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Workshop on Screening for Cancer of the Uterine Cervix in Central America[1]

A workshop on screening for cervical cancer was held in Managua, Nicaragua, from 21 to 23 November 1995. The workshop was sponsored by the Pan American Health Organization, Cancer Care International, the Canadian International Development Agency, the International Development Research Center (Canada), and the World Health Organization Collaborating Center for Evaluation of Screening for Cancer, located in Toronto, Canada. In attendance were participants from all the Central American countries (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama), as well as Barbados, Canada, Colombia, the Dominican Republic, Haiti, Mexico, Saint Vincent and the Grenadines, and the United States of America.

The objectives of the workshop were as follows:

- to discuss cost-effective models of screening for cancer of the cervix in high-incidence countries;
- to reach consensus on principles for screening for cancer of the cervix in the Central American countries in accordance with the resources in each country;
- to develop a planning framework for a demonstration project (or national program if feasible) and identify key planning steps;
- to point out strengths and weaknesses in each country in order to identify those areas in which intercountry technical cooperation is possible.

Following brief introductory and welcoming remarks to the participants, several experts explored salient aspects of the problem of cancer of the uterine cervix: the magnitude of the problem, particularly premature deaths attributable to the disease, which in 1990 amounted to 25 000; the low priority afforded to this disease within the health policy framework of most countries; and the unproductive concentration of control measures on treatment of patients rather than early detection. The speakers also emphasized the need to improve control programs, better evaluate their feasibility, expand the active recruitment of women for screening by the Papanicolaou test (Pap smear), and strengthen program organization and leadership.

CONTENT OF THE WORKSHOP

During the plenary sessions, experts from throughout the Americas gave presentations on a number of topics, which were then discussed by the participants. Reports on country programs were also given. The content of the sessions is summarized below.

[1] This report was prepared by Anthony B. Miller, University of Toronto, Canada, and Sylvia C. Robles, PAHO Noncommunicable Diseases Program, Washington, D.C., U.S.A.

Etiology and Natural History of Cancer of the Uterine Cervix and Implications for Screening Protocols

Current knowledge about the natural history of cervical cancer was presented, and the way that knowledge relates to the planning of screening programs was discussed. The tendency to concentrate resources on precursors to clinical invasive disease, particularly dysplasia and carcinoma *in situ*, was noted. However, in planning screening approaches it is important to recognize that the majority of detectable lesions, especially in younger women, will regress without treatment.

Using data from several studies in Europe and North America, the International Agency for Research on Cancer (IARC) calculated that the maximum benefit from annual screening of women aged 20–64 was a 93% reduction in lifetime incidence of the disease. Reducing the frequency of screening to every third year reduced the benefit only slightly, to 91%, but used only one-third of the resources. A screening interval of five years still resulted in an 84% benefit, and screening every three years starting at age 26 yielded a 90% benefit. Thus, the percentage reduction in incidence rates of cervical cancer will not change significantly if the frequency of testing is reduced and an older age group is targeted.[2] However, these maximal results are only possible if the program has high compliance among the at-risk population, excellent information systems, and high-quality laboratory services; no country in the world has yet reached that ideal situation. The most effective programs are in Scandinavia, with Finland leading the way, even though their organized program offers screening only every five years.

Most of the benefit results from screening women 35 and over. After age 35, the incidence of invasive cancer increases, and yet it is around this age that women tend to leave most cervical cancer screening programs in developing countries as they pass out of the period of medical surveillance associated with maternal and child health services. The challenge is to replan programs to prevent overscreening of women under 35 and to ensure that women over 35 remain in the program and are rescreened every three to five years.

One of the points addressed in the discussion was whether the natural history data from developed countries were applicable to Latin America. Studies that show that low-grade lesions tend to regress in the majority of women form the basis for recommending that annual screening of young women who attend family planning clinics—a common practice in Latin American countries—be diminished in favor of longer-interval screening for women aged 35–59. It was pointed out that data from Cali, Colombia, produced results that were consistent with those of developed countries.

Another issue related to this recommendation is that the model used to demonstrate the effect of different screening policies is based on assumptions that the screening test has a low false negative rate and that women in whom abnormalities are detected will comply with the diagnosis and treatment process. While there is no reason to believe that the natural history of the disease differs in women from developed and developing countries, it is likely those assumptions will not be equally valid in different settings.

