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Review of Mortality and Morbidity in the English-speaking Caribbean, 1970-1980

Introduction

On the recommendation of its Scientific Advisory Committee, the Caribbean Epidemiology Center (CAREC) conducted a review of mortality and morbidity in the Caribbean in 1970-1980 in order to determine the priorities of the countries and territories that are participating members of CAREC (Figure 1).

Many difficulties were encountered in establishing the demographic characteristics of the area because the last population census was held in 1970 and considerable changes are believed to have taken place in mortality, fertility, birth rate, child mortality, and migration between 1970 and 1980.

Since the mortality and morbidity data are presented in absolute figures, this review should be considered a first attempt to determine the health priorities of the region. This review will—it is hoped—serve as a basis for additional studies designed to obtain more precise information for planning and evaluating the health services the Caribbean population will need in the 1980s.

Mortality

To identify changes that might have occurred in the period 1970-1980, an analysis was made of the data for 1970, 1974, and 1978. Of the 19 member countries of CAREC, five (Antigua, Barbados, Dominica, Saint Lucia, and St. Vincent) were selected because they had appropriate data and similar economic and health characteristics (Figure 2). This group of countries has a total population of approximately 0.6 million and fewer than 5,000 deaths annually. Barbados accounts for 40 per cent of the deaths.

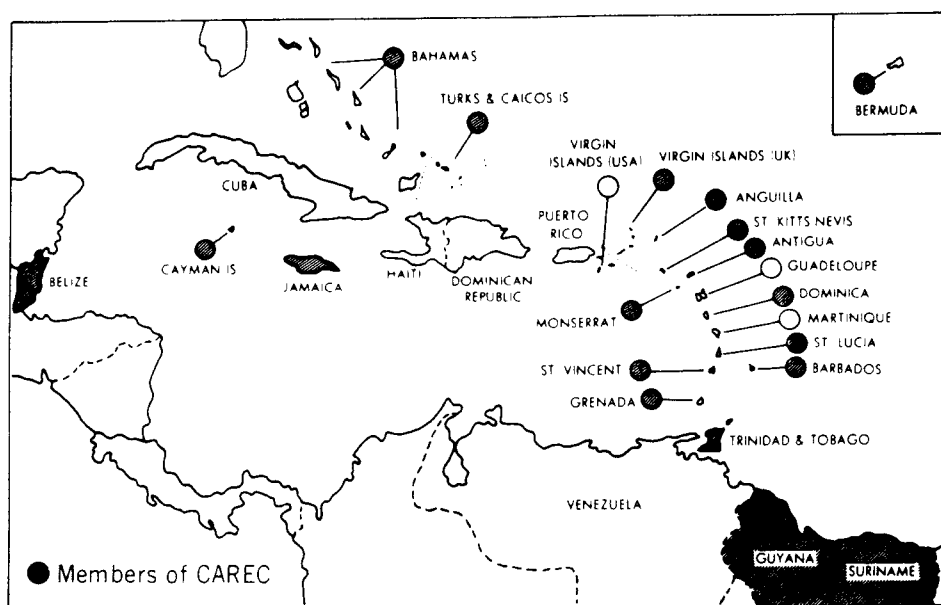
The quality of the data is limited because of defects in reporting and coding the causes of death and lack of uniformity in the age-groups used by the five countries.

Because of the lack of data for the continental countries (Belize, Guyana, and Suriname) as well as for other countries, including the two most populous (Jamaica and Trinidad and Tobago), the findings for this group of countries do not make it possible to extrapolate the state of health in the Caribbean as a region.

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Figure 1. Countries and territories members of the Caribbean Epidemiology Center (CAREC).



Of the deaths from heart diseases, hypertension accounted for 5 per cent in 1970 and 6 per cent in 1974 and 1978 and ranked seventh, sixth, and fourth as a cause of death in those three years. Of the deaths attributed to hypertension, 72 per cent occurred in the age-group 65 years and more. Only 3 per cent occurred in the population under 35 years of age.

Cerebrovascular disease was the second cause of death in 1970 and 1974 and in 1978 ranked third (12 per cent of total deaths). The population aged 65 years and more accounted for 77 per cent of the deaths.

Malignant neoplasms ranked fourth as a cause of death in 1970 and second in 1978 (13 per cent of total deaths). Of total reported deaths attributed to cancer, 57 per cent occurred in the group aged 65 and above while 32 per cent of total deaths from cancer in 1978 occurred in the age group 45-64 years. In males the most frequent locations of cancer were the stomach, prostate, trachea-bronchia-lung, and esophagus. In females the most frequent locations were breast, stomach, and cervix.

Among infectious diseases, diarrheal diseases occupy a leading place as a cause of death and were responsible for 58 per cent of the deaths attributed to infectious diseases in 1970, 56 per cent in 1974, and 47 per cent in 1978. The group most affected was children under one year of age, who accounted for 57 per cent of the deaths caused by diarrhea in 1978. In that same year, diarrheal diseases were responsible for 14 per cent of total infant

deaths and 15 per cent of deaths in the age group 1-4 years.

Influenza and pneumonia accounted for 6 per cent of the total deaths reported in 1970 and 1974 and 5 per cent in 1978.

Vitamin A and other nutritional deficiencies declined sharply (4 per cent to 1 per cent) as a cause of death between 1970 and 1978.

Deaths from accidents increased in all the countries, and represented 3 per cent of total deaths in 1970, 4 per cent in 1974, and 6 per cent in 1978. Accidents accounted for 33 per cent of total deaths in the age-group 5-14 years in 1978 and 16 per cent in the age-group 15-44 years. Of the deaths attributed to accidents in 1970 and 1978, 37 and 23 per cent, respectively, were caused by automobile accidents.

Morbidity from Infectious Diseases

Unlike mortality data, morbidity data for most of the reportable diseases have been notified to CAREC by all the Caribbean countries since 1975. Information for the period prior to 1975 was obtained from *Health Conditions in the Americas, 1969-1972*, and *1973-1976* (PAHO Scientific Publications 287 and 364) (Table 1).

Some of the problems highlighted by this information are:

- *Incomplete data.* For example, for diseases such as measles and influenza, only serious cases that require hospitalization are reported by many countries.

- *Lack of technical facilities for laboratory confirmation.* This lack usually results not only in underreporting but also in erroneous reports.

