Challenges faced by cervical cancer prevention programs in developing countries: a situational analysis of program organization in Argentina

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ABSTRACT

Objective. *To carry out a situational analysis of cervical cancer prevention activities in Argentina, specifically regarding (a) the organizational framework of cervical cancer prevention activities; (b) Pap-smear coverage; (c) cytology laboratory organization; and (d) follow-up/treatment of women with abnormal lesions.*

Methods. *A situational analysis of provincial cervical cancer programs using data from an ad-hoc questionnaire sent to the leaders of cervical cancer prevention programs in Argentina's 24 provinces. In addition, the provinces' program guidelines, statistical reports, laws, and program regulations were reviewed and certain key leaders were personally interviewed.*

Results. *Data were obtained for 19 of Argentina's 24 provinces. Four of the 19 provinces had no formal program framework. Conventional cytology was the most commonly used screening test. Screening was mainly opportunistic. The recommended interval between normal tests was 3 years in most provinces. The eligible age for screening ranged from 10–70 years of age; however, annual or biannual screening was the usual practice after becoming sexually active. None of the provincial programs had data available regarding Pap-smear coverage. Most of the cytology laboratories did not have a quality control policy. The number of smears read varied greatly by laboratory (650–24 000 per year). A log of events related to screening and treatment did not exist in most provinces.*

Conclusions. *Screening in Argentina is mainly opportunistic, characterized by an estimated low coverage, coexisting with over-screening of women with access to health services, and an absence of quality control procedures. Policies for cervical cancer screening in the provinces vary and, most often, deviate from the national recommendation of one Pap smear every 3 years for women 35–64 years of age. Ensuring compliance with national program guidelines is an essential step toward significantly reducing the burden of cervical cancer.*

Key words Uterine cervical neoplasms; cervix neoplasms prevention; women's health services; analysis of situation; government programs; health systems; Argentina.

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Cervical cancer prevention programs have failed in many developing countries for a variety of reasons that include health care system deficiencies, limited funding of preventive health, and a lack of trained human resources (1). These issues have resulted in low coverage levels, poor quality of cytology services, lack of follow-up and treatment of women with abnormal lesions, and the subsequent lack of impact on incidence and mortality (2–4).

Cytological screening has been available in Argentina for more than 50 years, but a national program on cervical cancer prevention was not established until relatively recently (5). When established in 1998, the National Program on Cervical Cancer Prevention set policies and guidelines that recommend screening every 3 years (following two negative annual screenings) for women 35–64 years of age; recruiting women in the target population for screening; establishing quality control procedures; and maintaining information systems that monitor and evaluate program effectiveness. The goal of these policies was to obtain 80% coverage and a 50% reduction in cervical cancer mortality in 2006. In spite of this, cervical cancer mortality rates have remained unchanged in the last 30 years (6–7).

In Argentina, the geographic and social disparities of cervical cancer's disease burden are striking: the province of Jujuy has a cervical cancer mortality rate ($15/10^5$) almost four times that of the city of Buenos Aires ($4/10^5$) (7), and in the nation as a whole, women suffering from cervical cancer are mostly poor, less educated, lack health insurance (8), and live in the least-developed areas of the country (7). An analysis of the 2005 National Survey on Risk Factors (9) showed that 40% of poor women had never had a Pap smear versus 22% of non-poor women.

As mandated by the Sexual and Reproductive Health Law passed in Argentina in 2002 (10), the Ministry of Health launched an initiative to ensure that all women and men get access to sexual and reproductive health care services. In 2007, a project within this larger context was initiated to improve and strengthen cervical cancer prevention activities (7). The first phase of the project was a situational analysis of cervical cancer prevention strategies currently in use in the 24 provinces of the country. The study was designed to identify failings and limitations. It was supported and funded by Pan American Health Organization (PAHO). Based on the results of the situational analysis, the Ministry of Health relaunched the National Program on Cervical Cancer Prevention in 2008.

The present study evaluates and shares results from the situational analysis regarding four essential components of a cervical cancer program: (a) the organizational framework of cervical cancer prevention activities; (b) Pap-smear coverage and promotion efforts; (c) cytology laboratory organization and quality control; and (d) procedures used to ensure follow-up and treatment in the case of an abnormal result.

