



By Wilson Footer, MD

Commentary by Steven A. Vasilev, MD, MBA

Kaiser Permanente Medicine 50 Years Ago: The Gynecological Cancer Detection Clinic

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The greatest problem with which we are confronted in the practice of gynecology is startlingly evident from the fact that "among white women cancer is the leading cause of death by a considerable margin for the 20-year period from 35-54 years of age. A study of the current statistics indicates that, if present conditions of mortality remain unchanged, cancer will take as its toll by death 14 out of every 100 women."¹ If we had no means of attacking this scourge, it would be discouraging enough to know as a certainty that 14 percent, or one in every seven, of the women in the prime of life are going to die from this disease. The fact that this situation persists (in spite of knowledge that we can cure 96% of certain very malignant tumors, specifically those of the cervix) is the greatest condemnation of the present lay and professional handling of cancer.

Bowen² reported two cases of "precancerous dermatoses" that had been present 19 and four years without becoming invasive but which showed the cytological changes found in undoubted cancers. Although the illustrations of his second case have been used to demonstrate what is now called Bowen's disease, the lesion had not become invasive. In fact Bowen credited Wende³ with demonstrating what had been suspected by others, namely, that these intraepithelial changes could progress to true malignancy. Schottlander and Kermauner⁴ have been credited with observing the

presence of carcinoma confined to the squamous epithelium at the periphery of invasive carcinoma of the cervix. Since then Schiller^{5,6,7,8} has repeatedly emphasized that carcinoma of the cervix can be diagnosed before invasion occurs and has introduced the procedure of staining the cervix with an aqueous solution of iodine to reveal suspicious areas requiring biopsy. He has also shown that cases adequately treated in the preinvasive stage are 96% curable.⁷

Graves⁹, during nine months experience with the Schiller test, discovered three early cases of cancer of the cervix, all of which, however, had had contact bleeding. He believed that cancer of the cervix passes through a period in its life history during which it is theoretically 100% curable and concluded that "patients must repeatedly be on our examining tables who without impairment of health, and often without symptoms, harbor a disease which at the same time is invisible to the keenest eye and intangible to the most sensitive touch." Of the 18 cases reported by Stevenson and Scipiades¹⁰ two are known to have developed invasive carcinoma after three and eight years. Wollmer¹¹ stated that "It becomes evident that there are neither symptoms nor clinical findings on which to base the diagnosis of cervical carcinoma in the early stage." In one group of 35 normally menstruating women in whom he removed the entire cervical mucosa he found one unsuspected epidermoid carcinoma. In another group of 24 patients with cervicitis and erosion he found one more unsuspected carcinoma.

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The Gynecologic Cancer Detection Clinic, one of a very few in that era, was established in the face of no efficacious screening modalities for cervical cancer, a potentially lethal disease that was rampant at the time. Since then, screening for cervical cancer—and more important, screening for the precursors of cervical cancer—has undergone a dramatic evolution and is the focus of this commentary. Although screening programs for ovarian and endometrial cancers also have been proposed, a litany of limitations has prevented adoption of these proposals, and no screening standards have yet been established.

Early History and Development of Cervical Cancer Screening

In the early 1940s, Dr George Papanicolaou proposed cytologic evaluation of cervical cells exfoliated into the vaginal pool. This method of screening for cervical cancer was further refined by Ayre in 1947 with the introduction of a wooden spatula to physically scrape cells directly from the cervical surface. Subsequently, routine practice came to include sampling of the endocervical canal by using a cotton-tipped applicator, an implement now largely replaced by a cytobrush, whose greater abrasiveness produces a tenfold greater yield of endocervical cells. These low-cost technical improvements occurred after Dr Footer's experience was published in a 1944 issue of the *Permanente Foundation Medical Bulletin*. Without these improvements, Footer could not help but conclude that negative results of vaginal smear were not reliable. The relatively low yield of cervical cells from the

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Meyer¹² maintained that cancer of the cervix can be recognized from fragments of superficial epithelium without observing its relation to the underlying connective tissue. This authoritative opinion substantiates the value of cervical scrapings, the removal with a curet or similar instrument of the epithelium down to the connective tissue, in the routine study of the cervix to detect occult carcinomatous changes. He believed that these intraepithelial changes will go on to fatal invasive carcinoma in the absence of treatment.

Knight¹³ reported 17 cases of noninvasive intraepithelial tumors of the cervix with an average age incidence of 44.1 years among 406 primary squamous cell epitheliomata of the cervix during a 16-year period at the Sloane Hospital for Women. He concluded that treatment should be just as thorough as when an invasive tumor is being treated. The presence of carcinoma was completely unsuspected in 11 of his patients.

