Two consecutive international meetings on cancer epidemiology took place in Quito, Ecuador, from October 2 to 9, 1991. They were sponsored by the International Agency for Research on Cancer (IARC), the Pan-American Health Organization (PAHO), the National Cancer Institute (NCI), the American Cancer Society, the Ministry of Health of Spain, the Italian League Against Cancer, and the Ecuadorian Society to Fight Cancer (SOLCA). The main organizers of the meetings were Dr. Nubia Muñoz, Dr. Maxwell Parkin (IARC), and Dr. Fabian Corral (SOLCA).

The first event was a Seminar on Cancer Registries in Latin America in which the principles and methods of cancer registration, with special emphasis on the Latin American scene, were described and discussed as follows: general principles and methods, Maxwell Parkin (IARC) and Eduardo de Stefani (Institute on Oncology, Montevideo, Uruguay); quality control, Franco Bernino (National Tumor Institute, Milan, Italy) and Jaime Galceran (Cancer Registry of Tarragona, Spain); tumor coding and classification, Constance Percy (NCI, Bethesda, MD); population estimates and projections, Guillermo Llanos (PAHO); data sources, Lorenzo Gafá (Tumor Registry, Ragusa, Italy); analysis and reporting of data, Carmen Navarro (Cancer Registry, Murcia, Spain) and Evelyn Shambaugh (NCI); computer systems, Stephen Olivier (IARC); procedures manuals, Sharon Whelan (IARC). A critical analysis of the history of cancer registration in Latin America was presented by Pelayo Correa. The five consecutive volumes of Cancer Incidence in Five Continents, the gold standard of international cancer incidence data, has published data on Latin American populations intermittently, but only the Registry of Cali, Colombia, has supplied acceptable data for all the volumes. The reasons for the omission of incidence registries from the publication were characterized as: demographic growth that is outstripping the resources for diagnosis and registration; unrealistic ambitions of covering too-large populations; administrative problems, especially due to insufficient funds; and the short-sightedness of sponsoring institutions, both international and local. A discussion of the special situation of cancer registration in most Latin American countries followed, based on descriptions and discussions led by representatives of each country.

The use of cancer registries was illustrated with presentations on determinants of cancer risk by geography by Dee West (Northern California Cancer Center, United States), ethnic classes by Carlos Marigo (Onco-centro Foundation, Brazil), social classes by Maria Latorre (São Paulo Cancer Registry, Brazil), and migration by Marco Geddes (National Tumor Institute, Genoa, Italy). The contribution of cancer registries to the initiation and support of etiological studies was illustrated for esophageal cancer by Eduardo de Stefani, for cervical cancer by Rolando Herrero (Social Security Institute, Costa Rica) and Xavier Bosch (IARC), and for gastric cancer by Pelayo Correa. A special session was dedicated to the prevention of the two most important problems in Latin America, cervical cancer (Nubia Muñoz, IARC) and gastric cancer (Walter Oliver, Centro de Control de Cancer, San Cristóbal, Venezuela; Eva Buatti, Prevention Oncology Center, Florence, Italy; and Maxwell Parkin). The general strategy and methodology of screening programs were discussed by J. Chamberlain (Thames Cancer Registry, England). The final session, coordinated by Xavier Bosch, was dedicated to exploring and discussing ways to establish and reinforce connections (hermanamiento) between Latin American registries and registries in more developed countries. The European countries with the most presence at the meeting were Spain and Italy. Jesus Gonzales (Ministerio de Sanidad y Consumo, Madrid) and Marco Geddes described their programs. For the United States, representatives of registries with prominent Hispanic populations such as New Mexico (Thomas Becker) and California (Leslie Bernstein and Dee West) expressed their interest. A general discussion followed on the many opportunities for collaboration, especially personnel interchange and sources of funding. Several initiatives were explored at this session which it is hoped will bear fruit. The formation of an Association of Latin American Cancer Registries and its relationship with other international organizations were discussed.

The second event was the annual meeting of the International Association of Cancer Registries (IACR). The delegates were welcomed by Solon Espinosa, President of SOLCA, and Plutarco Naranjo, Minister of Health of Ecuador. The conference centered around the subject of poverty and cancer. The keynote speaker was Lorenzo Tomatis, Director, IACR, whose comments appear as an Editorial in this issue. David Thomas (Fred Hutchinson, Cancer Research Center, Seattle, Washington), President of the Association, called attention to the increasing rates of tobacco-related cancers in Latin America. He reflected on the health problems created by the importation of tobacco products from the United States, which are of much greater magnitude than those created by the illegal trade of drugs such as marijuana and cocaine. He suggested that the Latin American governments should ask the U.S. government to join forces to fight the tobacco cartel as they jointly fight the cocaine cartel.

