

CERVICAL CANCER SCREENING: ARE THE 1989 RECOMMENDATIONS STILL VALID?

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Abstract • Résumé

Although screening for cervical cancer has been shown to be effective in reducing the morbidity and mortality associated with this disease, and despite many attempts to encourage the development of provincial programs, as of 1995 no province had a comprehensive screening program for cervical cancer. Participants at the Interchange '95 workshop, held in Ottawa in November 1995, reviewed the recommendations of the 1989 National Workshop on Screening for Cancer of the Cervix and identified factors that have impeded their implementation. Participants discussed the need for comprehensive information systems, quality control and strategies to increase recruitment of unscreened and underscreened women. They concluded that the formation of a Cervical Cancer Prevention Network involving key stakeholders will facilitate the development and implementation of provincial programs to ensure optimal screening. They agreed that, in the interim, recommendations for practising physicians should remain as they were following the 1989 workshop.

Même s'il a été démontré que le dépistage du cancer du col aide à réduire la morbidité et la mortalité causées par cette maladie, et en dépit de nombreux efforts afin d'encourager l'élaboration de programmes provinciaux, aucune province n'avait de programme complet de dépistage du cancer du col en 1995. Les participants à l'atelier Interchange '95 qui a eu lieu à Ottawa en novembre 1995 ont passé en revue les recommandations de l'atelier national tenu en 1989 sur le dépistage du cancer du col et défini les facteurs qui ont nui à leur mise en oeuvre. Les participants ont discuté du besoin de systèmes d'information complets, de contrôle de la qualité et de stratégies afin de recruter davantage de femmes non examinées ou examinées insuffisamment. Ils ont conclu que la création d'un réseau de prévention du cancer du col réunissant des intervenants clés facilitera l'élaboration et la mise en oeuvre de programmes provinciaux afin d'assurer un dépistage optimal. Ils ont convenu qu'entre-temps, les recommandations destinées aux médecins actifs devraient demeurer les mêmes qu'à la suite de l'atelier de 1989.

Screening for cervical cancer using the Papanicolaou test is accepted as an effective way of reducing the morbidity and mortality associated with this highly preventable disease; in Canada, screening began in 1949 in British Columbia and was gradually adopted across the country. As a result, there has been an overall reduction in the age-standardized rate of death from invasive cervical cancer (from 7.4 per 100 000 women in 1969 to 2.4 per 100 000 in 1992) and a reduction in incidence rates

(from 21.6 per 100 000 women in 1969 to 10.4 per 100 000 in 1990) (Laboratory Centre for Disease Control, Ottawa: unpublished data). However, since the mid-1970s the rate of decline in incidence rates has decreased, particularly among women under 50, suggesting that the current ad hoc approach to screening has reached the limits of its potential. It is estimated that 1350 new cases and 390 deaths from cervical cancer will occur in 1996.¹ The burden of the disease on women

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All authors were members of the organizing committee for the Interchange '95 workshop, held in Ottawa Feb. 27 to Mar. 1, 1995.

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and the health care system can also be demonstrated by the large number of Papanicolaou smears obtained each year and the rate of follow-up for abnormal results. According to self-reported data from national and provincial surveys, it was estimated that more than 4 million smears are taken every year in Canada, of which approximately 8%, or over 325 000, are abnormal (Vivek Goel: Developing a business case for cervical screening information systems [unpublished report to the Disease Prevention Division, Health Canada], 1995).