Both of the methods commonly used to diagnose carcinoma of the cervix, namely, biopsy of the full thickness of the cervix, or curettage of the cervical canal and of the surface of the external cervix, have been shown to provide adequate material for diagnosis. However, the hindrance to their general application to the entire population is obvious from a consideration of the skill, time and expense involved. Their use and usefulness are dependent both upon the patient going to a physician and upon the physician to whom she goes. The next step, that of diagnosing the presence of cancer from individual cells and groups

of cells shed into the vaginal secretions, has been accomplished by Papanicolaou and Traut¹⁴ and verified by Meigs, et al.¹⁵ Theoretically this would permit application to the general population without examination, that is a mass survey of the entire female population for the presence of genital cancer could be conducted by having the women send a small amount of the vaginal secretion to a central laboratory. However, the pitfalls are many and the practicability of such a detection program is doubtful.

There is now no question that advanced cancer can be diagnosed from individual cells cast off from the growth and that this method is useful when the symptoms cannot be explained by the clinical findings. A cancer of the cervical canal or in an inaccessible recess of an irregular uterine cavity might escape discovery by curettage, whereas it could be diagnosed from cancer cells found in the smear taken from the upper vagina, cervical canal or endometrial cavity. The danger of relying upon the vaginal smear lies in failure to realize its limitations; all slides made from positive cases do not contain the cancer cells, therefore a negative test is not conclusive. Furthermore, cancers such as the adenoma malignum of the fundus and cervix do not shed cells from which the diagnosis can be made.

Finally, the truly early preinvasive carcinomas of the cervix theoretically and practically cannot be diagnosed by this method. This is obvious from a consideration of the method of growth and exten-

vaginal pool made it difficult to find “truly early preinvasive carcinomas,” because early dysplastic cells below the surface epithelium are not readily sloughed spontaneously. Thus, despite its labor-intensive nature and higher morbidity, the greater emphasis at the time on visual aids and directed biopsy was understandable and predominately targeted carcinoma in situ and invasive lesions. Today, direct scraping of the cervix enables cytologic screening for the “truly early preinvasive” lesions or cervical intraepithelial neoplasia (CIN) I-III. Because progression from CIN to invasion usually takes many years, this progression is precisely where early detection and prevention of invasive cancer can make the greatest impact.

Success of Modern Screening Tests for Cervical Cancer

Notwithstanding Dr Footer's positive experience with screening by visually directed biopsy, screening by exfoliative cytology (ie, Pap smear) has since been credited with having the greatest impact on reducing both the incidence of cervical cancer and the death rate therefrom. Although never the subject of prospective, randomized studies, large-scale mass screening programs consisting of yearly Pap smears were first instituted during the 1950s in British Columbia. By 1984, the result was a threefold reduction in cervical cancer incidence and fourfold fewer deaths from this disease. The Pap test was quick, simple, associated with low morbidity, and low-cost. Therefore, because of its improved sensitivity compared with the other tests of vaginal cytology, the Pap test evolved as a tool substantially more applicable to mass screening than labor- and cost-intensive visual biopsy screening.

Schiller-Lugol staining (recommended by Footer as a screening method) and acetic acid wash—with or without 8-18× magnification via colposcopy—still plays a major role in management of cervical dysplasia. In



sion of these intraepithelial tumors. The first carcinomatous changes take place in the basal cells, those just above the basement membrane, and extend laterally and gradually upward toward the surface. When the surface cells are involved in the typical changes, the presence of the cancer could theoretically be diagnosed by the vaginal smear method. But even here it must be remembered that the examination by biopsy of all non-staining areas of the cervix is a more direct and conclusive approach to the problem as it involves the visible portion of the cervix. Differential suction curettage of the cervical canal and endometrial cavity are comparable procedures applicable to these hidden areas. In summary it can be said that none of these procedures is universally applicable but that taken together they provide all of the tools required by the thorough and inquisitive physician to establish the presence or absence of cancer of the cervix and fundus of the uterus.

With the aid of the American Society for the Control of Cancer, the National Cancer Institute (US Public Health Service), and private physicians, I have been able to locate only two clinics devoted to the early discovery of genital cancer.