- *Diseases subject to the International Health Regulations (cholera, plague, yellow fever, smallpox)*

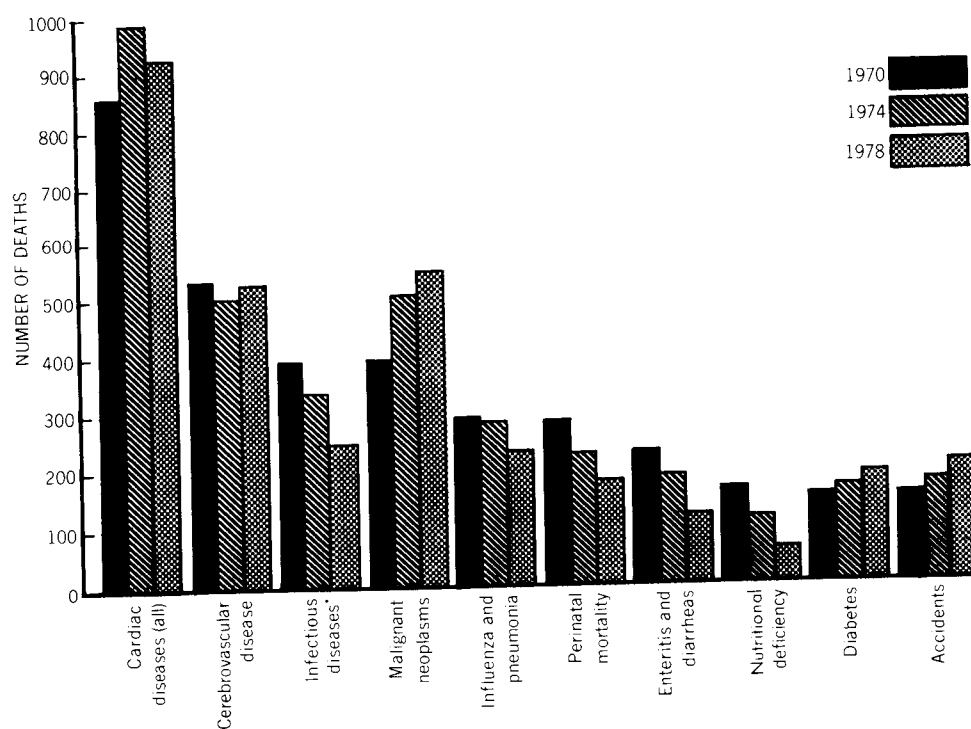
Of these diseases, only yellow fever was reported in the area in 1970–1980. In November 1978 there was a epizootic of yellow fever in monkeys in Trinidad, which was followed by two outbreaks of jungle yellow fever in 1979

that caused 18 cases, eight of which were fatal. These outbreaks gave rise to great concern because of the high *Aedes aegypti* infestation of the region and because of their effect on tourism. Consequently, systems of epidemiological surveillance were organized and large-scale immunization and *A. aegypti* control measures were instituted.

- *Diseases covered by the Expanded Program on Immunization (EPI) (poliomyelitis, measles, diphtheria, tetanus, whooping cough, tuberculosis)*

Poliomyelitis. The incidence of poliomyelitis decreased sharply in all the member countries of CAREC. Mass

Figure 2. Principal causes of death in five combined countries in the Caribbean (Antigua, Barbados, Dominica, Saint Lucia, and St. Vincent), 1970, 1974, and 1978.



*Excluding influenza, pneumonia, enteritis and diarrheas

Table 1. Incidence of certain communicable diseases in all the member countries of CAREC, 1970–1980.

Disease	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Malaria (Belize, Guyana, Suriname)	1,070	1,606	1,152	2,089	4,152	3,985	5,357	3,472	3,070	4,370	8,600
Malaria (other countries)	3	3	3	3	8	14	13	7	19 ^a	31	14
Poliomyelitis	10	47	186	3	8	5	2	1	—	4	2
Diphtheria	205	133	169	101	85	68	32	71	45	28	26
Measles	5,005	3,389	2,336	3,022	4,138	3,477	6,252	8,122	2,613	5,132	4,182
Tuberculosis	1,023	928	980	919	865	859	1,006	803	762	570	605
Typhoid fever	382	447	741	340	289	342	409	369	224	253	303

^aExcludes an epidemic outbreak (58 cases) in Grenada in 1978.

—Data not available.

outbreaks affected Trinidad and Tobago in 1971-1972 and St. Vincent in 1972. At present one case of poliomyelitis reported in the islands can be considered an epidemic. Of the nine cases that occurred between 1976 and 1980, five were in Belize and three in Suriname, both mainland countries.

Measles. Outbreaks of measles are common in the Caribbean, where the epidemic cycle and duration of the epidemics depend on the size of the island and the frequency of its contacts with foreign countries. The mainland countries have a regular two-three year epidemic pattern. In some countries measles vaccination has only recently been instituted. Up to December 1980, only 10 of the 19 countries offered their population measles vaccination.

Diphtheria. The number of reported cases of diphtheria gradually decreased during the decade despite the fact that, in Barbados, children with positive pharyngeal swabs were reported as cases.

Tetanus. Information on this disease is lacking in many countries in the region.

Whooping cough. The incidence of this disease in the area has remained low.

Tuberculosis. This disease has slowly decreased in the region. The organization of case-detection programs has influenced the number of cases reported by the countries.

- *Vector-borne diseases*

Malaria is endemic in three countries: Belize, Guyana, and Suriname. Since 1970 the malaria situation has considerably worsened. Belize reported 33 cases in 1970 and 1,800 in 1980. Guyana reported 18 cases in 1970 and estimated the number of cases in 1980 at 2,800. Suriname reported 1,019 cases in 1970 and 4,000 were expected in 1980. In the other countries malaria was eliminated in the 1960s. The cases reported in the following decade were imported from other countries. Of the 31 cases reported in 1979, 14 were in the Bahamas and most of them were imported from Haiti. Of the 14 cases reported in 1980, eight were in the Cayman Islands and most were workers from Guatemala and Honduras.

Cases of *schistosomiasis* have been reported by Antigua, Guadeloupe, Montserrat, Martinique, Puerto Rico, Saint Lucia, and Suriname. No quantitative information is available for most of these countries.

Dengue. In the 1977-1978 period there was a large-scale epidemic of dengue type 1 in the Caribbean; it began in Jamaica in March 1977 and rapidly spread to the other countries in which *Aedes aegypti* is an habitual vector.

- *Sexually transmitted diseases*

In 1979, 14 Caribbean countries reported 7,010 cases of gonococcal infections and 1,608 of syphilis. The number of cases reported by each country depends on the type of program and the intensity of active case-detection.

Guyana, Jamaica, and Suriname do not have any information on these diseases.

- *Gastrointestinal diseases*

The definition of *gastroenteritis* used for reporting varies from country to country and therefore the data must be interpreted with caution. The annual totals do not show marked weekly or seasonal variations.

The reporting of *hepatitis* is deficient and underregistration is considerable; in addition, no distinction is made between hepatitis A and B because the necessary laboratory facilities are not available.

Typhoid fever is present throughout the Caribbean. During the last five years CAREC has helped to investigate 10 epidemic outbreaks of the disease in six countries.

Principal Conclusions

The lack of reliable information makes it very difficult to plan health programs. Therefore, improvement of the collection and analysis of mortality data, including the establishment of histopathological services, must be emphasized.

Morbidity data also need to be improved through the strengthening of laboratories and improvement of reporting coverage. Of special importance is the improvement of the definition of cases for reporting such diseases as gastroenteritis, diphtheria, and the like, as well as the application of the concept of "negative reporting" (in order to ensure that the non-occurrence of cases is not construed to mean "data not available").

The data presented in this study point to a change in the non-infectious/infectious disease ratio. Nevertheless, infectious diseases continue to be a cause of high mortality, especially in children under five years of age and in the aged. Measles morbidity in children is still very high and a much more active vaccination against the disease is needed.

