# Epidemiological Bulletin

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## Strengthening National Capability in Epidemiology

There is an acute awareness, in the Region of the Americas as well as throughout the world, of the particular significance of society's current and foreseen evolution. This is undoubtedly a time of change, the pace and extent of which are expected to have major repercussions on the health conditions of the population, related recurrent emerging problems, and resources available to solve them. Attaining the goal of health for all by the year 2000 with equity, effectiveness, and social efficiency and participation will require both a greater understanding of those changes and across-the-board adjustments in the health sector and society as a whole.

One of the primary features that distinguishes the health situation in developing countries from that of developed countries is the pattern of diseases over time. Whereas in industrialized countries the health-disease profile evolved in three stages spanning 100 years and requiring at each stage the introduction of different control measures, in developing countries those stages are tending to occur simultaneously.[1]

The first stage, characterized by infectious diseases associated with poverty, malnutrition, and poor environmental and personal hygiene, gradually changed in response to increases in the availability of food, improved housing, and higher literacy levels, which were associated with greater prosperity. Certain public health measures, particularly increased availability of potable water, sanitation, and vaccination services, contributed significantly to these changes and may account for the continuing decline in infant and child mortality. Advances in science led to numerous innovative diagnostic and therapeutic techniques, which when introduced into infectious disease control programs resulted in increasing life expectancies. Respiratory and gastrointestinal infections were gradually replaced as leading causes of death by degenerative diseases such as heart disease, cerebrovascular accidents, and cancer. In 1900, the three leading causes of death in the United States—influenza and pneumonia, tuberculosis, and gastroenteritis—accounted for more than 30% of all deaths; heart disease, cerebrovascular accidents, and cancer together were responsible for 18% of deaths. By 1975, influenza and pneumonia ranked fifth among causes of death, accounting for 3% of all deaths, the three leading being heart disease, cancer, and cerebrovascular accidents, which together were responsible for more than two-thirds of all deaths (38%, 20%, and 10%, respectively).

The second stage in the evolution of the health-dis-

[1]This topic has been discussed by a number of authors, including J. N. Morris, T. McKeown, and J. Evans.

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ease profile features a predominance of these and other degenerative diseases such as diabetes and mental problems. As the threat of infectious diseases waned, traditional public health measures assumed a normative role and individual health care services became the principal means of preventing and treating health problems. The development of high-cost, complex diagnostic and treatment technology resulted in a transfer of medical care from ambulatory facilities to sophisticated and specialized establishments. Tissue microscopy, biochemical analysis, radiography, computerized tomography, and radioimmune assays are but a few examples of how medical practice became more and more dependent on highly technical and specialized diagnostic procedures that increased the cost of health care. Those techniques were frequently introduced without a proper evaluation of their validity, safety, and efficiency.

The third stage reflects a growing concern with health problems caused by environmental exposure to an ever-larger number of chemical products and other toxic substances on the one hand and, on the other, with changes in the social conditions of families, communities, and the workplace that affect behavior and are linked to high rates of violence, alcohol abuse, and drug addiction. In industrialized countries this third stage is assuming growing importance, and there is an increasing awareness that responsibility for health cannot be the exclusive domain of health professionals: society and the individual must also assume responsibility for applying protective and preventive measures. Health services and systems must adapt to these changes by focusing on health promotion and the application of individual and community measures through effective negotiation and coordination with other sectors.

Whereas it took developed countries more than a century to go through these three stages, developing countries face the challenge of dealing with all three at the same time. Problems characteristic of the first stage still persist among the very poor, who make up the majority of the population; among more affluent persons, especially those living in large urban areas, problems common to the second stage can be observed; those associated with the third stage, resulting from the environmental and social deterioration that accompany massive urban growth and unemployment, are already evident. Consequently, the favorable trends of certain health indicators should be carefully analyzed: since they represent national aggregates, they may disguise huge differences in the health conditions of various subgroups of the population.