At the Cancer Prevention Clinic at Memorial Hospital¹⁶ in New York during the 25 months from November 1, 1940 to January 1, 1943 among 49 malignant tumors found, four were of the fundus uteri, six of the cervix uteri, one of the vulva and two of the ovary. Both the clinic at Memorial Hospital, and the one in Philadel-

phia,¹⁷ (where one fundal and three cervical cancers were discovered among 976 women) are purely diagnostic. The patients are referred elsewhere for treatment. This is entirely inadequate because the significance of very early lesions that are neither palpable nor visible is not generally appreciated. Another inherent defect lies in the fact that at these clinics only patients wanting to be examined specifically for cancer are seen. As we have shown in our clinic, it is preferable to examine every woman for cancer rather than restricting our special tests to those specifically requesting it. Mortality from cancer can be reduced only on a large scale. This presupposes that the public will be made to realize the importance of periodic examinations and that every one of them will be given a complete examination to detect cancer, regardless of the patient's complaint. The cancer detection clinics should be the center for the dissemination of detailed information to the medical profession so that every doctor will be able to determine which patients require specialized attention.

Organization of the Cancer Detection Clinic

At our Cancer Detection Clinic, which in reality is intimately a part of the general gynecological clinic, these problems have been largely overcome. In the first place literature is distributed to the women stressing the importance of periodic examinations and the fact that early cancer is curable. In regard to this program of lay education it is expected that the old objection will be raised that it fosters cancer phobia.

the modern paradigm, these tools are used after a screening Pap test alerts the clinician to cytologic abnormality. Subsequent visually directed biopsy using these tools is currently the reference standard for diagnosing and characterizing preclinical cervical dysplasia and microinvasive carcinoma.

How has screening affected mortality rates more recently? Unfortunately, despite today's widespread availability of low-morbidity cytologic screening, cervical cancer continues to develop in women. The American Cancer Society estimates a relatively steady pattern of 16,000 new cases and 5,000 deaths yearly. In addition, the reported incidence of 65,000 new carcinoma in situ cases probably represents severe underreporting of this disease.

Limitations of Cytologic Screening Tests for Cervical Cancer

Nearly half the cases of cervical cancer in the United States are diagnosed in women who have never or rarely been screened. Barriers to access to Pap smear testing have been identified and targeted for elimination; however, even when available, Pap tests do not always alter the clinical outcome. For example, in Scotland from 1982 to 1991, 63% of women who died of cervical cancer before age 45 years had received Pap tests. In addition, as many as 20% of women with CIS or invasive cervical cancer had normal Pap test results in the preceding year.¹ Such reports suggest that Pap tests do not have 100% positive or negative predictive value, especially when used as the sole screening method at a single screening visit. For various reasons, sensitivity and specificity of the Pap test have been estimated only incompletely. However, a false-negative rate of 15% to 20% has been shown in many series of rereviewed Pap tests. A recent meta-analysis² suggests that the true sensitivity may be substantially lower. Incompletely determined specificity and false-positive findings are also of concern.

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In regard to this program of lay education it is expected that the old objection will be raised that it fosters cancer phobia. We have not seen any patients with cancer phobia, but many patients have come in to find out if they have cancer or, who in the course of an examination for some other complaint, have expressed the hope that they do not have cancer.

We have not seen any patients with cancer phobia, but many patients have come in to find out if they have cancer or, who in the course of an examination for some other complaint, have expressed the hope that they do not have cancer. If it is this doubt and curiosity that is usually called cancer phobia, we should have more of it. We cannot hope to appear consistent in our beliefs if on the one hand we excuse the present high cancer mortality on the basis that the patients come late for treatment and then on the other hand condemn as neurotics all of those who try to be examined early.

The routine examination includes that of the breasts and pelvic organs. Patients with suspicious lesions of the breasts are referred to the surgical service. In the course of the pelvic examination the cervix is cleansed and inspected closely. Any gross lesions are photographed in color. Then the lower cervical canal is cleansed by rotating a cotton swab gently to determine whether the mucosa bleeds easily. If it does, suction curettage of the cervical canal is performed; if an insignificant amount of tissue is obtained or if stenosis prevents performing this procedure, a smear is made from material aspirated from the cervical canal. Next the Lugol's solution is applied generously with a large well-soaked cotton swab. The excess solution can be immediately removed by a blotting motion with large cotton applicators. It is important not to rub because the upper glycogen-containing layers may be rubbed off, producing non-staining areas simulating those of

occult leucoplakia. The latter appear as pale yellow-white in contrast to the dark mahogany brown of the normal staining squamous epithelium. The junction between the two is abrupt. All of the true non-staining areas are biopsied. In a series of 100 consecutive cervixes examined the Schiller test was positive, non-staining, in 28 (28%). This is of importance because among true non-staining areas we have found 12% to be carcinomas. These figures roughly correspond to Schiller's⁷ findings that 25% of the cervixes showed occult leucoplakias and that among these there were 4 to 12 percent carcinomas. From Schiller's findings, which have been verified in this clinic, it is evident that from one percent to three percent of women in the age group seen in a gynecological clinic have definite carcinoma of the cervix at the time they are examined.