Given that Argentina is a federation, each province autonomously establishes its health policies, and its health care services are mainly funded and managed by the provincial and local health systems. Therefore, this study approached the results with two main questions: "To what extent are provincial programs adhering to the national guidelines established in 1998?" and "Are the guidelines being translated into action at the provincial level?"

This study is the first systematic analysis of cervical cancer prevention activities in Argentina; the results will help inform decisionmakers on whether or not, and how, to modify cervical cancer strategies and practices, and will serve as a baseline for monitoring program impact. In addition, the information will aid in understanding which components of the health system must be strengthened so that in the middle- and/or long-term, new and alternative prevention technologies—HPV testing, visual inspection, and HPV vaccination—may be introduced not only in Argentina, but also in other developing countries.

MATERIALS AND METHODS

This study was carried out in June 2007–June 2008, at a time when the National Program on Cervical Cancer Prevention was not in operation for several reasons, including having been designated a low priority; consequently, very limited information was available regarding organization or outcomes of cervical cancer prevention in the provinces. To overcome this lack of data, an ad-hoc questionnaire was sent to the leaders of cervical cancer prevention programs in the provinces. For the provinces without a cervical cancer program, the questionnaire was sent to the reproductive health program leader. Secondary sources of information for each province were reviewed, i.e., programmatic guidelines, statistical reports, laws, and program regulations. In addition, several key leaders were personally interviewed, including three heads of cervical cancer prevention programs; one member of the Argentine Cytology Society; two heads of cytology and gynecology services at public hospitals; two leaders of NGOs dedicated to the fight against cancer; three heads of reproductive health at national and provincial ministries of health; and the head of the epidemiology department at the National Ministry of Health.

Study instrument

The questionnaire consisted of 49 questions, grouped into five sections:

1. General screening framework.
2. Target age and screening interval (year of inception, normative framework, and geographic extension).
3. Cytology laboratories (number of cytology laboratories in public hospitals, type of health professionals in charge of reading Pap smears, number of cytotechnicians, number of pathologists, use of information systems, use of classification systems, quality control procedures, and training received in the last 5 years).
4. Type of health professional charged with obtaining the Pap smears; compliance with national guidelines and recommended policies.
5. Information was requested for monitoring indicators, as recommended by the World Health Organization (WHO, 11):
   - Pap coverage: proportion of targeted women with Pap smear according to provincial program guidelines/total targeted women.
   - Proportion of Pap smears performed out of target age-group/total number of women screened.
   - Proportion of women screened more often than indicated by program (excess use of screening).
   - Proportion of inadequate Pap smears/total number of Pap smears.
   - Proportion of high-grade squamous intraepithelial neoplasia (HSIL)/total number of adequate Pap smears.
   - Length of time for test results to return from laboratories.
   - Proportion of women with HSIL that were treated/women with HSIL.
   - Annual Pap smears read as a proportion of the number of women to be screened according to provincial guidelines regarding target age-group and screening frequency.

Additional data about Pap coverage was obtained from the National Survey

on Risk Factors (12). This was a cross-sectional, household interview survey, representative of the Argentine urban population 18 years of age and over living in cities with 5 000 or more inhabitants, conducted by the National Ministry of Health. It used an urban sampling framework developed by the National Institute of Statistics and Censuses. A detailed description of the survey methodology can be found elsewhere (12).

RESULTS

Organizational framework of cervical cancer prevention activities

In total, information regarding program organization was obtained for 19 of the 24 provinces: 15 completed the questionnaire; two provinces (Santa Cruz and Tierra del Fuego) reported no program; and additional information was obtained for two provinces (Salta and Tucuman) through review of available technical reports (13–14). The main characteristics of program organization in these 19 provinces are presented in Table 1.

The introduction of screening programs spans more than two decades in some provinces, while in others, it is quite recent (i.e., Chaco, 2004; Corrientes, 2007; and Cordoba, 2007). Four provinces had no formal program framework (Chubut, San Juan, Santa Cruz, and Tierra del Fuego). In San Juan, Pap screening activities are a component of the Sexual Health Program.