The danger of the spread of epidemics, especially those caused by arboviruses, such as dengue and yellow fever, calls for constant vigilance. Therefore, there is a continuing need for good virological diagnostic facilities.

Although malaria is endemic only in Belize, Guyana, and Suriname, the situation is serious since in the past two years the number of cases has risen sharply. At the same time there has been a continuous increase in the number of "imported" cases, which exposes the region to a considerable risk of the reintroduction of the disease.

Accidents, which have gradually increased in all the countries and especially affect the population 1-44 years of age, call for resolute efforts by the governments for their prevention and control.

The importance of hypertension control in preventing cerebrovascular accidents is obvious, as is the need to provide diabetes mellitus patients with medical services.

This should be assigned high priority and calls for a new methodology at the primary health care level.

Because of lack of data, it was not possible in this study to analyze a number of important aspects, such as food poisonings and occupational health, both of which are of regional interest.

(Source: Review of Mortality and Morbidity in the English-speaking Caribbean. Prepared for discussion at the Seventh Meeting of the CAREC Scientific Advisory Committee, 16-20 March 1981.)

Diseases Subject to the International Health Regulations

Cholera, yellow fever and plague cases and deaths reported in the Region of the Americas up to 1 June 1981

Country and administrative subdivision	Cholera cases	Yellow fever		Plague cases
		Cases	Deaths	
BOLIVIA	—	86	17	4
Beni	—	3	2	—
Cochabamba	—	5	4	—
Chuquisaca	—	2	1	—
La Paz	—	6	3	4
Santa Cruz	—	70	7	—
BRAZIL	—	3	3	3
Ceará	—	—	—	3
Mato Grosso	—	3	3	—
PERU	—	4	2	7
Cuzco	—	2	—	—
Madre de Dios	—	1	1	—
Piura	—	—	—	7
San Martín	—	1	1	—
UNITED STATES	—	—	—	3
Arizona	—	—	—	1
New Mexico	—	—	—	2

—None.

Status of Plague in the Americas, 1970-1980

Sporadic cases of plague and numerous small outbreaks attest to the persistence of the disease in the Americas. Wild rodent foci of plague in northeastern Brazil, the Andean region, and the western part of the United States continue to produce occasional cases. The conditions with regard to the potential for human disease in active foci vary widely and are not well understood.

At present, there has been a gradual decline in both the number of cases and extent of infected areas in the Americas. Figures 1 to 5 indicate an apparently decreasing geographic distribution of plague in the persistent foci of Bolivia, Brazil, Ecuador, Peru, and the United States, the only countries of the Region reporting human cases since 1963. The number of plague cases reported by

these five countries since 1970 is listed in Table 1. It should be noted that the majority of these reported cases are without laboratory confirmation.

Plague is essentially a disease of rodents and other small mammals, and the reservoirs of the infection include many genera of wild rodents infested with their specific species of fleas. Although a variety of animals and their fleas have been incriminated as playing a role in the maintenance and transmission of plague in those areas, their detailed interrelationships await further investigation.

The epidemiology of plague in the Andean region is particularly unique because outbreaks have occurred in places where domestic rodents are strikingly absent and very few wild rodents have been observed. The great abundance of human fleas (*Pulex irritans*) together with the occurrence of human cases in areas where domestic and wild rodents and their fleas are scarce, highly suggest interhuman transmission. Although this epidemiological hypothesis is well documented, confirmation is awaiting further investigation.

Plague is a disease subject to special provisions of the International Health Regulations of WHO and is one of the internationally reportable diseases. Today, however,

plague is of little importance in international travel because of the sylvan nature of the current persistent foci. Nevertheless, one must be constantly aware of the potential danger of plague being introduced into domestic rodent populations in large urban centers. This risk is greatly increased in endemic areas under conditions of natural disaster or large population movements.

Because of this potential threat, the Pan American Health Organization is encouraging constant surveillance of plague in endemic areas of the Region and is supporting activities designed to improve and simplify surveillance and control measures. Training activities in laboratory diagnosis are periodically sponsored by PAHO in an effort not only to introduce new rapid techniques but also to support research and provide the epidemiological information mandatory for prompt implementation of control activities.

Ongoing training in the ecology and identification of mammal and flea species is an essential component of research and is also important in delineating effective control measures.

The Ministry of Health in Peru has recently introduced an unique surveillance technique in endemic areas of the country in an attempt to identify plague in animals

Figure 1. Plague occurrence in Bolivia, 1968-1973 and 1973-1981.

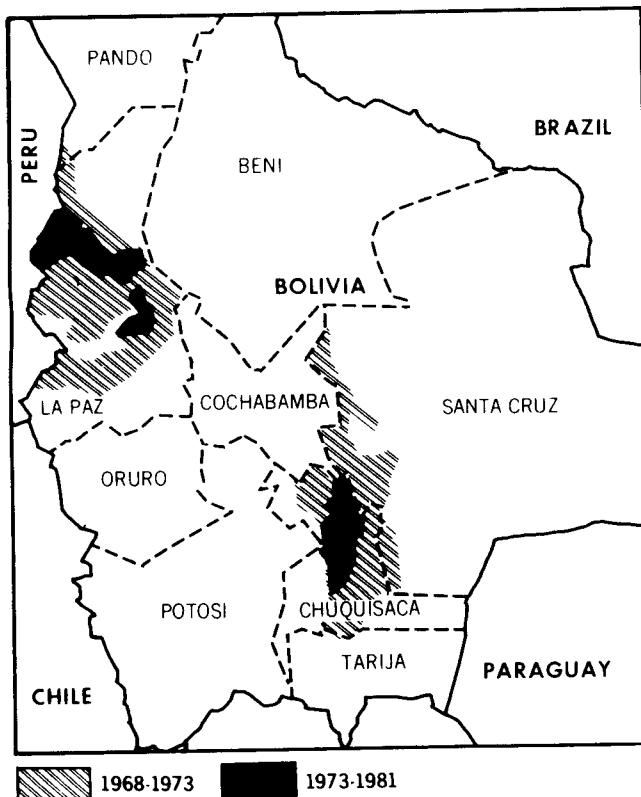


Figure 2. Plague occurrence in Brazil, 1968-1973 and 1973-1981.