Rapid economic development brings in its wake a myriad of health problems, including occupational diseases, traffic accidents, and environmental pollution. Similarly, migration, unemployment, and the breakup of families and communities trigger such problems as alcoholism, violence, and promiscuity, each of which prompts its own physical, mental, and social repercussions. In the rush towards industrial and commercial development, measures to protect workers and the environment are limited and, worse yet, often ignored, given high initial investments and the lack of sound legislation and constant monitoring.

In response to this complex health situation and as part of an effort to extend the coverage of health services to attain the goal of health for all by the year 2000, the countries of the Region have expanded and reorganized their health services systems and in many cases have combined programs and activities to improve their equity, effectiveness, and efficiency—a process which, however, is far from complete. The health sector has to compete with other sectors for extremely scarce financial resources. Access to health services is still limited, and large segments of the population continue to have no access to health care at all.

The organization of services represents a major challenge for the health sector. On the one hand, some of its objectives—e.g., health promotion and primary prevention involving services to the population at large—can only be achieved with the cooperation of other sectors, such as education, water and sanitation, and agricultural services. On the other hand, the delivery of services involves a variety of resources that include a wide range of types of personnel and general and specialized hospitals. Adding to the complexity of this situation is the fact that activities are carried out through vertical and independent disease control programs, each with its support staff and services, community health programs with polyvalent workers, and traditional medicine systems.

It is becoming increasingly evident that the achievements and not just the activities of programs, institutions, and medical care systems need to be assessed. Achievements should be expressed in terms of the health and disease status of the population and this reinforces the notion that the evaluation process does fall within the realm of epidemiology. However, the large number of health agencies, their lack of coordination, and shortages of trained personnel thwart the evaluation of the health situation, and also that of the services at all administrative levels. Periodic evaluation of health care systems is critical to assure their coherent

development as well as their appropriateness in light of the countries' health conditions and service requirements. Evaluation should also target medical technology for disease prevention and clinical and surgical procedures for diagnostic and therapeutic care. Experience gained during the 1970's showed that most often the use of advanced technologies did not result in benefits similar to those observed in the countries where they had originated. All of these aspects should be taken into consideration to avoid duplicative or, far worse, conflictive programs, and to establish a system of care that is coherent at its different levels of complexity.

The administration of health care services systems involves much more than the management of their facilities and supporting services and extends to the setting of priorities, the devising and implementation of strategies and programs, the allocation of resources based on the health needs of targeted populations, and the evalutation of activities and their results—a capability that continues to be very limited in most developing countries.

Health administration and planning have at their disposal numerous instruments, namely theoretical models used to interpret prevailing social realities, to gain an understanding of health situations based on past experiences, and to project them into the future. Social phenomena, and particularly health phenomena are, however, usually transitory, and relationships in any point in time are conditioned by changes occurring in the immediate past which, in turn, condition changes in the immediate future. None of the available theoretical models is sufficient to explain such a pattern. Thus, in order to understand the present situation and how it will affect the future, efforts should transcend the application of the familiar, available instruments. The combined intelligence of countries' health and policy-making sectors must be brought to bear on the tremendous challenges at hand and on those yet to come.

Epidemiology—its concepts, knowledge, and methods—has a major role to play in health planning and administration. Not only is the field important in the useful and necessary areas of surveillance as an essential means of disease control; it can also make a critical contribution through evaluation and analysis to the broader understanding of health as a whole and of the context in which specific health phenomena occur, to the perception of society as a resource for explaining and addressing those phenomena, and to the projection of needs, the identification and qualification of risk factors, the definition of priorities, and the utilization of available resources.

### *The Current Status of Epidemiology in the Region*

The role of epidemiology was the subject of discussion and analysis of a seminar on the field's current uses and future prospects, held in Buenos Aires, Argentina, in November 1983.[2] The participants, who included epidemiologists, health planners, and administrators from countries throughout the Region, reached a number of conclusions and made a series of observations and recommendations, included among them the following:

In health care services, epidemiology has been used to develop surveillance systems geared almost solely to the detection of abnormal situations, so that control measures can be activated promptly, particularly against some communicable diseases. In many countries these systems have become passive case-reporting mechanisms that typically collect data at the local level and compile them at the central level. In general, these data cover only a segment of the population (usually that dealt with by public services); their quality is limited by defects in diagnostic services; and they are not analyzed at the levels at which services are provided. The situation is aggravated by the multiplicity of case-reporting forms, which are controlled, standardized, and supervised by distinct, mutually disconnected programs. Even in the few instances where these data are analyzed locally, the information obtained does not produce immediate action due to limitations in local administrative capacity.

