured or underinsured for these services. This program is not restricted by age.

The Women's Breast and Cervical Cancer Health Program provides Medicaid coverage to women screened under the BCCP who have been diagnosed with either breast or cervical cancer. Women in this program are eligible for full Medical Assistance while they are undergoing treatment for breast or cervical cancer.

The American Cancer Society (ACS) provides educational and support services for cervical cancer patients, including several support groups. Assistance with transportation for cancer treatments can be obtained in some

areas of the state through the Road to Recovery program. The ACS publishes numerous educational brochures, and can send speakers to community meetings.

## Healthy People 2010 Objectives

The following are the Healthy People 2010 objectives<sup>53</sup> related to cervical cancer:

**Objective:**

Reduce the invasive cervical cancer death rate to 2.0 per 100,000.

The U.S. baseline was 3.0 per 100,000 in 1998 (age-adjusted to the 2000 standard US population).

**Objective:**

Increase the proportion of women aged 18 and older who have ever received a Pap test to 97%.

The U.S. baseline was 92% in 1998 (age-adjusted to the year 2000 standard population; includes women without a uterine cervix).

**Objective:**

Increase the proportion of women aged 18 and older who have received a Pap test within the previous three years to 92%.

The U.S. baseline was 79% in 1998 (age-adjusted to the year 2000 standard population; includes women without a uterine cervix).



## Cervical Cancer Goals, Objectives, and Strategies

### Goal:

Reduce cervical cancer mortality in Maryland.

### Targets for Change

By 2008, reduce cervical cancer mortality to a rate of no more than 1.9 per 100,000 persons in Maryland.

The MD baseline was 2.3 per 100,000 in 2000 (age-adjusted to the 2000 U.S standard population).

Source: Maryland Division of Health Statistics.

By 2008, increase the number of women aged 18 and older who have had a Pap test in the past three years to 94%.

The MD baseline was 90% in 2000.

Source: BRFSS.

### Objective 1:

Increase awareness in the general public of cervical cancer screening recommendations and availability of programs.

#### Strategies:

1. Increase educational activities among all population groups as to the importance of regular screening.
2. Increase awareness of the availability of screening programs to the general public.
3. Develop culturally sensitive educational messages.
4. Partner with smoking cessation programs.
5. Focus educational and outreach programs on high-risk populations (e.g., recent immigrants, African-American women, HIV-positive women).

### Objective 2:

Increase cervical cancer screening in women who have not been screened in the last five years, especially older women, and increase compliance with recommended follow-up.

#### Strategies:

1. Identify characteristics of women who may not have been screened in the past five years (e.g., examine changing demographics of the state population).
2. Increase outreach efforts to reach the underserved.
3. Provide low cost/easily accessible mechanisms for the screening of low-income individuals.
4. Encourage providers to have an organized mechanism to track patients, particularly those with high-grade lesions that fail to follow-up.
5. Focus screening and follow-up programs on high-risk populations (e.g., recent immigrants, HIV-positive women).



6. Encourage primary care providers to offer Pap tests or refer patients to providers who offer Pap tests, and then systematically track compliance to assure that their patients receive a Pap test.
7. Continue federal and state funding for the breast and cervical cancer early detection and treatment program.
8. Increase awareness of the availability of screening programs to providers.
9. Provide Pap tests to women seen in hospital inpatient or outpatient settings, including emergency rooms, and assure that a mechanism for follow-up is available.
10. Amend SB 59, Section 19–348 to “provide” Pap tests to all inpatients. Examine hospitals that succeed at providing Pap tests to inpatients. Share lessons learned at these locations with other hospitals.
11. Link Pap test performance or referral to physician re-certification from the Board of Physician Quality Assurance. Monitor providers by adding Pap testing as a HEDIS measure (Health Insurance Employee Data and Information Set).
12. Explore the feasibility of using a colposcopy van to provide colposcopy services to rural and underserved areas of the state.

**Objective 3:**

Ensure that all providers have access to state-of-the-art guidelines for the management of cervical abnormalities.

**Strategies:**

1. Disseminate management guidelines (ASCCP) to practitioners who care for women with cervical abnormalities.

**Objective 4:**

Ensure access to medical care for all.

**Strategies:**

1. Increase funding for health care centers that serve indigent women and include funding for staff to provide follow-up services.
2. Provide funding so that all women can obtain a Pap test and follow-up procedures regardless of insurance status.
3. Ensure access to prevention, screening, treatment, and follow-up care for all Maryland residents.

**Objective 5:**

Conduct Maryland-specific surveillance research on barriers to cervical cancer detection and treatment by establishing a statewide follow-back study mechanism to allow for monitoring of failures through follow-back and to evaluate and modify intervention strategies.

**Objective 6:**

Determine why there are discrepancies in survival among different segments of the state population, taking into account multiple factors including race and age.

**Strategies:**

1. Conduct a follow-back study to determine the factors that contribute to women developing and/or dying from invasive cervical cancer. Identify factors that influence or hinder health-seeking behaviors (e.g., screening, diagnosis, treatment) for the patient. Also identify factors within the health care system that influence screening, diagnosis, and treatment.
2. Establish and maintain mechanisms to monitor the proportion of cervical cancer cases and deaths attributable to failures of detection, and the proportion attributable to failures of treatment. Identify strategies and implement activities to minimize failures of detection and failures of treatment.
3. Explore whether alternative screening techniques should be used for special populations.
4. Encourage research to determine why discrepancies in survival exist and what factors can be changed to erase such discrepancies.

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