In all provinces, the target population was women without health insurance. These women are offered free health care at public health hospitals. Provincial programs had no information regarding Pap smears performed outside the public health sector. Legislative framework for program activities existed in eight provinces. Each province's program covered the entire province, except in Cordoba where a pilot program covering selected localities has been in place since 2007.

Cytology is the most commonly used screening test. A combination of Ayer's spatula and brush or extended tip spatulas is commonly used for the sampling. Colposcopy, although not recommended by any program, is quite diffused as a screening method in opportunistic screening. A call/recall system based on personal invitation is not in place in any provincial program. Screening is mainly opportunistic in all of them, especially through reproductive and maternal health services; women are screened independent of their screening history.

The study found that the most commonly recommended interval between normal cytological tests is 3 years (Table 1). One-year intervals are recommended in Buenos Aires, Cordoba, and San Juan. Two-year intervals are recommended in Catamarca and Jujuy. None of the programs included in this analysis adhered to the national recommendation about target age. Target age varies widely: 18–70 years of age in the Province of Buenos Aires, 25–45 years in Catamarca, 15–50 years in Cordoba, and 10–49 years in San Juan. The combined differences in the recommended age group and the screening interval resulted in striking differences in the number of recommended life time Pap smears: 11 in Catamarca, 12 in Chaco, 13–20 in most provinces, 35–39 in Cordoba and San Juan, and 19–52 in the Province of Buenos Aires.

There are no national or provincial guidelines regarding which indicators should be used to monitor program activities. A registration of events related to screening does not exist in most provincial programs. Cytology tests are registered at laboratory level through computerized software in Jujuy and Mendoza. In Mendoza, this system is used in 9 of 11 laboratories. In the Province of Buenos Aires, laboratories send a copy of the cytology report to the provincial Program office, where data are centrally entered and processed; the aggregated results are published annually. Follow-up and histology data from an initially abnormal smear are not reported. Colposcopies performed are not recorded. An annual report is produced only by the Province of Buenos Aires Program.

Pap coverage and promotion strategies

None of the provincial programs has produced information regarding the extent of Pap smear coverage in the target age group, at the defined screening frequency. When the number of smears read annually is compared to the number of smears that should be read according to specific provincial guidelines (Table 2), an important deficit is observed for most provinces. For example, in Jujuy, the number of read smears represents around 58% of smears that should be read to comply with the recommended biannual screening beginning at age 25. This deficit does not take into account that an important proportion of performed smears correspond to women that fall outside the target age group, as can be seen in Table 2. For example, in Jujuy 25% of read smears were taken out of the target age group of 25–60 years.

A proxy of Pap smear coverage is calculated using data from the National Survey on Risk Factors (Table 3). In 2005, approximately 52% of Argentine women answered "yes" to the question, "Have you had a Pap test in the last 2 years?"—ranging from 76% in the province of Neuquen to 30% in Tucuman (Table 3). Compared to the general population of women, those without health insurance have lower Pap smear coverage; for example, 36% of women reported having had a Pap smear in Corrientes, while the percentage for women without insurance was 25%.

There are no quantified data about excess use of screening, although information provided by provincial program leaders indicates that most health providers do not adhere to program recommendations regarding target age group and screening frequency. The accepted practice is to recommend annual or even biannual screening to all sexually active women. It is also common practice for gynecologists and pathologists to recommend colposcopy-based screening, accompanied by concurrent cytology.

In most provinces, the laboratory provides the results to the smear-taker who is responsible for contacting the woman; the contact is generally done by primary health care workers, mainly if the result is abnormal.

Cytology laboratory organization

The study found that provincial programs do not have rules or guidelines concerning the organization of cytology services, i.e., professionals in charge of reading smears, number of smears to be read, maximum/minimum number per cytologist, etc. Quality controls are not compulsory, and with the exception of Jujuy, Mendoza, and one laboratory in Santa Fe, most cytology laboratories do not have internal or external quality controls or proficiency testing.