Human Papillomavirus Infection and Screening Programs

Newly available information on human papillomavirus (HPV) in relation to cervi-

[2] Day NE. The epidemiological basis for evaluating different screening policies. In: Hakama M, Miller AB, Day NE, eds. *Screening for cancer of the cervix uteri.* Lyon: International Agency for Research on Cancer; 1986. (IARC scientific publication no. 76).

cal cancer etiology was presented. There are several types of HPV, of which the most important oncogenic ones are types 16 and 18. Modern techniques have made it possible to demonstrate the presence of one or the other of these oncogenic types in about 95% of cases of invasive cancer of the cervix uteri.

The results of a study in the Guanacaste region in northwestern Costa Rica involving a random sample of over 9 000 women were reported. While HPV infection rates ranged from a low of 6% among women aged 50–64 to a high of 24% among women aged 20–24, the frequency of lesions was much lower, as shown in Table 1. These results support the supposition that most low-grade lesions will regress, regardless of HPV infection status.

It has not been demonstrated that testing for HPV infection improves the efficacy of screening. The tests are currently expensive; if the price comes down, they might be useful for evaluating both the possibility of progression of low-grade lesions and the value of identifying high-risk women for more intense screening. Using the tests that are now available, it is possible to increase the rate of referral for evaluation from 2% to 9% and the cancer detection rate from 80% to 100%. However, expense precludes the routine use of this approach.

Table 1. Frequency (percentage) of lesions of the cervix uteri caused by human papillomavirus in a sample of Costa Rican women from the Province of Guanacaste, by age group.

Age (years)	Low-stage intraepithelial lesion (%)	High-stage intraepithelial lesion (%)
18–24	4.5	1.2
25–34	2.5	1.6
35–44	2.0	1.4
45–54	0.8	1.0
55–64	0.4	0.4
65+	0.4	1.6

Regarding typing of HPV present in different lesions, the Costa Rican study showed that high-grade lesions tend to have types 16 and 18, while low-grade lesions have less oncogenic types. In the discussion it was pointed out that since HPV infection is not sufficient in itself to cause carcinoma of the cervix, further research into the role of other putative risk factors in HPV-infected women is warranted.

Approaches to Registration of Cervical Cancer

Registries of cervical cancer cases allow for monitoring of reduction in incidence and mortality and can be helpful in analysis of screening program failures. However, for registries to be of greatest value, reporting must be prompt and case-finding must be as complete as possible. Information on cases detected by screening may be readily available, but it is also important to include all cases missed by screening. Therefore, registries must use multiple sources for case-finding.

The various routine tasks in registries—including data abstraction and initiation of data bases—must be carried out using standardized procedures. In order to obtain maximum utility from information systems for cancer of the cervix, an attempt should be made to add information on staging and treatment to the minimum identifying, diagnostic, and tumor data required for cancer registration.

During the discussion, it was confirmed that Costa Rica has the only population-based countrywide cancer registry in Central America. Its data have been included in *Cancer Incidence in Five Continents*, published by IARC, which requires indices of data quality. Although other countries have made efforts to develop cancer registries, some are hospital-based and others do not meet basic quality standards.

It was deemed desirable that a population-based cancer registry be functioning in any place where a cervical cancer screening program is to be launched. Notwithstanding, establishment of a full-blown cancer registry is a goal that is out of reach for most developing countries owing to constraints posed by costs and lack of availability of vital and health care data. In addition, a cancer registry needs to be functional for several years before its data can be considered timely, complete, and high-quality. Thus, in these countries, other evaluation alternatives should be sought.

Issues in Screening for Cancer of the Cervix in Central America

The current status of cervical cancer screening programs in Latin America and Caribbean was reviewed, with special reference to Central America. Mortality from cancer of the cervix appears to have increased in the period 1975–1985 in all Central American and Caribbean countries except Trinidad and Tobago; nevertheless, ministries of health have not formally designated this problem a national health priority. Most of these countries have assigned priority to maternal and child health concerns and infectious diseases because these problems are more immediately observable and politically sensitive. In addition, the organization of health services has been tailored to address communicable diseases.