Session I on cancer in developing countries was introduced by Maxwell Parkin with an overview of the
cancer burden in developing countries. In spite of the less than optimal statistics from many developing coun-
tries, they show that these countries provide about one-
half of the incident cases. Gastric and cervical cancer are
predominant, but a steady increase in lung cancer is being
registered. A trend of increasing rates of cancers of the
colon and breast is also being noticed. Hepato-
cellular carcinoma is a problem of major proportions in
countries where hepatitis prevalence is high. The cancer
burden in developing countries is expected to increase
considerably, and there is an imminent need to address
the problem with control and prevention measures. Of
special importance are screening programs for cervical
cancer and antismoking strategies, both of which are
insufficient at the present time. Examples of peculiar
problems were presented in this session. María Paula
Curado (Cancer Registry, Goiania, Brazil) described a
developing epidemic of malignant melanoma after an
“accident of poverty,” which led to dermal contact of
some local inhabitants with cesium-137 from an aban-
doned hospital facility. The social and medical problems
of cervical cancer, the rates of which have been una-
affected by the inadequate screening programs, were dis-
cussed by Luz Llanos (SOLCA) and Ramez Bedwani
(Cancer Registry of Alexandria, Egypt). Gastric cancer
mortality in Brazil was discussed by María Bustamante
(National Cancer Institute), who found moderate de-
creases since 1980 in urban but not in rural areas. The
problems of early diagnosis and cancer registration were
discussed by Hugo Noboa (SOLCA), Leticia Fernandez
(National Oncology Institute, Cuba), and Carlos Marigo.
Leslie Bernstein showed how the cancer profile of Latin
American immigrants to Los Angeles preserves the high
rates of stomach, cervical, and gallbladder cancers as
well as non-Hodgkin lymphomas. The Latin American
population in Los Angeles rose from 28% to 38% be-
tween 1980 and 1990. Jaime Rios Dalenz (La Paz Cancer
Registry, Bolivia) described the cancer profile of popu-
lations living at high altitude (3600 to 4000 meters above
sea level). High rates of cervical, gallbladder, and skin
cancers are recorded.

Session II, dedicated to infection and cancer, was
introduced by Nubia Muñoz (IARC). She described the
role of hepatitis virus (B and C) in hepatocellular carci-
noma, accounting for 56% to 90% of the risk in endemic
areas. She described ongoing studies examining the role
of papilloma viruses in cervical carcinomas in populations
of very high (Cali, Colombia) and very low (Spain) risk.
She compared three hybridization techniques for human
papilloma virus DNA, which showed a lower sensitivity
of ViraPap and Southern blot compared to polymerase
chain reaction. The present results, although they show
a strong statistical association (odds ratios > 10.0) be-
tween human papilloma virus and cervical cancer, also
indicate that the difference in prevalence of human pap-
illoma virus infection does not explain the difference in
cervical cancer risk between Colombia and Spain. She
also discussed briefly the possible role of Helicobacter
infection in gastric carcinogenesis. Data on cervical can-
cer and infection with papilloma viruses were the subject
of a round table discussion moderated by David Thomas
with the participation of Rolando Herrero, Xavier Bosch,
Nubia Muñoz, and Margarita Ronderos (Cancer Institute,
Colombia). Johanan Berkel (University of Alberta, Edmon-
ton, Alberta, Canada) examined data from population-
based registries of cancer and tuberculosis in Canada and
reported a “seemingly protective” effect of tuberculosis
for cancer risk.

Session III on diet and cancer was introduced by
Pelayo Correa, who illustrated the differences and simi-
larities of dietary influences in populations at low versus
high socioeconomic status. Low-socioeconomic status
populations in general have excessive salt intake, while
high-socioeconomic status populations in general have a
high-fat intake. What is common to both populations is
that low intake of fresh fruits and vegetables increases
the risk of cancer of different anatomic sites. Rolando
Herrero presented results of a case-control study in Costa
Rica, Panama, Colombia, and Mexico showing that vita-
min C, and possibly β-carotene, are protective factors
for cervical carcinoma. Marc Goodman (Cancer Center, Ha-
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waii) reported on a case-control study of endometrial
cancer, finding a positive effect of fat intake on cancer
but no effect of micronutrient antioxidants. Jean Caum-
in (CHV Morvan, France) examined the correlation between
nitrate intake and gastric cancer risk in the Finistère
province of northwest France. He found an increased
risk of gastric cancer in high-nitrate districts, which was
statistically significant for females only. Aya Hanai (Can-
cer Registry, Nagoya, Japan) reported increasing inci-
dence rates in Japan for cancers of the colon, breast,
liver, gallbladder, pancreas, lung, and prostate, some of
which may be related to changing dietary patterns and
smoking prevalence. Johans Berkel (Alberta Cancer
Board, Canada) reported increasing rates for lower esophaga-
and gastric cardia adenocarcinomas, the origin
of which is unknown at present. Aileen Clark (Ontario
Cancer Foundation, Canada) reported increasing rates of
in situ and invasive breast cancer, explainable only in
part by early detection.