At the central level, data thus collected besides being of dubious reliability are outdated as well. Much of the information is presented in statistical tables accompanied by little or no analysis. To improve surveillance, collected data must be analyzed and utilized at the local level so that decisions can be taken in good time. Moreover, analyses must be made at progressively higher levels to contribute to the understanding of health problems, support decision-making at each level, and provide feedback to the central regulatory and planning processes.

Surveillance must be extended to such problems as malnutrition, chronic diseases, accidents and poisoning, and conditions associated with occupations and environmental pollution. However, since the reporting procedures used in the epidemiological surveillance of acute diseases may not offer the best means to a proper assessment of these problems, new data sources and mechanisms for data collection will have to be identified and new methods of analysis

[2]See also *Epidemiological Bulletin* 5(1), 1984, and *Usos y perspectivas de la epidemiología*, PNSP 84-47, Pan American Health Organization, Washington, D.C., 1984.

worked out for evaluation of the preventive and curative measures taken. The extent of analysis of the health situation is generally limited to reporting national rates of indicators that do not disclose existing or potential geographic and social variations in each country.

The evaluation of health status must be expanded to include additional indicators such as the number of years of life lost prematurely and the number of cases that can be prevented under certain assumptions of effectiveness of measures taken. Likewise, demographic analyses should consider particular characteristics of the Region such as the urban explosion, and changes in fertility and the composition of the population pyramid.

As an aid to local programming and the evaluation of health services, data analysis must be based on the smallest geographical units and consider the structural characteristics of the health services and the distribution of population groups by living conditions. Programmed activities must be directed at concurrent solutions to the health problems of these groups.

Epidemiology must be closely involved in the development of mechanisms for evaluating existing and new technologies not only for health promotion and protection, but also for medical care, where there is a tendency to adopt increasingly costly technologies that have not always been proved effective. Epidemiology has a central part to play in the selection of technologies and the evaluation of their effectiveness, efficiency, feasibility, and practicality at the different levels of care in the services.

Research with an epidemiological approach has not developed as much as could be desired and has been confined to isolated clinical and laboratory projects with little attention paid to population-based studies and the improvement of health services. Contributing circumstances are the fact that scientific research has been limited to universities and technical institutes with almost no participation by health services, a lack of national research policies, and a distortion of priorities, which sometimes reflect the interests of funding agencies rather than the real health situations in the countries.

A continuing analysis of health conditions will reveal gaps in substantive and methodological knowledge that cannot be filled by the study of existing data. These gaps should become the focus of research undertaken as part of the functions of health service delivery agencies themselves.

All these elements must be taken into account in the formulation of national research policies, whose priorities must be compatible with the policies and plans of the health sector. Moreover, an appropriate infrastructure must be created for the implementation of these policies, and mechanisms for coordinating the efforts of institutions and different groups of universities and services to provide the requisite resources and advisory services. This would make possible the development of research projects that are more comprehensive and enjoy the required multidisciplinary support, and of collaborative studies at the national and international levels. At the same time, these mechanisms must contribute to the upgrading of the research skills of more of the health personnel of both universities and health services, and to the promotion of epidemiological research as a standard component of health programs.

The situation described so far is closely related to inadequacies of training in epidemiology, in part caused by a lack of trained staff but also due to a mismatch between the requirements of practice and the content of the instruction. Many so-called practical courses in epidemiology are designed chiefly with an eye to programs for the control of specific diseases, and include precious little material on epidemiological methodology.

All health personnel should have some training in epidemiology, and the characteristics of that training will depend on the health and training policies, on the structure and organization of the services, and on the levels of functional responsibility in them in the given country. Broadly speaking, and subject to more detailed specification in the given real situation, the breadth and depth of training in epidemiology should be based on the functional and administrative structure of the services. The manpower training system must meet the needs of the health care delivery system in order to produce appropriately trained health personnel in general and epidemiologists in particular.