It is our opinion that cancer of the cervix in its early stage can be treated best when the same person performs the diagnostic procedures, studies the pathological material grossly and microscopically and carries out the treatment, whether it be by radium or surgery. This is especially true in the very early cases where the lesion is a small non-staining area. Such a lesion might not be included in the biopsy or in the slide. If this slide is examined by anyone else the pathological report will deny the presence of malignancy. However, the person who took the material should promptly realize that the section does not reveal changes compatible with one of the many associated with non-staining areas and consequently that the slide does not contain the

One reason for "failure" of cytologic screening in individual cases (ie, false-negative or positive results) is that dysplastic lesions can spontaneously regress and recur over time. The Pap test can usually show presence or absence of abnormal cells but cannot distinguish between patients with dysplasia who will have spontaneous regression and patients in whom cancer will ultimately develop if treatment is not begun. In addition, a dysplastic lesion might not shed an adequate number of abnormal cells to provide the pathology slide with a sufficient cellular sample. For these reasons, repetitive screening at regular intervals is necessary for optimal clinical effectiveness. A single, isolated, apparently normal Pap test result has less meaning than multiple normal test results, which are associated with a much lower incidence of dysplasia or cancer. The necessary testing interval depends on presence or absence of risk factors, primarily those related to sexual transmission of human papilloma virus (HPV).

Other reasons for false test results relate to technical issues. For a Pap smear to be correctly analyzed, an adequate specimen must be collected, the slide must be closely screened for abnormalities, and the abnormalities must be appropriately interpreted. Deficiencies in any one of these steps may explain a negative test result for a dysplastic lesion or cervical cancer.

Resource Allocation for Maximally Effective Screening of Cervical Cancer

Almost 50 years after the Footer report, we still must recognize screening limitations as we develop and select appropriate adjuvant testing modalities. Proposed strategies to improve screening include advances in specimen collection, automated interpretation methods, and adjuvant physical and molecular tests. Although

**Table 1. Age incidence of patients with gynecological cancer (July 1, 1943 to July 1, 1944)**

Site of cancer	Number of cases	Number of cases detected	Age range	Average age
Cervix uteri				
Preinvasive	7	4	30-55	38
Invasive				
Stage I, early	3	2	31-44	35
Stage I, late	2	0	43-45	44
Stage II	1	0	44	44
Stage IV	1	0	44	44
	7	2	31-45	40
Fundus uteri				
Adenocarcinoma	3	1	53-55	54
Ovary				
Adenocarcinoma	1	0	35	35
Krukenberg	1	0	19	19
Vulva				
Epidermoid carcinoma	1	0	34	34

not part of the medical lexicon in Footer's day, cost-effectiveness must be an inherent part of any new tests that augment the Pap test. Cost-effectiveness analysis considers health outcomes as well as the resource costs of health interventions. Going beyond cost-benefit analysis, analysis of cost-effectiveness considers general benefit as given (eg, Footer's screening methods) and then look for alternatives that are least costly while providing the greatest benefit. Thus, the primary role of cost-effectiveness analysis is to identify the value of alternative interventions for improving health while considering as many costs as possible.

Analysis is complicated by the elusive nature of determining "total" or "full" costs. Nonetheless, today's adjuvant tests must be measured in terms of both the clinical and economic outcomes they produce. For example, we have little use for tests that lead to more diagnoses of true lesions that are nonetheless clinically insignificant. Adjuvant tests used within a specified program should ultimately lead to increased life expectancy by detecting and treating CIN and early-stage cervical cancer. To be useful, adjuvant tests must also enable stratification of risk so that for patients at low risk for cervical cancer, emphasis may be placed on surveillance and follow-up while treatment (often more costly than surveillance) is emphasized for high-risk patients, who can be expected to benefit most from it.