The introduction of a cervical cancer screening program requires a review of functional relationships within the health care services. Such as program is not limited to the introduction of a technology in a primary care setting; it requires the competent participation of other levels of care, such as laboratories and specialized diagnostic and treatment services. Inadequate capacity among these back-up services has caused many programs to fail. Information on available services in each country was requested prior to the workshop and is summarized in Table 2.

Downstaging for Cancer of the Cervix

Downstaging is an experimental procedure currently being evaluated by the World Health Organization in countries that do not have sufficient resources to extend cervical cytology screening programs to the whole country. Downstaging seeks to identify the cancer at an early stage through visual inspection of the cervix by specially trained personnel, thus avoiding the need for "high-tech" screening procedures. It should be recognized that visual inspection is an integral part of the normal examination in which a Pap smear is taken.

Evaluation of information from Sweden and other developed countries clearly shows that advances in public and professional knowledge of cervical cancer since the early 1920s and provision of facilities for treatment resulted in substantial downstaging in these countries even before cervical cytology was introduced. Several projects comparing cervical cytology with downstaging are being initiated—in the Philippines, Zimbabwe, and possibly Porto Alegre, Brazil. In the meantime, this approach could be considered in association with carefully designed programs of public and professional education for those areas of Latin America where it currently is not possible to offer cervical cytology.

Laboratory Aspects in Screening for Cervical Cancer

Quality control procedures for all phases of cervical cytology—including preparation, processing, examination, interpretation, and reporting of a Pap smear—were reviewed. This process is the cornerstone of the entire cervical cancer screening program. Emphasis was placed on the importance of correctly labeling the slides; of us-

Table 2. Characteristics of cervical cancer screening facilities in selected Central American and Caribbean countries, 1994.

Characteristic	Guatemala	El Salvador	Honduras	Costa Rica	Panama	Dominican Republic	Barbados	Saint Vincent and the Grenadines
Number of women aged 30-64	998 364	751 441	526 935	429 534	342 050	874 377	55 850	14 700
Incidence of invasive cervical cancer (per 100 000 women)	29.5	24.5	5.8	27.9	31.4	13.0	23.0	25.5
Personnel who take smears	Physician, nurse	Physician, nurse, nurse asst.	Nurse	Physician, nurse	Physician, nurse, nurse asst.	Physician, nurse, cytologist	Physician	Midwife
Number of cytology laboratories	6	6	4	10	10	39	5	2
Number of smears read annually	231 399	176 288	71 098	250 000	246 820	169 709	26 280	5 029
Full-time (8 hours per day) cytotechnologists	29*	13	16	40	36	*ND*	8	3
Colposcopy facilities	30	3.5	5	8	25	*ND*	5	0
Availability of treatment								
Cryotherapy	*ND*	yes	no	yes	yes	yes	yes	yes
Laser	*ND*	no	yes	no	no	yes	no	no
Electro-surgical	*ND*	yes	yes	yes	yes	yes	yes	no
Cauterization	*ND*	yes	yes	yes	yes	yes	no	yes
Hysterectomy	yes	yes	yes	yes	yes	yes	yes	no
Radiotherapy	yes	yes	yes	yes	yes	yes	yes	no
Technologists (no.)	8	10	1	19	18	6	2	3

ND = No data available.
* Refers to the number of pathologists; there are no cytotechnologists in the country.

ing appropriate techniques to take, fix, and subsequently stain the smears; and of accurate and timely reporting of results.

In taking the smears, it is important to sample the correct area of the cervix (namely, the transformation zone) and to use the correct instrument according to the woman's age. The material should be spread thinly on one slide and immediately fixed with 50% ethanol for 30 minutes or with a spray. If this procedure is carried out correctly, the length of time it takes for slides to reach a laboratory is not critical. Therefore, it is quite feasible for a country to use a central laboratory for Pap smear processing.

Once the slide reaches the laboratory, a record of the patient should be initiated and checks made to see if the woman has had prior smears examined there. Staining may be done manually or automatically. Examination of the slide by a qualified cytotechnologist should take 5 to 10 minutes. Around 85% to 90% of slides will be normal and will not need to be reexamined by anyone else. In general, one would expect about 3% of the slides to show mild dysplasia or worse, and less than 1% moderate dysplasia or worse.