Long-duration academic instruction should be offered as well as alternatives in continuing education, including opportunities for in-service training, basic courses, refresher courses, and epidemiological orientation seminars for professionals with no prior training in this area.

To all the foregoing must be added the limitations of existing health information and documentation systems, which compound the difficulties of training and research and hinder the overall development of epidemiology.

## Strategy for Technical Cooperation

In the light of the foregoing, PAHO considers that the practice of epidemiology should be reoriented in terms of its scope and procedures so that its full potential as an instrument for the better understanding, evaluation, and control of health problems and for the development of health care systems may be achieved. Accordingly, it established as one of its principal objectives the strengthening of national capability in epidemiology.

In order to achieve this objective PAHO is pursuing the following interrelated strategies:

- Provide direct technical advisory services in epidemiology to member countries, to PAHO country epidemiologists, the Caribbean Epidemiology Centre, and to professionals of other units at headquarters. Whenever justified, short-term consultants for specific activities are used.

- Disseminate information on epidemiology. As an essential component in strengthening capability in epidemiology, PAHO publishes data and analyses regarding health situations and their trends in the Region. It also circulates technical information related to the state of the art and resources available in the area of epidemiology.
- Stimulate the mobilization of national resources in epidemiology, in the areas of health care services as well as training and research.
- Stimulate cooperation among the developing countries by devising mechanisms for exchange of experts and experiences in the areas of epidemiological services, training, and research. PAHO also identifies and promotes the use of resources from other national and international organizations that can provide additional technical or financial support to the development of epidemiology services in member countries.
- Collaborate with the countries in identifying their needs in epidemiological research and promote jointly with countries the preparation and evaluation of epidemiological research projects designed to enhance knowledge of health problems and technologies and to improve health assessment and interventions.
- Stimulate the reorientation of existing training programs in epidemiology by mobilizing national institutions to coordinate multiple training approaches.

The reorientation of the practice of epidemiology must be related to the country's health status and the structure and organization of its health services. To achieve these purposes it will be necessary to promote activities in each country and at the Regional Headquarters.

*Activities at the Country Level*

PAHO epidemiologists work in close coordination with the Organization's country representations and make use of various support mechanisms in keeping with the principle of mobilization of national resources. One of the first activities for technical cooperation in epidemiology will be the promotion of meetings of national authorities from various institutions which provide services, public health and medical schools, and research centers. Discussions during these meetings should focus on the need to expand the uses of epidemiology in health care services, including:

1) Analysis of the health status of population groups, its trends and contributing factors, in order to:

- Provide a basis for the proper planning and coordination of health activities and the rational use of the sector's resources.
- Identify areas that require the establishment or strengthening of intersectoral coordination for solving health problems.
- Identify research needs.

2) Knowledge of the frequency, distribution, and determinants of diseases and specific health problems in order to establish appropriate measures for intervention, and to orient the organization of health programs and services.

3) Timely detection and investigation of health problems which require immediate application of control measures.

4) Evaluation of the impact of health care services and of interventions on the environment and on individual and collective behavior, so that they may be readjusted and refocused.

5) Evaluation of medical technology to identify effective and safe technological options that are consistent with the realities of the country.

To achieve these objectives, the participants at these meetings must design work strategies that take into account:

- Evaluation of the practice of epidemiology, its present characteristics and the factors that have limited or favored its development.
- Identification of measures necessary to adjust the current practice of epidemiology to whatever would be ideal for the country, for example, setting up national epidemiological networks and modifying training programs to fit the needs of epidemiological practice.
- Formulation of an action plan and the definition of the necessary mechanisms for applying and coordinating the proposed measures.
- Elaboration of the necessary mechanisms for ensuring the continuity of the process in the short and medium term.
- Identification of specific problems whose solutions require support from PAHO during the various stages of expanding the practice of epidemiology.

From the beginning, it will be necessary to promote solid political support in order to implement any changes proposed by national technical levels.