Perhaps the best way to view resource allocation analysis is to compare marginal cost vs marginal benefit, ie, how much additional overall benefit can be derived per additional incremental unit of cost. For the most part, such rigorous analysis of the new Pap-test-enhancing technology is lacking. Ultimately, formal decision

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The fact that this test was directly responsible for the diagnosis in six of the 14 cancers of the cervix is indisputable proof of the value of the Schiller Lugol test.

lesion in question. Further sections have to be made from the block and if these also fail to show the lesion the patient must be reexamined and another biopsy taken. Failure of the first biopsy to contain the lesion can be a very serious matter when the non-staining area was very small because the chances are that the distortion of the cervix as a result of the biopsy and resulting healing processes will make it difficult to determine whether or not the area was actually removed. To forestall such a situation it is preferable to remove an adequate wedge of tissue, including the junction of the normal and questionable area. After the tissue has been removed the application of Lugol's solution again to the excised tissue will stain it as before and it can be definitely ascertained that the lesion has been removed. It is also important to orient the tissue by placing it on a piece of filter paper, before immersing it in the fixing solution, in such a way that the epithelium will be sectioned perpendicular to the surface. When the non-staining area involves a large part of the cervix it may be permissible to remove a small punch biopsy or cervical scraping with the knowledge that if the section should prove unsatisfactory, plenty of the lesion remains for future study.

Review of Cases

Between July 1, 1943 and July 1, 1944, twenty patients with malignancies of the genitalia have been seen in this clinic. These included seven preinvasive carcinomas of the cervix (in addition there are five

cases in which the diagnosis is not yet conclusive), one stage I epidermoid carcinoma in the canal of a cervical stump two years after supravaginal hysterectomy for "tumors," one endophytic epidermoid carcinoma stage I on the anterior lip of a grossly normal cervix, two stage I grossly diagnosable epidermoid carcinomas, one stage I adenocarcinoma of the posterior lip, one stage II epidermoid carcinoma and one stage IV epidermoid carcinoma.

The ages of the seven patients with *preinvasive* carcinomas were 30, 31, 32, 36, 41, 43 and 55, with an average age of 38 years. One of these patients had malignant changes in a cervical polyp which was not suspected before histological study. Another patient had a small grossly visible leucoplakia on the anterior cervical lip. A third patient had a sharply demarcated raised red granular area on the cervix. These cases cannot be considered as having been detected because they all presented lesions which should be submitted for histological examination. The remaining four cases, however, were discovered entirely as the result of the findings with the Schiller test, which indicated areas requiring biopsy.

The ages of the patients with *invasive* carcinoma were 31, 31, 43, 44, 44, 44 and 45, with an average age of 40 years. One patient (plate I, case 3), a negress 31 years of age, had had a supravaginal hysterectomy two years previously for "tumors." For the past six weeks she had had post-coital bleeding. The cervix appeared to have an "erosion"

analysis involving costs as well as defined benefits and utility is likely to help define the best screening program for each patient.

Recent and Proposed Improvements to Cervical Cancer Screening Tests

Meanwhile, multiple technologic innovations have already been incorporated—albeit somewhat haphazardly—into screening programs. Some of these innovations have a more substantial evidence base and hold greater promise than others. A few of these promising innovations are introduced briefly; many others have been proposed.

ThinPrep®

The ThinPrep® method has been introduced to improve the quality of specimen collection. Specimens are placed in a collection fluid that homogenizes and rinses the cells, thus optimizing cell preservation and reducing artifacts that hinder interpretation. Mass screening applications for this method await improvement in handling large quantities of specimens at a reasonable cost.

PAPNET®

Because 50,000 to 300,000 cells are held on each slide, rare abnormal events may be missed by routine cytotechnologist screening. PAPNET® is a neural-network computer processing system that digitally screens conventionally prepared slides. The computer is programmed to recognize patterns and can identify abnormalities based on morphologic characteristics. Areas of concern are reviewed and confirmed by examination



around the external os. An endocervical suction biopsy was taken which showed early invasive epidermoid carcinoma. This was confirmed by biopsies of the anterior and posterior lips including the "erosion." Both of these contained invasive carcinoma. Thus the "erosion" was not the benign lesion it appeared to be. Two of the stage I cases of invasive carcinoma were biopsied solely because of non-staining areas. Thus two of the seven cases of invasive carcinoma of the external cervix would not have been diagnosed had it not been for the routine use of the Schiller test. The fact that this test was directly responsible for the diagnosis in six of the 14 cancers of the cervix is indisputable proof of the value of the Schiller Lugol test.