Session IV, dedicated to screening, was introduced
by J. Chamberlain, who reviewed the efficacy of screen-
ing for several cancer sites. For lung cancer she reported
a lack of effect on mortality by screening programs.
Screening for stomach cancer with double-contrast X-
rays taken by mobile units on the field has been carried
out extensively in Japan, but its efficacy has not been
adequately evaluated. The screening program has con-
cuded in time with decreasing rates, but it is not clear to
what extent dietary changes are responsible for the de-
cline. A case-control study reported a significant effect
for women and a suggestive effect in men. Screening
programs for breast cancer based on mammography in
the United States and Europe have shown a 30% reduc-
tion in numbers of deaths due to breast cancer in the
screened population. The increase in rates observed
recently does not negate the efficacy of mammography
screening. Some programs based on physical examina-
tion as a first round followed by mammography have
higher specificity and sensitivity than other methods.
Breast self-examination is difficult to evaluate because it
is practiced more by more health-conscious women.
International studies are in place to evaluate annual phys-
cal examinations and breast self-examination screen-
ing methods. Guillermo Llanos reviewed screening pro-
grams in Latin America, especially for cervical cancer.
These programs have been insufficient and to some
degree ineffective in part because the highest-risk pop-
ulations have not been especially targeted and because
of logistical problems in locating women for follow-up

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and treatment. Gonzalo Davila (Social Security Institute, Quito, Ecuador) reported an increase in the proportion of superficial ("early") gastric carcinomas associated with increases in the availability of gastroscopy services. At present the superficial carcinomas are approximately 6% of all gastric cancers diagnosed. Rolando Herrero described the screening program for cervical cancer in Costa Rica. Lack of screening of older women, lack of endocervical specimens, small scattered laboratories, and lack of adequate follow-up characterize the program. Leticia Fernandez described programs for early detection of oral cancer in Cuba. G. H. Bolda (Oncology Institute, Cluj-Napoca) described screening programs for cervical cancer in Romania, where they have led to an increase in the proportion of cases at earlier stages. Diana Robson (Saskatchewan Cancer Foundation) described screening programs for breast cancer which have provided mobile units to cover small remote communities. Melton Paz y Miño (Hospital CAM, Quito, Ecuador) compared fine-needle aspiration with needle biopsy as techniques for the early diagnosis of prostatic cancer. The sensitivity was 96% and the specificity 66% for fine needle aspiration, compared with 94% and 83% for needle biopsies.

A special session examined the screening strategies available for gastric cancer, the second most frequent cancer in the world, with a 5-year survival rate of approximately 10% overall but higher than 90% for superficial carcinomas. Maxwell Parkin examined the experience in Venezuela, utilizing double-contrast X-ray equipment in mobile units followed by gastroscopy and biopsy. Approximately 110,000 subjects have been screened over 10 years. Approximately 50 patients with superficial carcinoma have been identified. A case-control study of invasive cancers is in progress. The death rates in the area of screening have decreased in recent years. The X-ray screening method is costly and probably not applicable to large populations in developing countries. Screening by pepsinogen levels in the blood is cheaper and potentially valuable, but its efficacy has not been determined.

Session V on tobacco and cancer was introduced by Thomas Novotny (NCI), who discussed the present trends in tobacco smoking and tobacco-related cancer rates. Developing countries are experiencing the beginning of the tobacco-related cancer epidemic, which is well established in industrialized countries. The tobacco companies are targeting developing countries and populations with lower socioeconomic standards for their promotion efforts. Carlos Salvador (International Anti-Tobacco League, Ecuador) discussed the "transfer of the risk to the third world." While the publicity for tobacco products is being curtailed and the antismoking campaigns are growing in developed countries, in developing countries the tobacco cartel has mounted an intense publicity campaign targeted especially at the young. In Ecuador the prevalence of smoking in adolescents (10–19 years of age) in 1970 was approximately 10%, with a 2.4:1 male:female ratio; in 1988 the prevalence was 14.7%, and there was no gender difference. Mauro Delende (University of Udine, Italy) presented data on linear increases in the risk of lung cancer of different histological types associated with an increasing prevalence of smoking.

Finally, the importance of maintaining high standards of quality of registry data was discussed and illustrated by Evelyn Shambaugh, Constance Percy, and J. Berkel.

The 1992 annual meeting of IACR will be in Ottawa, Canada, June 28–30.
International cancer epidemiology meetings.

P Correa


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