*Activities at the Regional Level*

In support of activities conducted in the countries, the PAHO Epidemiology Unit will disseminate data and analyses of the Region's health status and trends. It will also disseminate technical information on the theory, principles, and methods of epidemiology and the availability of supporting resources.

One of the main instruments for disseminating information is the *Epidemiological Bulletin*, prepared in

accordance with the editorial policies established by the PAHO Secretariat and the Editorial Board of the *Bulletin*. Its main purpose is to publish periodically short accounts of and comments on the epidemiological activity of communicable and noncommunicable diseases of priority public health concern, as well as information regarding technical aspects involved in disease surveillance, prevention, and control programs in the countries. In addition, the *Bulletin* aims to assist decision-makers in their allocation of resources to health systems and services by providing information on conceptual and technical aspects and national experiences regarding the application of epidemiology in the diagnosis of health situations. Moreover, it aspires to serve professionals and technical personnel in the field, sector administrators, and health sciences students.

As proposed in the Medium Term Program of the Epidemiology Unit, other measures will be developed for disseminating epidemiological information, including the following:

1) The identification, compilation, organization, and distribution of information on the theory, principles, and methods of epidemiology, through bibliographies and reference materials, specifically:

- The compilation and annual publication of an annotated bibliography, which would include important articles on epidemiology published recently in reviews, periodicals, bulletins, and other technical and scientific publications.
- The compilation and annual publication of an annotated bibliography of books on epidemiology and related topics.
- The preparation and publication of a book that will include a selection of articles and portions of documents that represent landmarks in the development of epidemiological theory, method, and practice.

2) The identification of human and institutional resources in epidemiology in order to improve their utilization, exchange, and mobilization. Part of the process of strengthening national capability in epidemiology includes the identification of available resources. It is therefore proposed to set up and maintain a data bank on human and institutional resources in epidemiology and supporting disciplines as a service to the countries of the Region.

3) The establishment of an inventory of courses in epidemiology, including their objectives, orientation, level, duration, and content. The inventory will facilitate the revision and adjustment of training programs in epidemiology in accordance with the needs and interests of each country. It will also be a useful resource for the orientation of potential students.

The strategy for cooperation described above is already being followed in an increasing number of countries. Although it is still too early to judge its effectiveness, experience seems to indicate that it offers sufficient flexibility to permit each country to undertake the strengthening of national capability in epidemiology according to its own specific circumstances.

*(Source:* Epidemiology Unit, PAHO.)

# Advance Report of Final Mortality Statistics, U.S.A., 1982

## Nature and Source of Data

Data shown in this report are based on information from all death certificates filed in the 50 states and the District of Columbia. Mortality statistics are based on information coded by the National Center for Health Statistics (NCHS) from copies of the original certificates received from the state registration offices, and on state-coded data provided to NCHS through the Vital Statistics Cooperative Program (VSCP). In 1982, 46 states participated in this program. For these states part or all of the mortality data for 1982 were provided on computer tape. For the four states and the District of Columbia that were not participants in the VSCP in 1982, NCHS coded all nonmedical data and all or part of the medical data.

Data for the United States as a whole refer to events occurring within the United States. Beginning with

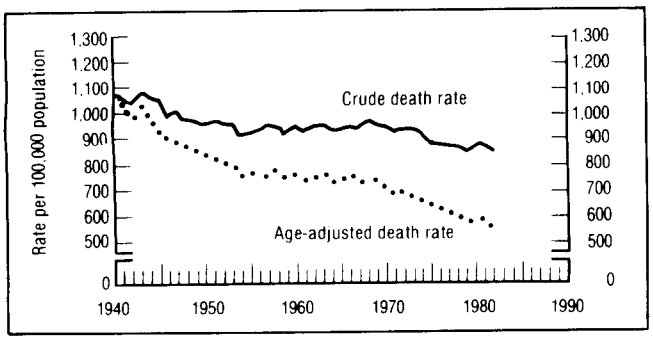
1970, mortality statistics exclude deaths of nonresidents of the United States. All data exclude fetal deaths.