In the Health Promotion Survey of 1990 the number of women aged 25 to 44 years who reported that they had never had a Papanicolaou test was double that in the 1985 survey; in the 1990 survey 27% of respondents over 65 years of age reported that they had never been screened.² In a study of invasive cancer of the cervix conducted in British Columbia,³ almost half of newly diagnosed cases fell into the category of "no cytology or cytology longer than 5 years ago." Native women, recent immigrants and women over 60 were disproportionately represented in these statistics, and it was felt by the authors that special efforts were needed to recruit these groups for screening. In a review of the cervical cytology screening history of women in Prince Edward Island diagnosed with squamous cell carcinoma of the cervix, 57% of the study sample had no previous record of screening; 39% of those under 60 years of age and 86% of those over 60 had no record of screening.⁴ An analysis of data from the Ontario Health Survey found that factors associated with low utilization of cervical cancer screening were recent immigration, low level of education and not having English or French as a mother tongue.⁵ These studies suggest that there are still opportunities to reduce the occurrence of invasive cervical cancer in Canada by targeting those groups least likely to present for screening.

HISTORY OF CERVICAL SCREENING IN CANADA

As early as 1973 the Conference of Deputy Ministers of Health was exploring the need for comprehensive screening programs for cervical cancer. The resulting Walton Task Force recommended in its 1976 report that health authorities support the development of cervical cancer screening programs and that all women be encouraged to participate.⁶ Further recommendations pertained to quality control and efficiency in cytology laboratories, frequency of screening, follow-up mechanisms (including provincial registries) and uniformity of terminology.⁶ The primary effect of the report was to stimulate an assessment of current patterns of practice. However, a survey conducted in 1980 to assess the impact of the task force concluded that, by and large, its recom-

mendations were not being implemented at the provincial level.⁷ This finding, together with concerns about the significance of new data, changing sociosexual patterns and wide variation in the implementation of the 1976 recommendations,⁸ prompted the reconvening of the task force in 1980. Subsequent recommendations, made in 1982, dealt with frequency of screening, laboratory quality control and mechanisms for follow-up. Measures to improve the quality and sensitivity of screening programs, to recruit women never screened and to develop government-sponsored registries were seen as essential components of an effective system and as potentially more effective than attempts to increase the frequency of screening.

On Nov. 27 to 29, 1989, a National Workshop on Screening for Cancer of the Cervix was held in Ottawa to review the 1982 recommendations and propose an integrated screening program within Canada's health care system. The workshop participants recognized that programs in Canada were still not fully effective: not all women at risk were being screened; some physicians had not acquired the necessary skill to obtain satisfactory smears; some laboratories were too small to provide adequate experience for staff and adequate quality control; and some women with detected cytologic abnormalities were receiving inadequate follow-up and management.⁹ Conversely, some women were being screened too frequently, resulting in an inappropriate use of resources. Table 1 lists the 27 recommendations made at the workshop; these addressed concerns related to the need for an organized approach, the frequency of screening, the management of abnormalities, information systems, and training and quality-control requirements for laboratories and programs.

The Society of Obstetricians and Gynaecologists of Canada, the Gynaecologic Oncologists of Canada and the Society of Canadian Colposcopists supported the development of formal screening programs and recognized the need for the 1989 recommendations to be considered as a whole and not be implemented in part until such time as comprehensive programs existed in each province. These groups argued that the recommendation that a 3-year screening interval is adequate for women who obtain normal results for two consecutive annual tests was premature in view of the inability of existing systems to ensure that women were recalled at the appropriate time. They also questioned the recommendation that repeat smears be taken without colposcopy for women with low-grade squamous intraepithelial neoplasia, and suggested that, until adequate patient information systems and high-quality laboratory services were in place, annual screening of sexually active women should continue to be standard practice.¹⁰

In response to renewed concern about the prevalence

of cervical cancer among Canadian women, the Interchange '95 workshop was held in Ottawa on Feb. 27 to Mar. 1, 1995, to determine whether the recommendations made in 1989 were still relevant and, if so, to identify the barriers to their implementation and develop an approach through which information and expertise could be shared at the provincial, territorial and national level. The workshop focused on three specific but inter-related components of a comprehensive cervical cancer screening program: information systems, quality improvement and recruitment. Provincial and territorial representatives involved in cervical cancer screening on a clinical or programmatic level were invited to attend the workshop along with policymakers from the provincial and federal governments and other relevant national organizations.