In Ontario, the Laboratory Provincial Testing Program found that small laboratories were poor performers. Automated processing is under consideration and evaluation there. It is costly and there is no guarantee that it would prove useful in most developing countries.

Treatment and Follow-up of Abnormalities Identified in Screening

Various approaches to diagnosis and treatment of lesions in the cervix uteri were discussed. Outpatient treatment alternatives for cervical intraepithelial neoplasia (CIN or dysplasia) were described and are summarized in Table 3. A "seek and treat" approach was also described. This would include, in one visit, the Pap smear; evaluation by visual inspection aided by use of acetic acid, which causes suspect areas to turn white; biopsy of such areas; and treatment with cryotherapy. The targeting of this method to high-risk groups was proposed. The disadvantages would be capital costs, less accurate treatment, and possibly unnecessary treatment. Evaluation of efficacy and cost is necessary before such a practice is promoted.

Recruitment and Participation of Women in Screening Programs

Recruitment of women into cervical cancer screening programs in Latin America is generally based on convenience, with smears taken from women who attend family planning clinics or those who seek medical examinations. The women likely to be recruited are consequently those in their prime reproductive years. In contrast, organized programs will set up mechanisms for issuing specific targeted invitations and for encouraging women to attend clinics.

Education for the public and for health personnel needs to be integrated into the program. In order for education to be effective it must take into account local culture and social behavior as well as individual attitudes. Several approaches for conducting the educational component were discussed, as was the importance of evaluating the recruitment process and coverage.

Also discussed were the approaches adopted in Honduras, where the Ministry of Health is attempting to ensure maximum access to health services for women. In its effort to develop an organized screening program, the Ministry is proposing a model in which NGOs are responsible for recruiting women to the project. The first step is to investigate women's understanding of cervical cancer in their social context. It is hoped that the research will yield a database that will increase participation and aid

Table 3. Outpatient treatment approaches for cervical intraepithelial neoplasia (CIN).

Characteristics	Ablative methods*			Excisional methods
	Cryotherapy†	Cold coagulation	Electrocautery	Loop electrosurgical excision procedure (LEEP)
Effectiveness	79%–90% for CIN III	92% for CIN III	85%–89% for CIN III	90%–95% for CIN III
Potential side effects	Watery discharge for 2 weeks, infection risk, receded transformation zone	Bleeding, pain, uterine cramping, vaginal discharge	Uterine cramping, pain, bleeding, cervical stenosis, receded transformation zone	Bleeding, infection risk
Training requirements	Low	Low	Moderate	Moderate to high
Anesthesia requirements	None, though some women may prefer local anesthesia	None, though some women may prefer local anesthesia	None, though some women may prefer local anesthesia	Local anesthesia
Supply requirements	Refrigerant (liquid nitrogen or carbon dioxide), local anesthesia, needles, syringes, Lugol's solution	Probes, needles, syringes, local anesthesia, Lugol's solution	Ball-type and return electrodes, needles, syringes, local anesthesia, Lugol's solution	Needles, syringes, local anesthesia, loop and ball-type electrodes, return electrodes, suture set, Lugol's solution, vasoconstrictive agent, Monsel's paste
Equipment requirements	Cryotherapy unit, cryoprobes, colposcope or low-power magnification device, speculum, examination table, light source	Electrosurgical generator (Semm Cold Coagulator), colposcope or low-power magnification device, speculum, examination table, light source	Electrosurgical generator, non-conductive speculum, colposcope or low-power magnification device, speculum, examination table, light source	Electrosurgical generator, colposcope or low-power magnification device, nonconductive speculum, smoke evacuator
Personnel requirements	Physicians, nurse-midwives, or nurse-practitioners	Physicians, nurse-midwives, or nurse-practitioners	Physicians, nurse-midwives, or nurse-practitioners	Physicians
Infrastructure requirements	Record keeping, counseling, follow-up, reliable source of refrigerant	Power supply, record keeping, counseling, follow-up	Power supply, record keeping, counseling, follow-up	Power supply, record keeping, counseling, follow-up
Costs	Initial cost: US$ 1000–3000; low recurrent costs	Initial cost: US$ 1000–2000; low recurrent costs	Initial cost: US$ 1000–2000	Initial cost: US$ 4000–6000; US$ 15–60/loop