TABLE 1. Characteristics of cervical cancer prevention programs in 19 of 24 provinces in Argentina, 2008

Province	Program (year of inception)	Normative framework	Age group, in years	Frequency interval, in years	Information system	Health provider obtaining smears
Buenos Aires	Yes (1988)	Yes	18–70 Priority group 30–50	1, 1, 3 1, 1, 1 (for high risk)[a]	Yes, at central level	Gynecologists and nurses
Catamarca	Yes (1998)	Yes	25–45	1, 1, 2	Yes	General doctors, gynecologists, family doctors, obstetrics
Chaco	Yes (2004)	Yes	30–60	1, 1, 3	No	General doctors, gynecologists, obstetrics
Chubut	No	NA	NA	NA	NA	NA
Córdoba	Yes (2007, pilot project)	No	Women of reproductive age (15–50)	1, 1, 1	Yes	General doctors, gynecologists
Corrientes	Yes (2007)	No	18–70	1, 1, 3	Yes, at central level	General doctors, gynecologists, nurses
Entre Ríos	Yes (1998)	Yes	25–65	1, 1, 2	Yes, at central level	General doctors, gynecologists, obstetrics
Formosa	Yes (1990)	No	25–59	1, 1, 3	No	General doctors, gynecologists, obstetrics, nurses
Jujuy	Yes (1998)	Yes	25–60	1, 1, 2	Yes	General doctors, gynecologists, nurses
La Rioja	Yes (2001)	No	20–65	1, 1, 3	No	General doctors, gynecologists
Mendoza	Yes (1991)	Yes	30–65	1, 1, 3, 5	Yes, at 9 of 11 laboratories	Gynecologists, nurses
Neuquén	Yes (2003)	Yes	20–59	1, 1, 3	No	General doctors, gynecologists, nurses, obstetrics
Salta	Yes (2002)	No	25–64	1, 1, 3	No	General doctors, gynecologists, obstetrics
San Juan	No, activities are performed as part of the Sexual Health Program, created in 2003	No	Women in reproductive age, from menarche (10–49)	1, 1, 1	No	General doctors, gynecologists, obstetrics
Santa Fe	Yes (1998)	—	30–64	1, 1, 3	No	General doctors, gynecologists, nurses
Santiago del Estero	Yes (1995)	Yes	30–64	1, 1, 3	No	General doctors, gynecologists
Santa Cruz	No	NA	NA	NA	NA	NA
Tucumán	Yes (2001)	—	Women with active sexual life	—	No	Gynecologists, obstetrics
Tierra del Fuego	No	NA	NA	NA	NA	NA

[a] Defined by the province's program as: women with multiple sex partners, early initiation of sexual relations, history of sexually-transmitted disease, cigarette smoking, or HIV-infection.

The number of laboratories varies greatly by province, as does the annual number of smears read by laboratories in each province (Tables 2 and 4). For example, in La Rioja, three laboratories read a total of approximately 3 000 smears annually; whereas in Neuquen, one laboratory was in charge of reading about 24 000 smears annually.

TABLE 2. Number of total Pap smears read in 1 year as a percentage of women to be screened according to provincial policies, and Pap smears performed out of target age-group (%), selected provinces in Argentina

Province	Number of women to be screened[a]	Annual Pap smears read		Pap smears performed out of target age-group (%)
		No.	%	
Buenos Aires	849 167	327 650	38.6	—
Catamarca	12 625	7 243	57.4	41
Córdoba	534 774	25 390	4.7	—
Entre Ríos	63 887	20 686	32.4	40
Formosa	24 647	13 140	46.7	—
Jujuy	39 237	22 548	57.7	25[b]
La Rioja	13 049	2 936	22.5	3[c]
Mendoza	76 294	26 572	34.8	25[d]
Neuquén	25 182	23 896	94.9	—
Salta	56 874	28 000	49.0	20[e]
San Juan	20 801	13 552	65.2	—
Santiago del Estero	60 249	10 350	17.2	35[f]
Tucumán	194 255	18 686	9.6	—

[a] According to provincial guidelines regarding target age-group and screening frequency.
[b] In 2006.
[c] Estimation based on a sample of 1 310 Pap smears in 2007.
[d] In 2006.
[e] Estimation based on a sample of 13 004 women in 2004.
[f] Data available for one hospital in 2006.