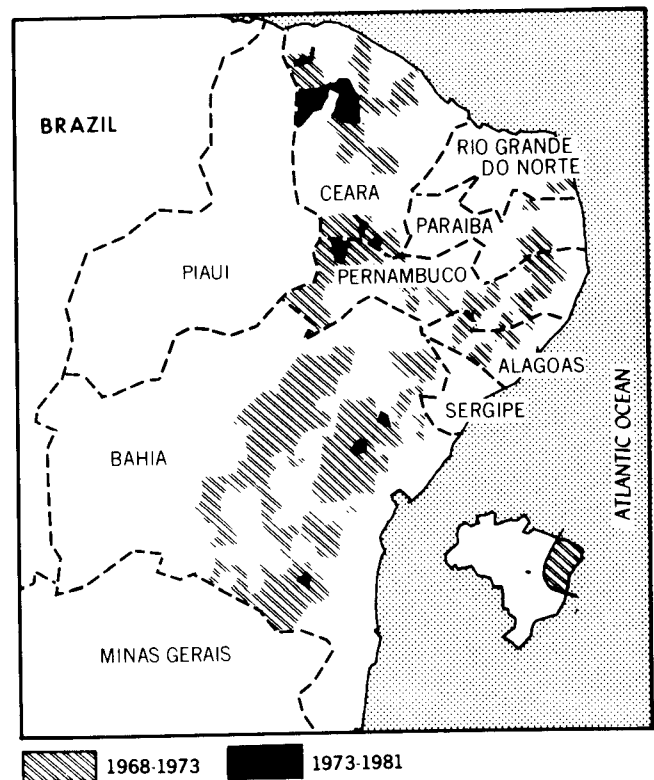
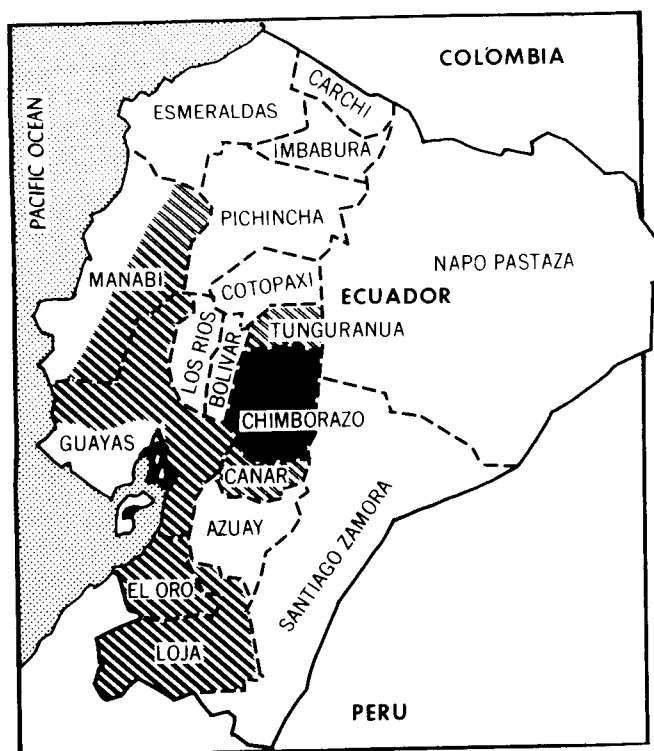


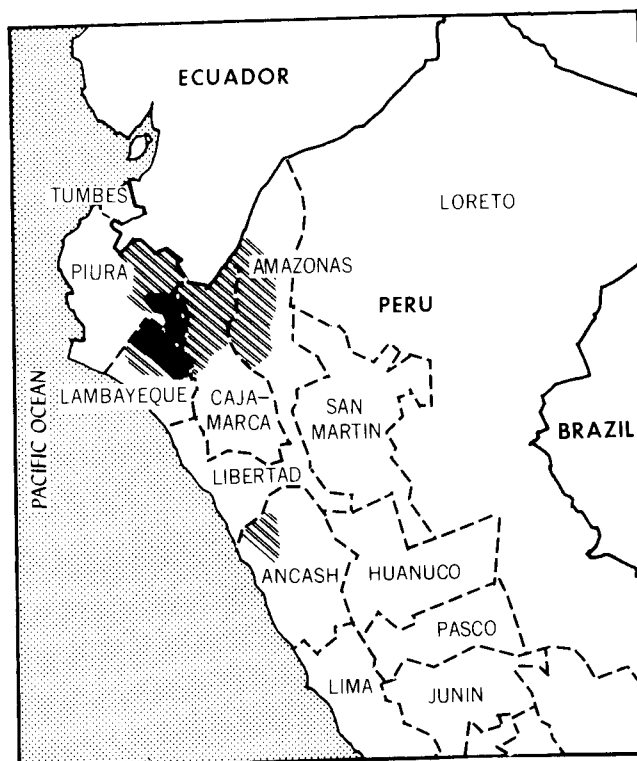
Figure 3. Plague occurrence in Ecuador, 1968-1973 and 1973-1981.



1968-1973 1973-1981

No cases have been reported since 1976.

Figure 4. Plague occurrence in Peru, 1968-1973 and 1973-1981.



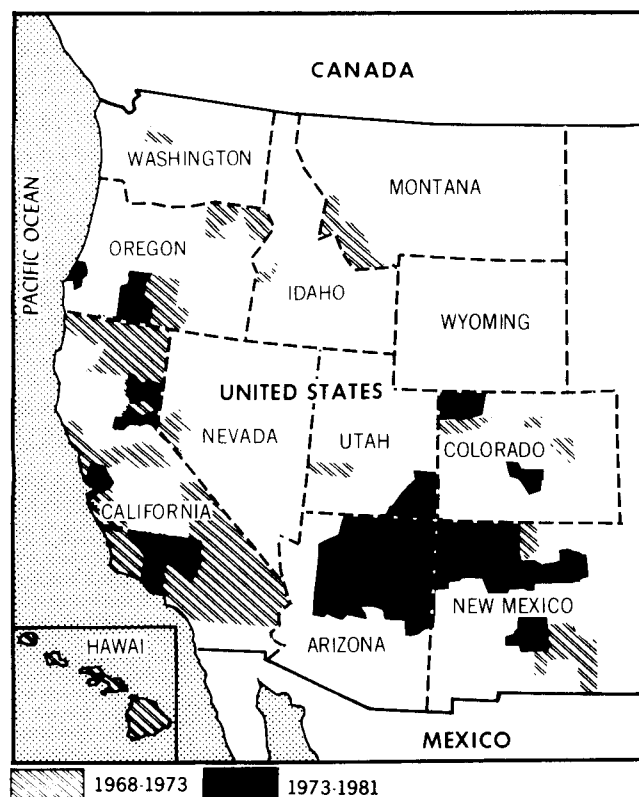
1968-1973 1973-1981

No cases have been reported since 1978.

Table 1. Cases of plague in the Americas, 1970-1980.

Country	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Bolivia	54	19	0	0	14	2	24	29	68	11	26
Brazil	101	146	169	152	291	496	97	1	0	0	98
Ecuador	30	27	9	1	0	0	8	0	0	0	0
Peru	128	22	118	30	8	3	1	0	6	0	0
United States of America	13	2	1	2	8	20	16	18	12	13	18
Total	326	216	297	185	321	521	146	48	86	24	142

Figure 5. Plague occurrence in the United States of America, 1968-1973 and 1973-1981.



before human cases become evident. This predictive surveillance is based on the premise that free-ranging domestic dogs ingest sick or dying plague infected mammals, developing a non-clinical infection which produces a demonstrable antibody response to the plague organism. Therefore, by periodically collecting blood from dogs in infected areas and assaying their plague antibody levels, one may be able to determine if the area is plague endemic and if there is an epizootic occurring among the small mammals. In other words, this surveillance system may predict increasing animal plague activity and may also be useful in assessing the effectiveness of control procedures when they have been implemented.