## Deaths and Death Rates

In 1982 there were 1,974,797 deaths recorded in the United States, 3,184 fewer than in 1981. The death rate decreased to a record low in 1982, falling to 852.0 deaths per 100,000 population compared with 862.4 in 1981. Provisional data indicate that the rate for 1983 was 858.9, somewhat higher than that for 1982, but lower than that for 1981.

The age-adjusted death rate decreased to 553.8 in 1982, down from 568.2 deaths per 100,000 population in 1981. The decrease in 1982 continues the long-term downward trend in mortality in the United States, bringing the age-adjusted rate to a record low (Figure 1). Age-adjusted death rates show what the level of mortality would be if there were no changes in the age composition of the population from year to year. Therefore they are better indicators than unadjusted death rates in showing changes in the risk of death over a period of time when the distribution of the population by age is changing. They are also better indicators of risk when comparisons of mortality are being made for sex or race subgroups of the population that have different age compositions.

**Figure 1. Crude and age-adjusted death rates, United States, 1940-1982.**




## Death Rates by Age, Race, and Sex

Death rates for every age group of both sexes declined between 1981 and 1982 (Figure 2). For males and females combined, the smallest decrease was for the age group 65 to 74 years (1%), while the largest declines occurred in the age groups 15 to 24 years and 35 to 44 years (6% each). For almost all age groups of both sexes the decline in death rates between 1981 and 1982 represents a continuation of the general downward trend observed since 1950. Males 15 to 24 years of age have been the primary exception to this general decline in age-specific death rates. However, between 1980 and 1981, and again between 1981 and 1982, there were substantial declines in death rates for this group.

Between 1981 and 1982 the age-adjusted death rate for males decreased 3% while that for females decreased 2%. However, as in 1981, the 1982 age-adjusted death rate for males was 1.8 times that for females. The age-adjusted death rate decreased 2% for the white population and 3% for the black population between 1981 and 1982. In 1982 the rate for the black population was 1.5 times that for the white population, the same as the ratio in 1981.

## Expectation of Life at Birth and at Specified Ages

The average expectation of life at birth reached a record high of 74.6 years in 1982, up 0.4 year from 1981 (Figure 3). This increase continues the general upward trend in life expectancy in the United States that was interrupted in 1980.

The expectation of life at birth for 1982 represents the average number of years that a group of infants would live if they were to experience throughout life the age-specific death rates prevailing in 1982. In 1982 females could expect to live an average of 78.2 years compared with 70.9 years for males. Between 1981 and 1982 life expectancy for males increased 0.5 year, slightly more than the gain for females, 0.3 year. The difference in life expectancy between the sexes, which was widening for many years, now appears to be decreasing. The difference was 7.3 years in 1982 and 7.5 years in 1981 and 1980, compared with 7.6 years in 1970 and 6.5 years in 1960.

Between 1981 and 1982 the black population showed an increase of 0.6 year in life expectancy, to 69.3 years, twice the increase of 0.3 year for the white population. Life expectancy for the white population was 75.1 years in 1982. In 1970 life expectancy for the white population was 71.7 years, while that for the black population was 64.1 years. The difference in life expectancy between the white and black populations narrowed from 7.6 years in 1970 to 5.8 years in 1982.

Among the race-sex groups, white females continued to have the highest life expectancy at birth (78.8