TABLE 3. Percentage of women in target age-group[a] that reported a Pap smear in the last 2 years, National Survey on Risk Factors, Argentina, 2005

Province	Pap smear in the last 2 years among women in target age-group	
	All women (%)	Uninsured women (%)
Buenos Aires	57	48
Catamarca	47	43
Chaco	53	38
Chubut	54	41
Córdoba	61	54
Corrientes	36	25
Entre Ríos	53	37
Formosa	51	43
Jujuy	58	48
La Rioja	50	47
Mendoza	59	52
Neuquén	76	71
Salta	45	35
San Juan	45	36
Santa Fe	62	51
Santiago del Estero	40	28
Tucumán	30	26

[a] Target age-group as defined by provincial programs.

There are no requirements for continuing education and accreditation of health care personnel involved in the screening, and in several laboratories Pap smears are read and diagnosed by gynecologists. The National Program recommends the use of the Bethesda System, and most provinces adhere to this recommendation; but some provinces also use older classification systems, such as the Papanicolaou class system and CIN classification.

Few laboratory performance indicators are available at the provincial level. The proportion of unsatisfactory cytology tests is available for only nine provinces. The proportion is high in Chaco, Tucuman, Jujuy, and Santiago del Estero (13%, 13%, 15%, and 20% of the smears, respectively). Most provincial programs do not send monitoring reports on unsatisfactory smears to the health providers who obtained the smears. The proportion of women with HSIL varies across provinces, from 0.2 in Entre Rios to 1.0 in Santiago del Estero. The Province of Buenos Aires does not report the total number of adequate smears, and therefore, it is not possible to calculate this indicator. Four provincial programs do not have any data about the number of screened women with HSIL. Very little data exists on the length of time for test results to return from laboratories; in some provinces, it can take as long as 2 months to get results.

Procedures for ensuring follow-up and treatment for women with abnormal results

With the exception of Catamarca, there are no provincial programs with data on how many women with abnormal lesions have been followed-up and treated. The provincial program of Catamarca reported that 100% of women with HSIL are treated within 6 months of diagnosis; these data have not been published.

DISCUSSION

In Argentina, prevention activities implemented in the last 20 years have not been effective in significantly reducing cervical cancer mortality. Experience from developed countries has shown that it is possible to reduce the burden of the disease by implementing organized screening programs (15–16). However, results presented here show that programs in Argentina face problems linked to low Pap-smear coverage and absence of quality controls, as well as a lack of monitoring and evaluation systems. This situation is similar to what has been reported for several Latin American countries (2, 4). National program guidelines (one Pap smear every 3 years for women 35–64 years of age) were established in 1998 with little subsequent action.

Organizational framework of cervical cancer prevention activities

The study results show that the level of adherence to national recommendations is low, and that in general, they were not translated into action at provincial levels. Most provincial programs recommend screening for wider target-age groups and at a frequency higher than that recommended by the national program (35–64 years of age; annually for 2 years, and if negative, than every 3 years). This might limit the possibility of increasing Pap coverage since many cytology laboratories do not have the human resources and equipment needed to read the number of smears that would be read if high coverage was to be reached by annual screening of a wide target-age group (7). In some provinces, screening is recommended from first menses (10–15 years of age).

WHO does not recommend screening of women younger than 25 years of age because a high proportion of precancerous lesions will regress spontaneously in young women (17). In addition, treating

TABLE 4. Organization of cytology laboratories and monitoring indicators by provinces, Argentina, 2008