* Other methods, such as laser vaporization, are not described in this table because their technical requirements and high cost make them less suitable for low-resource settings.
† Cryotherapy is the only method that does not require electricity.
Source: Bishop A, Sherris J, Tsu V. *Cervical dysplasia treatment in developing countries: a situation analysis.* Seattle: Program for Appropriate Technology in Health (PATH); July 1995.

in the development of an appropriate educational program relevant to gender and health. The second step consists of working with organized groups in the community in order to develop an educational program and leadership. It is expected that the participation of NGOs will enhance the program's credibility and help restore women's trust in the health services. Health personnel must also be incorporated into the educational process.

The problems encountered by the national program for detection and control of cancer of the cervix that was initiated in 1990 in Colombia were described. The program's objectives were to increase cytology coverage to 90%; to ensure continuity between screening, diagnosis, and treatment; and to reduce mortality by at least 20%. Screening units are based in local hospitals and laboratory services are centralized. The plan is to rescreen women at three-year intervals after they have had two negative smears one year apart. Cytology registries are being set up, as are colposcopy clinics. Quality norms are being enforced for cytology laboratories, and there are attempts at official coordination of cytology and biopsies.

Research has identified a number of attitudes that discourage women from using screening services: They consider that a lack of pain means they are healthy, that the health care needs of children and others in the household outweigh their own, and that vaginal cytology is sinful and primarily for prostitutes. They may have a fatalistic attitude about cancer and do not understand that invasive disease can be prevented. They lack time to attend health services and find the gynecologic examination humiliating and painful.

An educational program aimed at increasing recruitment has been developed, taking into account the cultural diversity of the population. However, a decrease in mortality from cervical cancer has not yet been noted, perhaps indicating a failure to reach social groups at high risk. Another persistent problem is a shortage of pathology laboratories to read the additional smears. It was suggested that risk factors for the disease may have increased. The need to set up organized programs to ensure that those at high risk take part in screening was emphasized.

Organized Programs, the Role of Information Systems, and Downstaging for Cancer of the Uterine Cervix

The function of organized cervical cytology screening programs and the place of information systems in those programs were discussed. Organized programs strive to develop mechanisms that will increase coverage to the maximum extent possible and at the same time avoid excessive expenditure. The tasks of the organized programs should be as follows:

- identify the individual women in the target population;
- develop measures to guarantee high coverage and attendance, such as a personal letter of invitation;
- provide adequate field facilities to take the smears and adequate laboratory facilities to examine them;
- set up an organized quality control program pertaining to both collection of the smears and their interpretation;
- ensure that adequate facilities exist for diagnosis and appropriate treatment of confirmed neoplastic lesions;
- develop a carefully designed and agreed-upon referral system for managing any abnormalities found and for providing information about normal screening tests;
- organize evaluation and monitoring of the total program.

Information systems for organized cervical cytology programs must do the following:

- contain data on the individual women in the target population;
- ensure that individual women in the target population are sent letters to (a) remind them to come for screening once they reach the recommended age, (b) remind them to be rescreened at the recommended interval, and (c) ask them to visit their physician if an abnormality is discovered;
- monitor that action has been taken by the woman and her physician following the discovery of a cytological abnormality;
- provide long-term follow-up for patients who have received treatment following diagnosis of an abnormality;
- permit linkage of the results of separate screenings of the same individual;
- provide data on a woman's previous screening history to her (new) physician;
- collect data to facilitate assessment of the efficiency of laboratory quality control systems;
- permit evaluation and monitoring of the total system;
- permit the comparison of data within a country and among countries.