The very remote areas in which sylvan plague occurs in the Americas have prevented the detailed ecological research necessary to describe the natural history of the disease in these areas. Nevertheless, the constant strengthening of national laboratory and epidemiological capabilities will gradually pave the way for a better understanding of plague ecology in these relatively unknown areas, which in turn will provide for the development of more effective control measures.

(Source: Communicable Disease Program,
Division of Disease Prevention and Control,
PAHO.)

Patterns of Drinking in Five Latin American Cities

In 1975, a large-scale household survey of drinking patterns was carried out in five Latin American cities by the PAHO with a grant from the U.S. National Institute of Alcohol Abuse and Alcoholism. The survey was modeled after similar studies conducted by D. Cahalan, I. H. Cisin, and H. M. Crossley¹ in the United States, and focused on drinking patterns rather than the prevalence of "alcoholism" per se. Heavy drinking was defined in the PAHO study using a quantity-frequency-variability index which classified a person as a heavy drinker if he or she got drunk and/or drank 10+ drinks per occasion at least once a month and/or 5+ drinks per occasion at

least twice a month. In effect, the classification of drinkers was somewhat more conservative in the PAHO study than in the research by Cahalan et al. Heavy drinking in Bogotá, Caracas, Santo Domingo, and San José (Costa Rica) tends to be characterized by the consumption of beer and/or distilled alcohol in rather large quantities about 1-4 times a month, while in the United States the quantity per occasion is less but the number of drinking sessions per month is greater. Further comparisons with U.S. drinking patterns indicate that Latin Americans are more likely to fall into one of the extremes (abstention or heavy drinking), while North Americans are more likely to drink and to drink moderately.

The investigation revealed that four of the cities studied (Santo Domingo, San José, Caracas, and Bogotá) had a large proportion of heavy drinkers, while in São Paulo drinking was relatively more moderate. The rate of heavy

¹*American Drinking Practices. A National Study of Drinking Behaviour and Attitudes.* Monograph of the Rutgers Center of Alcohol Studies, No. 6. College and University Press, New Jersey, 1969.

drinking among males aged 15 to 64 runs as high as 39 per cent in Bogotá, with the highest proportion of heavy drinking occurring in the 30-39-year old group. Further, between 35-47 per cent of men in Bogotá, Caracas, Santo Domingo, and San José reported having drinking-related problems, particularly problems with interpersonal relationships (family or friends) and with the expenses involved. Only 6-7 per cent of the women reported such problems. In general, men drink about three times as much as women and are far more likely to be heavy drinkers experiencing social, medical, or economic problems related to their drinking.

The study pointed out that there is a major need for treatment and prevention programs oriented toward male problem drinkers. Since the majority are employed and in the most productive period of their working life, programs operated in the workplace may be most effective.

Although a number of variables were examined for their relationship to drinking patterns (i.e., age, socio-economic status, migration, employment, education, attitudes, etc.), the only strong and consistent relationship with heavy and/or problem drinking was found with a

variable which measured the degree to which alcohol is present in one's environment. That is, heavy drinking was more prevalent among persons who reported having heavy drinking friends and/or persons who use alcohol on most social occasions. This finding is consistent with the results of several other studies which found that the degree of overall availability of alcohol in a society seems to have an independent effect on consumption.

In general, then, as has been suggested in recent WHO reports, preventive efforts might well be most effective when aimed at reducing overall availability of alcohol in the population. While legislative action would seem indicated, it should be remembered that this must be accompanied by educational and promotional programs aimed at changing social drinking habits and attitudes over the long term.

A monograph based on this study is scheduled for publication and release in late 1981.

(Source: Mental Health Program, Alcohol and Drug Abuse, Non-Communicable Diseases, Division of Disease Prevention and Control, PAHO.)

Hospital Infections

Hospital-acquired infections¹ are at present one of the leading causes of complications in hospitalized patients and account for a substantial increase in their mortality (in many cases they are the direct cause of the patient's death and therefore the responsibility of the institution) and in the cost of hospital care and are an additional health hazard for the community.

Although some success has been achieved in controlling hospital infections, the advances made in biomedical technology and therapeutics are producing a large number of very susceptible patients, which is aggravated by the appearance of certain pathogenic organisms with resistance to antibiotics.

¹A hospital-acquired infection may be defined as "any clinically recognizable microbiological disease that affects the patient as a consequence of his being admitted to hospital or attending for treatment, or the hospital staff as a consequence of their work, whether or not the symptoms of the disease appear while the affected person is in hospital." WHO, European Series No. 4, 1978.

Recent studies in Latin America² show that infection rates range between 5 and 70 per cent. The major impact is on human health and is shown by a high case-specific mortality rate, especially in the child population. In addition, the effects on the cost of hospital care are enormous.

According to recent data from Latin America, annual hospital care costs for infectious cases were approximately US\$196 million, on the basis of an acquired-infection rate of 10 per cent of annual discharges, an average hospital stay of 10 days, and costs of approximately US\$20 per day/bed. At present it is estimated that this figure has tripled.

In the United States, 70 hospitals in 31 states (that participated in a National Nosocomial Infections Study)

²Pan American Health Organization. Multi-disciplinary Group on the Control of Hospital Infections in Latin America and the Caribbean. *Bol Ofic Sanit Panamer*, Vol. LXXXVIII, No. 6, June 1980.

reported in 1977 that, of the 1,281,099 patients hospitalized and discharged in that year, 43,774 acquired infections in hospital.³

The importance of this problem has led the national authorities of the countries of the Americas to undertake studies on programs for the control of hospital-acquired infections. In the United States, the Centers for Disease Control (CDC) initiated a study on the efficacy of nosocomial infections control (SENIC project) in 1974.⁴ The three principal purposes of this project are: (1) to determine whether the execution of programs for the surveillance and control of hospital infections has reduced the rate of those infections; (2) to describe the present status of those programs and hospital infection rates; and (3) to demonstrate the relationship between the characteristics of the patients and the hospitals participating in the program as well as the changes in hospital infection rates. Data have already been collected from a representative sample of hospitals in the country and are being analyzed in order to devise the most effective strategies for controlling hospital infections and determining the aspects that require further research.

In September 1979 a multidisciplinary group met in Guatemala City to prepare a report reflecting the ideas, needs, and problems connected with the establishment of a hospital infections control program in Latin America and the Caribbean and to formulate pertinent recommendations.

The group identified a number of general and specific problems that hinder the conduct of such programs. Because of unsatisfactory integration of the health services with the community, lack of resources and limited staff training are the fundamental constraints on the detection, prevention, and control of hospital infections. This lack of familiarization with and training in programs for the control of these infections exists at all levels and, together with the lack of personnel, is the principal obstacle to the solution of the problem.

In the field of education, there is no clear concept of what constitutes a hospital infections control committee. The principal shortcomings are in basic aseptic procedures, use of antimicrobial and antiseptic agents, epidemiological surveillance, microbiological techniques, medical records, technical standards and procedures for patient care and treatment, sterilization, health personnel, quality control of supplies, and basic hospital sanitation.

The lack of inter- and intra-sectoral communication and coordination that characterizes some health systems also affects the efficiency of the programs.