Province	No. of laboratories in public hospitals	Recommended classification system	Quality control procedures	Staff in charge of cytology reading (public hospitals)	Continuous training	% inadequate smears	% HSIL	Length of time for test results to return from lab
Buenos Aires	119	Bethesda	No	Pathologists, cytotechnicians	No	—	—	—
Catamarca	1	Bethesda	Internal: Yes External: No	Pathologists	No	1.3	0.3	—
Chaco	3	Bethesda	No	Pathologists, cytotechnicians	No	13.0	0.8	< 30 days, but periods > 2 months
Chubut	1	Bethesda	—	Pathologists	No	—	—	—
Córdoba	17	Bethesda	—	Pathologists	No	—	—	—
Corrientes	6	Bethesda	No	Pathologists	No	—	—	—
Entre Ríos	10	Bethesda	No	Pathologists, cito-technicians	No	7.0	0.2	< 1 month
Formosa	2	Bethesda	No	Pathologists	No	1.0	—	—
Jujuy	5	Bethesda	Yes	Pathologists, gynecologists	No	15.5	0.5	10–60 days
La Rioja	3	Bethesda	No	Pathologists	No	—	—	—
Mendoza	11	Bethesda in 80% of laboratories Other: Pap classes	Internal and external in one laboratory External in 4 laboratories	Pathologists	No	1.9	0.5	15–45 days
Neuquén	1	Bethesda and Papanicolaou classes	No	Pathologists, citotechnicians	No	—	—	—
Salta	8	Bethesda and Papanicolaou classes	—	Gynecologists, pathologists, cyto-technicians	No	—	—	15–25 days
San Juan	4	Bethesda and Papanicolaou classes	No	Pathologists	No	2.1	0.4	—
Santa Fe	—	Bethesda	Yes. External in one hospital	Pathologists	No	—	—	—
Santiago del Estero	2	Bethesda	Cytohistologic correlation in 2006	Pathologists	No	20.0	1.0	—
Tucumán	6	Bethesda	Yes. External	Pathologists	No	13.0	0.3	15–45 days

precancerous lesions in very young women could have adverse effects on fertility, as well as psychological consequences (18). Therefore, the recommendation made by some provinces to begin screening at very young ages should be reviewed. An important limitation to reviewing early screening is that annual screening from the onset of sexual intercourse is a widespread recommendation of the medical community, irrespective of provincial or national guidelines. Adherence to the recommendation of the national program would facilitate reaching high coverage levels without losing program effectiveness (17). Once 60%–80% of women 35–64 years of age were screened, screening could be extended to women less than 35 years of age.

Doubtless, adherence to national guidelines by provincial programs will constitute a considerable challenge for program managers faced with translating national policy into action at provincial, district, and facility levels, in a country where the health system is decentralized and the Ministry of Health has limited power over provincial administrations. Low adherence to screening guidelines has been reported for other settings (19). The variability in terms of guideline adherence is closely linked to a lack of awareness of current scientific evidence and to whether or not professionals receive continuous dissemination of the guidelines and continuing education and requirements (20).

Other reasons might be related to the fact that the number of patients that a physician sees and the procedures performed directly impact their income, or that it may be easier to screen every pa-

tient than to spend the time reviewing the patient's medical history in order to determine whether a Pap test is needed. Prior patient expectations can also be difficult to overcome in a relatively short appointment (19).

A study carried out in Mexico (20) stresses the fact that improving prevention programs in Latin America means setting up systems that support health care professionals to implement guidelines. Such support should include activities for dissemination of guidelines, continuing education, and reminders for health care users. Also, the normative capacity of the national and provincial programs should be strengthened, in order to regulate and discourage practices that have a low level of cost-effectiveness.

In Argentina, health professionals often recommend colposcopic examination along with Pap screening as a strategy to increase screening sensitivity (21). Overuse, overdiagnosis, and overtreatment using colposcopy has been reported in other Latin American countries (20). In addition, Pap and colposcopy-based screening might limit screening in public health centers in areas with limited health infrastructure and with no human resources trained to perform colposcopy. Colposcopy services should be carried out only for women with abnormalities and not used for primary screening (22). A study in Mexico (20) stressed the fact that among the related colposcopy quality control and monitoring mechanisms that should be established are: unifying the academic curricula on colposcopy; regulating and accrediting colposcopy practice; monitoring validity and diagnostic reproducibility; and, in general, establishing external and internal quality control mechanisms.