Individual Country Programs

Nicaragua

In a country with a population of just over 4 million, most cervical cytology is done in two centers, located in Managua and León. In the central hospital in Managua, approximately 22 500 Pap smears are performed each year and 400 cases of cervical cancer are diagnosed. In León 16 000 smears are done each year in a population of half a million, with an average of 73 invasive cancers diagnosed. In both centers, very few of the women diagnosed with invasive cancers had had cervical cytology. Some 500 to 1 000 new cases of cancer of the cervix occur nationally each year, but there is no cancer registry. There was 50% cytology coverage of women attending health centers, but the coverage rate fell after women were required to pay for their smears. In the country as a whole, Pap smears are taken in an unorganized and repetitive manner.

Poverty is a barrier to screening, especially in rural areas, and lack of screening of older women is a problem. One possible solution to the latter is to convince younger women to bring their mothers and other older female relatives to be screened

Development of a community-based pilot project was proposed. It will concentrate on applying a new approach in rotating focal areas around Managua, gradually covering the population over a five-year period. An attempt will be made to provide maximum coverage of women 35–64 years old.

Panama

In Panama screening activities are mainly carried out in maternal and child health clinics. Current coverage is probably only about 25% of women age 25 and over. Although physicians have expressed concern that cases may be diagnosed in women under 25, it is essential to reorient detection activities toward the population at greater risk, women aged 30–65, and resources must be obtained to increase awareness of this need. The current approach is generally to screen annually for at least three negative smears and every two years thereafter. It was agreed that this represented overutilization of resources on too few women. Thus, education of the public and professionals is essential in order to overcome opposition to moving toward less frequent tests and to ensure coverage of the older age group.

Haiti

Haiti has no national screening policy for cancer of the cervix. In this country of

7 million people, there are only seven cytologists in the private sector and one in the public sector, but medical personnel are available to perform examinations and colposcopy. It is believed that there would be little cultural resistance to cervical cytology screening programs and that women would be interested in participating. Their participation could be encouraged by radio. Obstacles include the high prevalence of other health problems (particularly infections) and their priority for care, as well as insufficient funds and too few diagnostic laboratories. There is a lack of interinstitutional communication and collaboration, and within the National Cancer Institute radiotherapy is no longer operational.

It was recommended that information on this meeting be disseminated to secure collaboration through the Ministry of Health in a limited project in a province, presumably concentrating on women aged 35 and over. A program proposal needs to be developed.

Dominican Republic

The estimated coverage of cervical cytology was 35% in 1992, 53% in 1993, and 61% in 1994. Coverage is lowest in the older age groups. An attempt is being made to develop a screening model. However, there is no quality control for cervical cytology, no information system, and little access to computers (records are kept manually).

No cancer registry exists and mortality data are limited. However, there are some clinics and laboratories with adequate infrastructure, and it would be possible to develop a program in Santo Domingo. Training of health personnel would be needed, and midwives could be integrated into the national program. It is proposed to recruit women age 35–50 for screening in all four sections of the health care system: social security, armed forces, NGOs, and private. Women are currently screened during their fertile years and it would be necessary to extend coverage to older ages. The plan calls for cervical cytology every three years.

Guatemala

The country is largely rural, with some 20 000 villages to which access is difficult. There is cultural resistance to Pap smears among the indigenous people. The incidence of cervical cancer is believed to be low in this group, but medical certification of cause of death is mostly lacking.

Until recently, initiatives to increase screening have come exclusively from local institutions. However, following an analysis of resources, a plan was developed for a national program for cervical cancer control and prevention, beginning with a pilot project coordinated by the Ministry of Health. The project is intended to inform and educate the population on screening for cervical cancer, to increase the coverage of the population, and to regulate the quality of testing and standardize norms. The initial objective is to cover approximately 120 000 women aged 35 to 50 in the southern part of the country, an area with a total population of about 3 million where resources are scant. Coordination of infrastructure between that area and the capital metropolitan area is expected, and broad collaboration between the Ministry of Health and other entities is hoped for, including the provision of resources. The current norm in Guatemala is screening every year; an effort will be made to change this norm to screening every three years.