There was general agreement in the working group that the training of personnel in epidemiology and in intra-hospital infections is very deficient. It emphasized the need for each country to prepare education plans geared to its particular hospital infection problems. So far, this type of training has not been incorporated into the general curriculum of the health team in most of the Latin American countries.

The working group was of the opinion that a proper program for the control of intra-hospital infections should include the following essential components:

- Infections control committee.
- Epidemiological surveillance system.
- Methods of isolating patients with communicable diseases.
- Health programs for employees.
- Efficient microbiological services.
- Educational programs and personnel training.
- Methods of environmental surveillance (cleanliness, vector control, etc.).
- Coordination with the community.

The group stated that the control of intra-hospital infections is a priority task in the health plans of the countries of the Americas and recommended that the governments adopt the following measures:

1. Consider the control of hospital infections a strategically valid tool for the proper administration and organization of hospitals.
2. Assign importance to a program for the control of these infections at all levels of medical care.
3. Integrate these activities into health programs.
4. Promote the preparation, application, and supervision of national hospital standards.
5. Include in the budgets funds for basic multidisciplinary training in hospital infections control, at all levels.
6. Establish mechanisms for selecting human and material resources for surveillance and appoint and train personnel and provide them with the necessary instruments for carrying out these activities.
7. Convince the hospital authorities of the advantages of a personnel health program and present estimates of the savings entailed by early diagnosis and treatment.
8. Establish, whenever there are no microbiological laboratory services, mechanisms for providing this service in reference centers.
9. Promote the development and application of health care standards for hospitalized patients appropriate to each country.

³Centers for Disease Control. National Nosocomial Infections Study Report, 1977 (6-month summaries), 1979.

⁴Haley, R. W., D. Chuade, H. E. Freeman, and J. V. Bennett. The S.E.N.I.C. project. Study on the efficacy of nosocomial infection control (S.E.N.I.C. project). Summary of study design. *Amer J Epidemiol* 111 (5):472-85, 1980.

(Source: Communicable Diseases Program,
Division of Disease Prevention and Control,
PAHO.)

Bibliography

In view of the many requests from persons and institutions in the countries of the Region interested in the problem of hospital infections, a selection of the most recent publications on this subject is presented below:

- Ayliffe, G. A., J. R. Bab, L. Taylor and R. Wise. A unit for source and protective isolation in a general hospital. *Brit Med J* 2(6188):461-465, 1979.
- Brachman, P. S. *et al.* Nosocomial surgical infections: incidence and cost. *Surg Clin Month Am* 60(1):15-25, 1980.
- Cooke, E. M., J. C. Brayson, A. S. Edmondson and D. Hall. An investigation into the incidence and sources of Klebsiella infections. *J Hyg (Lond)* 82(3):473-480, 1979.
- Feldman, L., M. Lanson, F. Gallelli and J. E. Bennet. Surveillance of nosocomial infections by antibiotic monitoring. *JAMA* 241(26):2806-2807, 1979.
- Flournoy, D. J., H. G. Muchmore and E. B. Francis. Nosocomial infection linked to handwashing. *Hospitals* 53(15):105-107, 1979.
- Gross, P. A., H. C. New, P. Aswapokee, C. Van Antwerpen and N. Aswapokee. Deaths from nosocomial infections: experience in a university hospital and a community hospital. *Amer J Med* 68(2):219-223, 1980.
- Haley, R. W. *et al.* The accuracy of retrospective chart review in measuring nosocomial infection rates. Results of validation studies in pilot hospitals. *Amer J Epidemiol* 111(5):516-533, 1980.
- Haley, R. W. and R. H. Shachtman. The emergence of infection surveillance and control programs in US hospitals: an assessment, 1976. *Amer J Epidemiol* 111(5):574-591, 1980.
- Hooton, T. M., R. W. Haley and D. H. Culver. A method for classifying patients according to the nosocomial infection risks associated with diagnosis and surgical procedures. *Amer J Epidemiol* 111(5):556-573, 1980.
- Iffy, L. *et al.* Control of perinatal infection by traditional preventive measures. *Obstet Gynecol* 54(4):403-411, 1979.
- Kelly, J., J. Roberts and P. W. Harvey. A simple data processing system for the monitoring of cross-infection in a district general hospital. *Med Inf (Lond)* 4(1):29-34, 1979.
- Levitem, D. L. and S. T. Shulman. Multiple nosocomial infections: a risk of modern intensive care. *Clin Pediat (Phila)* 19(3):206-209, 1980.
- Pan American Health Organization. *Técnicas de aislamiento para uso en hospitales*. Scientific Publication 377, Washington, D.C., 1979.
- Ransjo, V. Attempts to control clothes-borne infection in a burn unit. Clothing routines in clinical use and the epidemiology of crosscolonization. *J Hyg (Lond)* 82(3):369-384, 1979.
- Smith, D. H. Epidemics of infectious diseases in newborn nurseries. *Clin Obstet Gynecol* 22(2):409-423, 1979.
- Wenzel, R. P. *et al.* Development of a statewide program for surveillance and reporting of hospital-acquired infections. *J Infect Dis* 140(5):741-746, 1979.
- World Health Organization. *Hospital-Acquired Infections: Guidelines to Laboratory Methods*. WHO Regional Publications, European Series No. 4. Copenhagen, 1978.

Reports on Meetings and Seminars

Conference on cervical cancer screening: the Pap smear

In September 1977 the United States National Institutes of Health (NIH) initiated a consensus development conference program on different technologies used in the biomedical field. These conferences consist of open-ended discussions on the usefulness, applicability, effectiveness, advantages, and disadvantages of new techniques or techniques already in use in medicine and public health. The results of these discussions are transmitted to the medical community and to the public in general for the updating and orientation of the users.

In July 1980 one of these conferences was held on the subject of cervical cancer screening: the Pap smear.

The discussions were based on the accepted definition that screening procedures apply to healthy female populations and not to women identified as patients undergoing gynecological treatment.

The members of the conference panel included epidemiologists, pathologists, obstetricians-gynecologists, prac-

ticing physicians, health scientists, a social worker, a lawyer, and consumer representatives.

As a framework for developing recommendations the panel agreed on the following operational definitions:

- A Pap smear, developed by Dr. George N. Papanicolaou more than 50 years ago, is a cellular specimen removed from the lower female genital tract that is used in routine screening for cancer. The Pap smear for detection of cervical cancer should include samples of cells from the ectocervix, transformation zone, and endocervical canal.

- In the United States, most Pap smears are obtained as part of a medical examination by a woman's physician or in the context of a health maintenance program. A cervical cancer screening program refers to the testing of large numbers of women who manifest no symptoms of pathological changes of the female genital tract, in order to classify them as likely or unlikely to have cervical cancer or its precursors.

In 1980 the incidence estimate of invasive cervical cancer in the United States was 16,000 and the estimate of carcinoma in situ (pre-invasive cancer) was 45,000. The latest estimate of mortality in 1980 was 7,400.

Three characteristics of a disease have been cited as requirements for making it suitable for screening. First, the disease should have serious consequences. Second, the disease must have a treatment which, when applied to the screen-detected stage of the disease, is more effective than when applied after symptoms have led to a diagnosis. Third, the detectable preclinical phase of the disease should have a high prevalence; otherwise, too few cases would be detected to justify the expense of a screening program.