Strategies for increasing Pap-smear coverage

Low coverage affects most provincial programs. Although national guidelines recommend target women to be reached through active recruitment activities, most women are opportunistically screened, mainly through sexual health and maternal services. A study of social determinants of Pap smear coverage in Argentina showed that women not using contraception were 1.5 times less likely to have been screened in the last 2 years (9). These results are similar to what have been reported for other developing countries (23). Although active recruitment of target women is recommended by national guidelines, the lack of population registries and deficiencies in postal systems constitute an obstacle to increasing screening coverage through invitation letters, as implemented in several developed countries (24). In some provinces primary health care workers visit households several times a year, so they may constitute an adequate channel for providing face-to-face information. Optimizing opportunistic screening through curative services has been proposed as a strategy to increase coverage among underserved women in South-Africa (25); this strategy could be replicated in Argentina where 75% of women have at least one contact with a health center annually (26).

Cytology laboratory organization

Data from cytology laboratories showed wide variations in percentages of HSIL among provinces. An in-depth study of laboratories from the Province of Jujuy, carried out as part of this study, showed that important variations are also observed among laboratories within the same province (7). For example, in the six cytology laboratories from the Province of Jujuy, the range of HSIL varied from 0.1% to 7.5% in 2005 and from 0.2 to 1.7% in 2006. However, almost no laboratory had, until the year 2008, quality control mechanisms to evaluate underlying causes of these variations. The lack of external quality control procedures affects almost all cytology laboratories, all across the country. Detection of false negative smears by rapid screening review exists in some large laboratories, but this is not a widespread practice.

In general, provincial programs do not have the regulatory power to request that laboratories perform quality checks, and there are no certification standards or procedures. In some Latin American countries, such as Peru, laboratory certification is carried out by the Scientific Society of Cytology, after verification of basic conditions, including number of Pap smears read annually, and the undertaking of internal and external quality control procedures (27). Similar systems are urgently needed in Argentina.

In several provinces cytology reading was in charge of gynecologists. This is, for example, the case of Jujuy, where in three of six provincial laboratories cytology reading and diagnosis is done by gynecologists. A national mandate, created in collaboration with the Argentine Society of Cytology (28), was established to regulate cytology laboratories. According to the mandate, the first screening must be carried out by cytotechnicians, under the supervision of a pathologist in charge of re-reading 100% of abnormal smears and a percentage of negative Pap smears. However, no subsequent mechanisms of the mandate were developed.

Certification of professionals by scientific organizations, according to national and international standards, must be set up in order to ensure professional standards. Certification of professionals should also be a prerequisite to laboratory certification. Although WHO recommends centralization of cytology laboratories reading around 10 000 Pap smears annually (17), this study's results show that this recommendation is not generally followed. For example in the Province of Jujuy, six laboratories were in charge of reading approximately 23 000 Pap smears; one of these laboratories had read about 650 smears in 2006. Centralization of laboratories and established referral procedures are essential to ensuring high quality cytology services.

In Argentina, very few provinces have an information system, despite the fact that this is an essential component to monitor and evaluate program activities. As a result of this, little data exists regarding program performance and outcome indicators. The establishment of such a system should be a priority component of the national program in order to insure the ability to monitor procedures and evaluate final outcomes.

Procedures to ensure follow-up and treatment for women with abnormal results

The results of this study reveal a lack of data regarding follow-up and treatment of precancerous lesions. A study carried out in the 1990s in Greater Buenos Aires showed that around 40% of women diagnosed with precancerous lesions were not followed-up or treated (29). It is imperative that women with results that are positive for high-grade lesions be followed-up and treated as needed. It is also essential to implement research studies to evaluate the magnitude of the problem and specific strategies to reduce it.

The future of cervical cancer prevention

Important options to consider for cervical cancer prevention are the introduction of the HPV vaccine and the availability of new tests for cervical cancer. Cautious, evidence-based decisions must be made and strategies adapted to Argentina's disease epidemiology and the country's existing human and economic resources. If the efficient coordination of all screening-related services is not ensured, the introduction of new technologies will probably not decrease the burden of disease. Furthermore, the result might be a widening of social and health inequalities, with women of higher socioeconomic level (and at lower risk of developing cervical cancer) having access to the new technologies; and poor, older women, continuing to be underserved and suffering the highest toll.