Although the participants at Interchange '95 reaffirmed and validated most of the recommendations of the 1989 workshop, concerns were raised that the recommendations on quality control related only to cytology. It was also felt that the recommendations needed to be updated, particularly with respect to community involvement in policy and program development and to quality improvement processes; it was felt that the latter should incorporate guidelines for smear taking and follow-up of women with abnormal smears, as well as for cytology (to incorporate automated technology), and should reflect new educational approaches. Participants also reiterated the view that the recommendations should be considered as a complete package and deplored the tendency for programs and individual physicians to adopt single recommendations in the absence of appropriate information systems and quality-improvement processes.

Notwithstanding their support for the spirit of the 1989 recommendations, participants identified some major challenges. They noted that although the evidence to support screening programs has existed for over 20 years, little or no progress had been made in terms of program implementation in many provinces. The earliest provincial screening program for the detection of preinvasive cervical cancer in Canada was started in 1949 in British Columbia; today this program incorporates a central laboratory as well as a colposcopy program for the management of preinvasive lesions. In 1991 an organized, accountable provincial screening program was introduced in Nova Scotia in response to the recommendations of the three national task force reports.¹¹ In recent years, the other provinces and territories have been addressing the issue of cervical cancer control and are at various stages of developing some or all components of an organized program. However, a model of a fully implemented comprehensive organized provincial screening program does not yet exist.

COMPONENTS OF AN ORGANIZED SCREENING PROGRAM

INFORMATION SYSTEMS

Effective information systems are basic to the management of an organized cervical cancer screening program. They are essential to recruit women into population-based programs and to recall them at the appropriate time, to maintain the screening history of each woman, to ensure follow-up of women with abnormal results and to monitor the quality of the program. Linkage with a population database helps to ensure that target groups are being reached. Linkage with databases of colposcopy and histology results allows for monitoring of compliance and evaluation of the quality of the program. For most provinces, major barriers to implementing these information systems have been cost as well as legislative and regulatory issues related to confidentiality. Issues of terminology and the development of a core set of data need to be addressed if comparisons across provinces are to be made. Nevertheless, a number of provinces have established computerized information systems, the most advanced being in British Columbia and Nova Scotia and most recently in Prince Edward Island.

QUALITY IMPROVEMENT

Assuring the quality of services provided in an organized program encompasses a wider range of activities than was addressed by the 1989 recommendations, which focused mainly on quality assurance in cytology. At Interchange '95 it was suggested that mechanisms be in place to ensure the quality of smear taking and preparation, interpretation of results and follow-up of women with normal or abnormal results, and to ensure that the program as a whole is effective in recruiting and retaining the participation of all women at risk. Little or no attention has been paid to the integration of specialty-specific activities for quality control; practice guidelines or quality-assurance processes that do exist have been developed in isolation.

RECRUITMENT

The ad hoc approach to screening taken in most of Canada has resulted in a failure to recruit and retain women from the hard-to-reach groups identified earlier. Even in provinces with well-established programs, there is still much to do to reach these women. A comprehensive strategy for recruiting these women into screening programs would include public and professional education and would be facilitated by information systems, particularly if these were linked to a population database

providing access to names and addresses of women at risk. The legislative and regulatory environment in most provinces does not currently support access to population databases, and concerns have been voiced that the use of administrative databases for recruitment into screening programs may not be acceptable to women. Nevertheless, research in Canada has shown that women do accept this approach.¹² Once recruited into screening programs, women need to be retained in the system; this would also be facilitated by information systems that ensure the timely recall of women with normal or abnormal smears for follow-up.

CURRENT PROVINCIAL ACTIVITIES

In the two provinces with the most advanced programs, British Columbia and Nova Scotia, efforts are being focused on the improvement of information systems to facilitate recruitment and recall as well as on the enhancement of quality-assurance programs. Both provinces will focus on infrequently screened women, British Columbia giving priority to older women. The

Nova Scotia program has a colposcopy database and has cytology, histopathology and colposcopy guidelines in place; linkage between the cytology registry and the colposcopy database is being developed. Both provinces recognize the value added to their programs when reliable information is made available to epidemiologists and other researchers.