All of the three *adenocarcinomas* of the fundus uteri were early growths still circumscribed and essentially confined to the endometrium. One case had no symptoms other than those produced by the procidentia. The diagnosis was made during the curettage routinely performed prior to any vaginal plastic operation. Consequently one of the three cases of fundal carcinoma was actually detected prior to the onset of symptoms.

The remaining tumors consisted of one *adenocarcinoma* of the ovary in a patient 35 years old, one Krukenberg tumor in a 19-year-old girl who was four and a half months pregnant, and one epidermoid carcinoma of the vulva. All of these lesions were far advanced when the patients presented themselves for treatment.

Among the many faulty concepts regarding cancer, one of the most pernicious is the "cancer age" myth, the belief that certain types of cancer appear only after the person has attained a certain age. Ordinarily the cancer age, based purely on a statistical analysis of causes of death, is stated to be from 35 to 55 years. Actually the "cancer age" extends from birth to death. In any individual, cancer may be found at any age. In regard to cancer of the cervix, Waters¹⁸ reported a case in a seven-months-old infant and referred to two other cases at seven months and seven years. Hurdon¹⁹ mentions cases at 17 and 19 years of age which were not accurately diagnosed for many months because of failure to examine the patients. Such fatal delays in diagnosis will not be prevented until cancer is suspected and looked for in each and every patient. Although we have confirmed Schiller's findings with the Lugol's test and are firmly convinced of its value in aiding the discovery of an increasing number of early cancers of the cervix, the current literature reflects conflicting opinions regarding its value. Graves⁹ was enthusiastic, and Henriksen²⁰ used the test routinely. On the other hand Hurdon¹⁹, Marziuff²¹ and Novak²² considered it practically useless, and Macfarlane²³ abandoned the Schiller test after two thousand examinations. My own opinion is prejudiced in its favor on the basis of the fact that of the 14 cases of cancer of the cervix mentioned here, six, or 42.8%, would not have been biopsied had the Schiller test been omitted.

of the actual slide. Critics assert that this system produces more ASCUS (atypical cells of uncertain significance) diagnoses than correct assignments into benign or dysplastic categories and that this result may create a larger problem by increasing costs as well as morbidity.

HPV Testing

HPV strain testing has become widely available, both for primary screening and for triaging patients into risk groups. However, in young, sexually active women, HPV infection patterns may change over time, weakening the clinical significance of a single test result. For most patients, information provided by HPV testing usually does not lead to changes in case management. The full utility for HPV testing remains unclear, although the best application of the test might be for triage of ASCUS Pap test results.

Speculoscopy

Proposed visual methods to improve the Pap test include speculoscopy, which uses 4× to 6× magnification of an acetic-acid-stained cervix and a blue light to visualize potentially abnormal areas of the cervix. Study results are interpreted as positive or negative on the basis of presence or absence of white lesions. When used in combination with the Pap test, speculoscopy has been reported to yield a false-negative rate under 3%. Various combinations of speculoscopy screening and Pap testing may be used to identify clinically significant lesions and to triage patients according to whether they need further evaluation, follow-up, or treatment.

Ultimately, formal analysis involving costs as well as defined benefits and utility is likely to help define the best screening program for each patient

Cancer detection should be an integral part of every gynecological examination.

In the series of seven cases of preinvasive carcinoma of the cervix there were two in which color photographs (Plate I, Case 2), taken before and after the application of Lugol's solution, vividly reveal the value of this test in pointing out areas in the relatively normal appearing cervix that require biopsy. Biopsies of the non-staining areas of these two cases showed definite carcinomatous changes without invasion of the stroma. A detailed report of these and additional cases actually detected will be published in the near future.

Conclusions

Carcinoma of the cervix uteri can be diagnosed in the preinvasive stage and in the early invasive stage before the appearance of any symptoms and before the development of ulceration or tumor.

The Schiller (Lugol) test is a definite aid in locating the optimal site for cervical biopsy.

Cancer detection should be an integral part of every gynecological examination. ❖

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Final Comments

Two of the three conclusions noted by Dr Footer regarding screening still ring true. First, preinvasive disease can be diagnosed while it is virtually 100% curable. Second, detection of cancer and its precursors should be part of every gynecological or well-woman examination. In addition, education of patients and

Health Plan members—a strategy emphasized in the Gynecologic Cancer Detection Clinic's operations—remains a cornerstone of prevention. Patients should be advised of the availability and benefits of screening tests and programs as well as their limitations. Future inquiries should focus on combinations of new technology and improved access to basic screening services that offer the best value for our patients and for society. ❖

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Suggested further reading

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