Primary screening with HPV testing is expected to be the future standard of care, once new tests are affordable and provide same-day results (22). A screening algorithm, with HPV testing as the initial screening test, followed by cytology of HPV positives, has been proposed (22, 30), as this will permit screening intervals to be safely lengthened. The use of HPV tests is mainly recommended for women 30 years of age and older, where specificity is highest (31). Women with negative cytology would need to be rescreened with HPV testing at 6–12 months, and if persistently positive, referred for colposcopy. However, this new technology should be introduced with caution in Argentina in the present context of low compliance with National Program guidelines and the absence of regulatory procedures. If evidence-based recommendations are not followed, this might result in inappropriate screening of young women, with an important risk of overloading the screening program (as transient HPV infections are extremely common), overtreating lesions that normally clear within the first few months (22), and of potential harm, as certain treatments increase the risk of complications in pregnancy (18). In addition, inadequate counseling and follow-up of women with a positive HPV test and negative cytology might also result in overtreating and unnecessary psychological distress, including fear of cancer, anxiety, and being stigmatized (32). Developing professional training programs and regulatory procedures, and monitoring of health provider compliance are of utmost importance.

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RESUMEN

Retos de los programas de prevención de cáncer cervicouterino en países en desarrollo: análisis de situación de la organización del programa en Argentina

Objetivo. Realizar un análisis de la situación actual de las actividades de prevención del cáncer cervicouterino en Argentina, específicamente con respecto a los siguientes aspectos: a) el marco organizativo de las actividades de prevención del cáncer cervicouterino; b) la cobertura de la prueba de Papanicolaou; c) la organización de los laboratorios de citología; y d) el seguimiento y el tratamiento de las mujeres que presentan lesiones anómalas.

Métodos. Se llevó a cabo un análisis de la situación actual de los programas provinciales de prevención del cáncer cervicouterino a partir de los datos de un cuestionario *ad hoc* enviado a los directivos de los programas en las 24 provincias de Argentina. Además, en cada provincia se examinaron las directrices del programa provincial, los informes estadísticos, las leyes y los reglamentos de los programas, y se entrevistaron algunos directivos clave.

Resultados. Se obtuvieron datos de 19 de las 24 provincias argentinas. Cuatro de las 19 provincias no tienen instaurado ningún marco programático formal. La citología convencional es la prueba de tamizaje que más se utiliza y, en general, el tamizaje es oportunista. El intervalo recomendado entre las pruebas de resultado normal es de 3 años en la mayoría de las provincias y la edad a la que se indica efectuar el tamizaje en las distintas provincias se ubica entre los 10 y los 70 años; sin embargo, el tamizaje anual o bianual es la práctica habitual una vez que la mujer comienza a mantener relaciones sexuales. Ninguno de los programas provinciales pudo aportar datos acerca de la cobertura de la prueba de Papanicolaou. La mayoría de los laboratorios de citología no disponen de una política de control de calidad. Es muy variable el número de pruebas de citología cervical que llega a cada laboratorio (entre 650 y 24 000 por año). La mayoría de las provincias carece de un registro de acontecimientos relacionados con la detección y el tratamiento del cáncer cervicouterino.

Conclusiones. En Argentina, el tamizaje suele ser oportunista, tiene baja cobertura, se realiza con una frecuencia excesiva en las mujeres que tienen acceso a los servicios de salud y carece de procedimientos de control de calidad. Cada provincia aplica políticas diferentes en relación con el tamizaje del cáncer cervicouterino y, lo más habitual, es que no se atenga a la recomendación nacional de efectuar una prueba de Papanicolaou cada 3 años a las mujeres de entre 35 y 64 años de edad. A fin de reducir significativamente la carga del cáncer cervicouterino, es esencial garantizar el cumplimiento de las directrices del programa nacional de prevención.

Palabras clave Neoplasias del cuello uterino; prevención de cáncer de cuello uterino; servicios de salud para mujeres; análisis de la situación; programas de gobierno; sistemas de salud; Argentina.