To give an example of the value of good information systems, the British Columbia program was able to change the recommended frequency for routine smears from 1 year to 2 years as a result of analysis of their data and the ability to recall women with normal results; the Nova Scotia program intends to review its screening interval when sufficient experience with their system has been acquired. Continuing analysis of information from these databases will allow decisions to be made with respect to the screening interval on the basis of actual experience.

In Ontario a Cervical Cancer Ad Hoc Working Group was formed in October 1993 with representation from the Ontario Medical Association, the Ontario Association of Medical Laboratories and the Ontario Cancer Treatment and Research Foundation to consider

Table 1: Recommendations from the National Workshop on Screening for Cancer of the Cervix 1989*

The following recommendations should be considered as a whole. The screening frequencies should be established formally only when the following are in place: high-quality laboratory services for reading cytology smears, with adequate internal and external quality-control systems, and information systems to monitor screening frequencies and to issue reminders to attend at the recommended intervals. Not all jurisdictions will be able to implement all the recommendations rapidly, but this should not prevent them from complying with those recommendations with which they can, when they can.

An organized approach

1. Governments should encourage and support the development or enhancement of organized cervical cytology screening programs involving family physicians, specialists, laboratories and information systems to reduce morbidity and mortality from carcinoma of the cervix.
2. All women aged 18 and over who have had sexual intercourse should be encouraged to participate in a cervical cytology screening program.
3. Care should be taken to incorporate new programs within an overall conceptual and planning framework of care of well women.
4. The setting and manner of screening for cervical cancer should be sensitive, supportive and culturally appropriate.
5. Concepts of cervical cancer prevention and screening should be integrated with sex education for students and included in health promotion programs directed to all adolescents.

Frequency of screening

6. A second smear should, in general, be taken after 1 year, especially for women who begin screening after age 20.
7. If the first two smears are satisfactory and show no significant epithelial abnormality, women should, in general, be advised to be rescreened every 3 years to age 69.
8. Women over age 69 who have had at least two satisfactory smears and no significant epithelial abnormality in the last 9 years and who have never had biopsy-confirmed severe dysplasia or carcinoma in situ (cervical intraepithelial neoplasia [CIN] III) can be dropped from the cervical cytology screening program.
9. The recommended frequency of rescreening for women aged 18 to 69 is appropriate for all risk groups.
10. Women entering a screening program at age 67 or older should have two satisfactory smears at least 6 months apart; those over age 69 can then be dropped from the program if the smears show no epithelial abnormality.
11. The recommended screening frequencies apply to women whose smears show no epithelial abnormality. If abnormalities are detected, schedules for repeat examinations should be dictated by the requirements of surveillance, diagnosis, treatment and follow-up.
12. Women do not need to be screened if they have never had sexual intercourse or have had a hysterectomy for benign conditions with adequate pathological documentation that the cervical epithelium has been totally removed and previous smears have been normal.

Management of abnormalities

13. In women with cytologic abnormalities the degree of abnormality reported by the cytopathologist should be noted.
 - (a) Generally, a repeat cytology smear should be recommended in 6 months for women with cytologic evidence of mild dysplasia (CIN I) with or without human papillomavirus (HPV) effects. If there is no evidence of cytologic progression, repeat smears at 6-month intervals are appropriate for up to 2 years, after which colposcopy should be arranged for all women with persistent abnormalities.
 - (b) Referral to colposcopy should be arranged for women with cytologic evidence of moderate or severe dysplasia (CIN II or III) or malignant cells.

*Excerpted from the workshop report,⁹ which outlines the rationale for each recommendation.

ways to improve the present system of cervical screening. The group identified four elements that must be in place before a cervical screening program can be implemented in Ontario: a linkage group of researchers, professional organizations, service providers, funding sources, users and their support groups; a cervical screening information system to integrate patient information and identify women who are infrequently or never screened; continuous quality improvement for all aspects of the program; and a review of existing guidelines regarding the age of women to be screened and the frequency of screening.