Cancer of the cervix was considered by this conference in the context of these criteria. The scientific aspects dealt with by the conference and the conclusions reached are set forth below.

1. Does screening with a Pap smear affect the mortality from cervical cancer?

Evidence suggests that there is a falling incidence of invasive squamous-cell carcinoma and a decreasing mortality from cervical carcinoma. At the same time carcinoma in situ is being detected with increased frequency. These trends have been noted in association with increased screening for cervical carcinoma and are probably related to early histological diagnosis of cervical neoplasia in verification of the results of cytological screening.

2. Is the Pap smear safe as a screening procedure?

There are no known adverse effects that have been ascribed to the screening technique. However, if the Pap smear is incorrectly evaluated by the laboratory, or is incorrectly responded to by the clinician, overinterpretation may result in unnecessary procedures and in possible complications.¹

3. On the assumption that screening is beneficial:

(a) Should the Pap smear be used as a routine screening procedure?

The panel agreed that the Pap smear should be used as a routine screening procedure for cervical cancer.

(b) If so,

- At what age is screening no longer rewarding?
- What is the optimal screening frequency at different ages?
- Should the recommendations made in response to the questions above be modified for certain high or low-risk groups?

¹Surgical conization for elucidation of minor changes in Pap smear cytology can occasionally result in severe hemorrhage or in incompetent or obstructed cervix.

If so, what are the groups and what are the modifications?

For many years it has been the policy of health care providers in the United States to recommend annual Pap smear screening for women over age 18. It should be recognized that this policy has not been based on the results of well-designed experimental studies, because there have been no rigorous randomized trials of the impact of Pap smear screening on mortality. However, this policy has contributed to a reduction in the ill-effects and mortality due to invasive cervical carcinoma. The panel carefully reviewed the data presented at the conference to determine whether changes in this general screening policy should be suggested. On the basis of available scientific data and judgment, the panel made the following recommendations for screening asymptomatic females:

(a) Virgins need not be screened for cervical cancer,²

(b) All females who have had sexual intercourse should be screened for cervical cancer.

- Screening should be initiated soon after the beginning of sexual activity.
- If the first smear is satisfactory and does not indicate evidence suggestive of neoplasia, the smear should be repeated in one year.
- If the second smear is also satisfactory and negative, rescreening of a majority of healthy females should be repeated at regular intervals of one to three years. The decision on precisely how often to rescreen them should be made jointly by the women and their medical care providers. The panel did not agree on precisely how frequently these examinations should be repeated for healthy females of different ages. For healthy females with different assessed risks of developing cervical cancer, it was felt that, in general, the level of risk should not determine the frequency of screening.³ The level of risk referred to is determined by four factors, three of which are consistently identified with higher than average likelihood of developing cervical

²There are some notable exceptions such as females exposed to DES in utero who may later develop adenocarcinoma of the cervix and vagina.

³The assessed risk of a healthy female getting cervical cancer in the future should play a part in decisions about the frequency or repeated screening only when that assessed risk is either extremely high or extremely low. Any healthy female whose risk level is assessed as being at or below the level found in the general female population is considered to have a low risk. Any healthy female whose risk level is assessed as being five times higher than the risk level found in the general population would be considered to have an extremely high risk level, but application exclusively of the factors determining high risk mentioned in the text has so far not revealed any groups of healthy women with a risk level that high. However, the level of risk should be the criterion used in identifying groups of women for whom intensive and complete recruitment into screening programs is critical.

cancer in situ and the fourth of which is consistently identified with almost complete absence of risk of developing invasive squamous-cell cervical cancer. The factors determining high risk are: first intercourse before 18 years of age; a variety of sex partners; and low socioeconomic status. The factor determining low risk is life-long abstinence from sexual intercourse ("virgin" status).

- If two negative Pap smears are obtained after the woman reaches age 60, further screening for the detection of cervical cancer appears to be unrewarding. No assessment was made by the panel of its usefulness in the detection of vaginal, endometrial, or ovarian cancer.
- A female whose Pap smear reveals significant epithelial abnormality should be referred for diagnostic evaluation as described in the answer to question 5.
- Unscreened females at risk should be recruited into the screening programs. Recruitment could be aimed at points of contact with medical care, such as neighborhood clinics, emergency rooms, venereal disease clinics, sites of immigration examinations, jails, hospitals, and all physicians' offices. Evidence suggests that education regarding cervical cancer high-risk factors would increase the use of screening.

4. What critical factors are needed to ensure that the procedure is reliable?

Key factors affecting reliability include a proper clinical sample, high-quality laboratory evaluation, and proper communication between the cytopathologist and the clinician.

The quality of a laboratory's cytopathological technique is of prime importance to any screening program, but high quality is difficult and expensive to attain and to maintain.

The key factors in assuring consistently good cytopathological practice are the qualifications and continuing education of the personnel as well as the quality assurance program of the laboratory.

The standards of the American Society of Cytology (currently a maximum work load per cytopathologist of 12,000 cases per annum for screening) and those recommended in the Canadian Walton report (currently, three cytopathologists per 25,000 cases per annum for screening quality assurance, supervision, etc.) are recommended.

Accurate and complete reporting between the cytology laboratory and the clinician is of basic importance in proper Pap screening. Poor wording of the report and the use of laboratories at great distances from the clinician can impair proper communication. Use of numerical

classification (i.e., Pap I-V) in place of diagnostic terminology is discouraged and should be abandoned in favor of acceptable, standard, clearly understood medical disease nomenclature. In this way the biological significance and recommendations for diagnostic workup and handling are reported completely and clearly to the clinician so that the severity of the changes is understood and the clinician has clear guidance for appropriate action.

5. Following a screening what are the responsibilities for followup, confirmation of findings, and initiation of treatment?

The panel recommends that, whenever a clinician receives a Pap smear report suggestive of cervical neoplasia (dysplasia or cellular anomalies; carcinoma in situ; invasive cancer), the patient in question should undergo thorough diagnostic evaluation. It is the responsibility of the physician to notify the patient of the abnormal result. The objective of the diagnostic investigation is to use the simplest procedure to ensure an accurate diagnosis. Ideally, diagnostic evaluation should include colposcopic examination and biopsies of representative areas of the cervix, usually including an endocervical curettage. Diagnostic conization of the cervix may also be required if the location of the lesion makes colposcopy unsatisfactory, if the diagnosis from an endocervical curettage so indicates, or if the cytological findings conflict.

Treatment of neoplastic lesions must be individualized. In certain cases noninvasive lesions may be treated in outpatient facilities.

On the other hand, invasive cervical carcinoma requires the use of hospital facilities in addition to referral to or consultation with a physician with expertise in gynecological oncology. The status of the woman who has been treated for cervical neoplasia should be closely followed.

Further investigations. The crucial unanswered question is whether carcinoma in situ develops and progresses at different rates in women with different assessed levels of risk. The panel therefore recommends research on the rate of progression of pre-symptomatic disease in high-risk women. The panel also recommends that studies be undertaken to monitor the impact of changes in the Pap smear screening interval on the incidence and mortality rates of cervical carcinoma. Finally, it recommends that a task force be convened within five years to assess all relevant scientific data that may have accumulated since July 1980.