Honduras

A major obstacle to be overcome in the target population of women aged 35–50 is social and cultural barriers to the taking of smears. The strategy to combat this problem is to increase information to women. The aid of NGOs and women's circles will be sought in some communities to identify

women to be offered screening. Health personnel will be trained to take smears and then will train auxiliary personnel to do so. Equipment shortages are a potential problem, and a supply management system must be put in place. Smears can be read in two national laboratories and there is also existing capacity to perform directed biopsies, colposcopy in eight hospitals, cone biopsies and hysterectomies in all hospitals, and radical surgery in one hospital. One national center provides radiotherapy. Governmental support will be required to strengthen laboratories and introduce standardized quality control programs. A proposal will be developed to implement a demonstration project and strengthen national capacity for colposcopy.

Saint Vincent and the Grenadines

In the target population of women age 25–79, smears have increased since the Caribbean Cervical Cancer Control Project commenced in 1990 (see the report on p. 409). Nurses at the clinics have been trained to take Pap smears; three physicians have been trained in colposcopy. There are three cytotechnicians but there is no resident pathologist. Concerns exist about quality control and also about radiotherapy, for which waiting times are long and patients must travel to Barbados.

The challenge is to motivate at-risk women to have a smear, now that the infrastructure is largely in place. Women will be encouraged to have a smear in their birth month and district nurses will be urged to take smears whenever a woman who has not been screened is seen (even if for hypertension or diabetes).

Discussion

For all countries, the importance of education and of using younger women to recruit older women was emphasized. It was agreed that initial attempts should focus on obtaining one smear from all women at risk and then rescreening after five or six years. To ensure rescreening, an information system is required, and it should be linked to laboratory and treatment records.

WORKSHOP CONCLUSIONS

Participants agreed that the highest priority was education about cancer, and cancer of the cervix in particular, directed to women and primary health care professionals. They also agreed that programs should be developed in each country as demonstration projects that would utilize available resources as efficiently as possible, with the objective of expanding to a national program as soon as feasible. These demonstration projects will allow countries to detect weaknesses that need to be addressed in a national program. The implementation of screening policies should be adapted to the particular features of each country. This is especially important at the primary care level.

In general, the majority of women have contact with health services during the prime reproductive ages for the purposes of family planning, prenatal care, or child care. However, such contacts are not usually used for cervical cytology of older women. Health care professionals must use the opportunities they have to identify women at high risk for developing invasive cancer. Young women must be enlisted as allies in efforts to recruit older women for screening. In many populations, there is currently overcoverage of women in their 20s and early 30s. The emphasis of the new programs must be to bring women 35 to 64 years of age into cervical cytology screening programs. Adequate organization and good information systems will enable women to be recalled for smears at appropriate intervals.

Good information on knowledge, attitudes, and practices relative to particular cultural settings is necessary in order to obtain the first smear and ensure the par-

ticipation of women throughout the program—that is, taking smears at recommended intervals and undergoing treatment if necessary. The participation of women's organizations is a strategy that will result in better understanding among the public, thus creating a need and demand for the program in the community. It also must be recognized that health personnel are part of a given cultural setting and share general attitudes and beliefs. Specific educational programs directed to this group are necessary to foster changes in the community at large.

The effectiveness of a screening program relies heavily on the quality of cytology laboratory services. All aspects of the laboratory's participation should be reviewed periodically. This includes reporting and follow up, as information systems within the laboratory form part of the overall information system of the program. The incorporation of a quality improvement process should result in fewer false negative slides, thus increasing the sensitivity of the screening test. This improvement is facilitated by the centralization of cytology services.

For those women found to have an abnormality which appears to be low grade, cytology surveillance is appropriate. For high-grade lesions (particularly CIN III), colposcopy can be used to facilitate diagnosis and treatment, if it is available. If it is not, surgical approaches, such as biopsy, cone biopsy, and hysterectomy, will generally suffice for management. The program should have appropriate information on the technical capacity of the treatment facilities available to the population and should develop consensus on treatment protocols accordingly. Participation of local clinicians—both general practitioners and specialists—should be encouraged.

At the close of the workshop, the task before the participants was to develop, in consultation with their colleagues, an appropriate project proposal for each country. The Pan American Health Organization, the WHO Collaborating Center for Evaluation of Screening for Cancer in Toronto, and, after appropriate arrangements are made, Cancer Care International in Toronto will make available assistance in developing and evaluating these programs. Nevertheless, the programs will not succeed unless there is adequate input at the local level and appropriate investment of skilled personnel and resources.

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