Alberta, Saskatchewan, Manitoba, New Brunswick, Prince Edward Island and Newfoundland are at different stages in the development of a collaborative approach to designing and implementing comprehensive screening programs. All have the support of their respective departments of health but differ in the involvement of partners and in the commitment of funding. In some provinces cytology laboratories are being amalgamated to meet the guidelines of the Canadian Society of Cytology for workload and training; in others, laboratories are

collaborating on the development of standardized guidelines for cytologic reporting. Most provinces acknowledge the need for information systems. A committee of the Manitoba Cancer Foundation has been convened and, as well as undertaking other activities, will be addressing the issue of public education to increase the participation of women, particularly native women, older women and prostitutes, in cervical cancer screening. Quebec is addressing the issue of breast cancer first in its overall cancer control activities and will address cervical cancer in the near future. In the Northwest Territories most cervical smears are taken by nurse practitioners and are processed, under contract, by the British Columbia Cancer Agency; in the larger urban areas smears are taken by medical practitioners. Guidelines and follow-up procedures are those of the British Columbia Cancer Agency.

POPULATION HEALTH AND THE ROLE OF THE FEDERAL GOVERNMENT

Health care in Canada is facing a period of reform,

Table 1 (continued)

14. Colposcopy should be performed by adequately trained gynecologists or other health care professionals who work in a setting that provides a constant source of abnormal material so that their skills can be maintained and enhanced.
15. Women who have been treated for an epithelial abnormality of the cervix, or have had an epithelial abnormality that regressed spontaneously with no epithelial abnormality on two consecutive follow-up visits, should be rescreened annually for as long as is clinically feasible.

Information systems

16. Information systems should be established in all provinces to ensure appropriate organization of all programs.
17. There should be consultation with all appropriate interests before establishing information systems. The design of information systems should be a result of participatory planning involving all the stakeholders.
18. Before the system is made operational all stakeholders should be consulted on policy about access to data and the conditions under which identified data can be released. The use of information systems should be compatible with the database requirements in the province.
19. Agreement on the core data to be included in information systems should be sought among all jurisdictions.

Training and quality-control requirements

20. Cytotechnologists should be trained according to the requirements of the Canadian Medical Association's Conjoint Committee on the Accreditation of Educational Programs in Cytotechnology or their equivalent, as recognized by the Canadian Society of Laboratory Technologists.
21. For most efficient function in a mass screening program a laboratory should process a sufficient number of cases annually to require staffing by a minimum of three qualified and experienced full-time cytotechnologists, supervised by a cytopathologist, plus adequate clerical and technical support staff.
22. Provincial governments should recognize the need for centralization or regionalization of cervical cytology screening services wherever there are multiple laboratories not fulfilling the criteria set out in recommendation 21.
23. The jurisdiction responsible for cervical cytology screening programs should ensure that appropriate and satisfactorily functioning quality-control mechanisms are in play.

Other considerations

24. The jurisdictions responsible for cervical cytology screening programs should ensure that the mechanisms described in this report are in place to evaluate and monitor the total program, which should be overseen by a broad-based advisory committee established by each province.
25. When new data on duration of protection from negative smears at age 60 to 69 are available, the recommendation to continue screening to age 69 should be reconsidered.
26. Current evidence is not sufficient to support the use, in screening for cervical cancer, of laboratory procedures designed to detect specifically the presence of HPV.
27. No later than 1996, all programs should be reviewed further for the Conference of Deputy Ministers of Health using data obtained through the evaluation and monitoring functions of the recommended information systems.

and the health care system of the future will likely be grounded in a population health approach. This requires that health care strategies address the entire range of individual and collective factors that determine health and are designed to benefit whole groups or populations of people. In contrast to the population-health approach, traditional health care focuses on risks and clinical factors related to particular diseases and deals with patients on a one-to-one basis, usually after they already have or are at high risk of having a health problem. To be most effective in reducing morbidity and mortality from cervical cancer, both population health and traditional health care approaches are relevant; collaboration, including the active support of the consumer, is the key to success.