(Source: *Cervical Cancer Screening: The PAP Smear*. United States National Institutes of Health Consensus Development Conference, Summary, Vol. 3, No. 4, 1980.)

Editorial Comment

According to the statistics of medical institutions in Latin America the most frequent malignant tumor in that region is cervical cancer.

With the introduction of Pap smear screening more than 50 years ago, a clear regression in the incidence of invasive cervical cancer was noted, in particular in the countries of North America, as was a corresponding decrease in mortality from those tumors. Concurrently there was an increase in the diagnosis of dysplasias and of cancer in situ.

This change over time is closely linked to the introduction and extensive use of exfoliative cytology. It is also clear that other socioeconomic factors and factors connected with hygiene and education are involved in the general picture.

A study made in British Columbia⁴ showed that between 1955 and 1974 the incidence of and mortality due to cervical cancer decreased by 70 and 60 per cent respectively as the result of the cancer control program based on the use of exfoliative cytology.

Recently the Puerto Rican Central Cancer Registry published⁵ statistics that show an increase in carcinoma in situ and a decrease in invasive cancer. This phenomenon is also connected with the conduct of a mass screening program in which the Pap smear is used.

In many Latin American countries information on programs and campaigns for the detection of cervical cancer organized in accordance with different models and schemes is available. Some of these activities were shortlived, others encountered financial problems or difficulties in dealing with the growing demand for medical services generated by those programs or campaigns.

A lack of adequate planning, deficient integration of those programs with the health systems of the countries, the non-existence or lack of qualified manpower for meeting the demand, an insufficient hospital care network, and the excessive workload in specialized institutions are factors that limit the extension of the coverage of services for the control of cervical cancer.

The ideas put forth and the positions taken at the NIH conference on aspects of cervical cancer that are so far controversial make this a very valuable document. Therefore, its dissemination among the persons in charge of cancer detection and prevention programs in Latin America is considered extremely valuable.

⁴Boyes, D. A., M. T. Nichols, A. M. Millner, and A. J. Worth. Recent results from the British Columbia screening program for cervical cancer. *Amer J Obstet Gynecol* 128 (6):692-693, 1977.

⁵Cancer Control Program, Puerto Rican Health Department. *Cancer in Puerto Rico, 1978*. Puerto Rico, 1980.

Conference on Onchocerciasis Research and Control

The conference was held in Guatemala City between 12 and 16 January 1981 and was attended by scientists from various countries. They were organized as three working groups in order to review different aspects of the onchocerciasis problem.

The first group dealt with the transmission dynamics and epidemiology of the disease. Members of the group agreed that the basic technical and scientific data was now available for initiating an onchocerciasis program based on vector control and possibly on chemotherapy to reduce transmission. The program's aim would be to control the vector to a point at which transmission could be interrupted and the parasite eliminated. The first stage in such a strategy would be an epidemiological survey to determine the extent of the areas infected and the preparation of maps indicating the sites where infection was occurring and ocular diseases were present. Various methods of evaluating the transmission of the disease were examined together with the role of chemotherapy in the reduction of transmission.

The second group considered parasitology, immunology, and clinical studies on onchocerciasis. It was recommended that priority be given to prevalence surveys based on skin biopsies, using standard methods and procedures to determine the density of microfilariae. There was general agreement on the need to encourage centers to undertake research into the physiology and biochemistry of *Onchocerca volvulus* in order to intensify work that could help to clarify immunology and identify compounds that could be tested in chemotherapy.

In addition, it was recommended that campaigns to eliminate the onchocercoma be continued, that studies be made on dosage and treatment intervals with diethylcarbamazine, that new drugs and compounds be investigated to determine whether they could be used in the treatment of onchocerciasis, and that support be given to studies that might lead to the preparation of a vaccine.

The third working group dealt with the entomology and control of vectors. The discussions on entomology centered around systems and taxonomy, especially that of anthropophilic species; studies to determine the minimum vector density required to maintain transmission, standard methods of measuring larval and adult populations of the blackfly; the flight range of *Simulium ochraceum*, its longevity and possible seasonal variations; rate of larval development in water of various temperatures; geographic distribution of the vector; and the preparation of maps to indicate breeding sites.

As for vector control, it was recommended that the parasite density in the human population be reduced below the level which could give rise to the principal form of the disease. It was suggested that a pilot area should be selected to test an intensive form of treatment during

the dry season, when transmission is greater. Other approaches considered were environmental, biomedical, genetic, and chemical control and land treatment with insecticides.

The conference adopted the following general recommendations:

1. Bearing in mind that the existence of endemic foci of onchocerciasis has been confirmed in Ecuador (larger than those in Colombia and Brazil), it is recommended that international agencies provide the health authorities in that country with the technical and economic assis-

tance necessary to implement an effective control program.

2. In order to standardize technical criteria for the integrated control of onchocerciasis, it is recommended that periodic meetings be held in countries affected by the disease.

3. It is recommended that onchocerciasis control activities include socioeconomic measures, including the identification of the migratory patterns of coffee plantation workers representing, as these do, a risk of propagation of the disease.

Amendment to the International Health Regulations (1969)

The Thirty-fourth World Health Assembly, having taken into account the declaration of global eradication of smallpox, and considering that it is therefore no longer necessary for it to appear among the diseases subject to the International Health Regulations (1969), decided on 20 May 1981 to eliminate the pertinent provisions from the Regulations and to include smallpox among the diseases under international surveillance.

The text of the resolution adopted by the Assembly will be included in the next issue of the *Epidemiological Bulletin*.

Courses in Tuberculosis Epidemiology and Control, 1981

Country, institution and postal address	Duration	Course content
ARGENTINA National Tuberculosis Institute P.O. Box 106, Sante Fe	6 weeks (September–October)	Emphasizes epidemiological and research aspects and includes field trips to provincial programs
BRAZIL National Public Health Neumology Program Ministry of Health Esplanada dos Ministerios Brasília, D.F.	5 weeks (second semester)	Uses self-teaching methods, emphasizes programming of activities by health unit
CHILE National Institute of Respiratory Diseases and Chest Surgery P.O. Box 9639 Santiago	4 weeks (1–31 October)	Includes a short clinical course and seminar on the evaluation of the national program, emphasizes programming, includes such subjects as clinical training, epidemiology and control of acute respiratory diseases
CUBA Tuberculosis Program Ministry of Public Health P.O. Box 9082 Zone 9 Havana	5 weeks (5 October–7 November)	Emphasizes service organization and includes a seminar on the evaluation of the national program
MEXICO General Directorate for the Control of Tuberculosis and Respiratory Diseases Leibnitz No. 32, 5th floor Mexico, 5, D.F.	4 weeks (second semester)	Includes clinical training, epidemiology and control of acute respiratory diseases
CEPANZO Pan American Zoonoses Center P.O. Box 3092 Buenos Aires Argentina	5 weeks (19 October–27 November)	Tuberculosis bacteriology, Regional theoretical and practical course; emphasizes technical and bacteriological aspects.

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