The Interchange '95 workshop concluded with suggestions that the federal government continue to encourage and facilitate information exchange between the provinces and to provide some direction and leadership in the area of standards and quality of care. To build on the momentum of current activities in the provinces and of the workshop itself, all provinces and territories were invited to participate in the Cervical Cancer Prevention Network, an informal association of provincial and federal representatives with the relevant clinical professional bodies. Among the clinician groups represented are the College of Family Physicians of Canada, the Canadian Society of Cytology, the Society of Obstetricians and Gynaecologists of Canada, the Gynaecologic Oncologists of Canada and the Society of Canadian Colposcopists; in recognition that nurses play an important role in Papanicolaou testing in some parts of the country, representation from the Canadian Nurses Association will be sought. The network will continue to share information on program development, organization and data at the provincial and national levels as one of the intended outcomes of Interchange '95. Three working groups have been struck to address the issues of information systems, an integrated approach to quality management and the development of recruitment strategies; a coordinating committee will oversee the activities of the working groups and ensure that duplication of effort does not occur. The challenge for the network is to overcome the barriers to the implementation of the 1989 recommendations and for the provinces to emerge with comprehensive, organized programs that use the technological innovation and advances in knowledge that have occurred since 1989.

THE INTERNATIONAL SCENE

Canada is not alone in revisiting the issue of cervical cancer screening at this time; many industrialized countries are reviewing the effectiveness of their cervical cancer screening activities and have recognized the need for

organized programs. In 1991 all health ministers in Australia agreed to adopt an organized approach to cervical cancer prevention, as recommended by the Cervical Cancer Screening Evaluation Steering Committee, with the aim of making screening more effective, equitable and cost effective.¹³ Under the Europe Against Cancer program, guidelines for quality assurance have been developed with the aim of improving the quality of cervical screening in the European Community.¹⁴ In the United Kingdom, the National Health Service Cervical Screening Programme was developed in recognition of the piecemeal expansion of cervical cancer screening since the 1960s and has succeeded in achieving 83% coverage in the first 5 years of its existence.¹⁵ In the United States the Public Health Service established a National Breast and Cervical Cancer Screening Early Detection Program to bring breast and cervical screening services to underserved women, particularly women with low incomes, those from ethnic minorities and older women.¹⁶

RECOMMENDATIONS FOR CURRENT PRACTICE

Physicians have an important role in encouraging their patients to have a Papanicolaou test; having a regular source of medical care and a physician's recommendation to undergo screening has been shown to be strongly associated with having the test.^{17,18} Until organized screening programs are established in each province the 1989 recommendations for age to commence screening and for screening interval still hold. As suggested by the Society of Obstetricians and Gynaecologists of Canada, the Gynaecologic Oncologists of Canada and the Society of Canadian Colposcopists, annual screening of sexually active women should remain the standard of practice until patient information systems and high-quality laboratory services are in place. The presence of these two elements in British Columbia's screening program has allowed that province to recommend biennial testing.

THE FUTURE

Interchange '95 provided a catalyst for the enhancement or development of comprehensive cervical cancer screening programs in the provinces and territories. It is hoped that the Cervical Cancer Prevention Network will continue to facilitate this process and thereby help to reduce the occurrence of this preventable disease among Canadian women. The commitment of all health care professionals involved in the prevention and treatment of cervical cancer is vital if we are to move forward. The initial impetus for the development of screen-

ing programs was provided by the Walton report in 1976; the participants at Interchange '95 stated that they would like to continue to share information that will further the prevention and control of cervical cancer. The Cervical Cancer Prevention Network will continue the drive toward organized and comprehensive screening programs in Canada.

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