**Figure 2. Death rates by age and sex, United States, 1950-1982.**

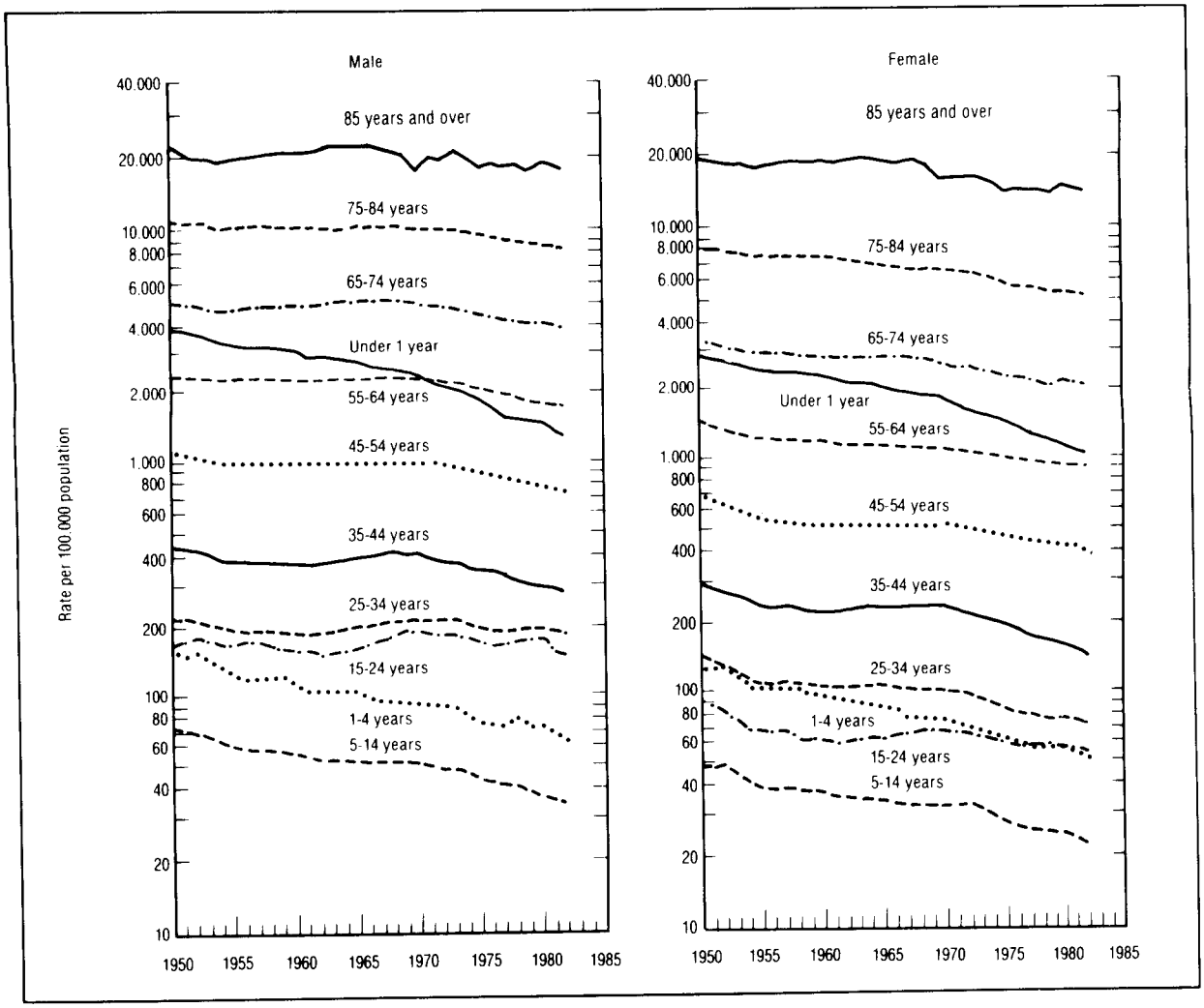
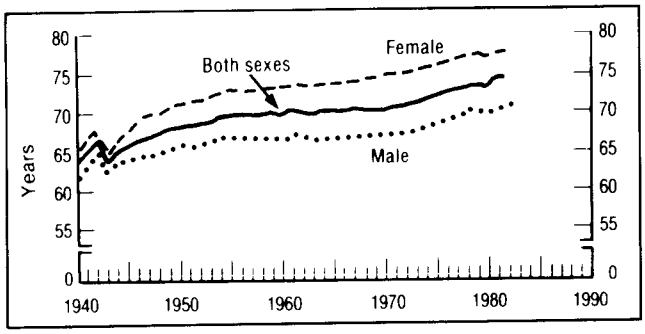



**Figure 3. Life expectancy by sex, United States, 1940-1982.**




years), followed by black females (73.5 years), white males (71.5 years), and black males (64.9 years). The largest gain in life expectancy between 1970 and 1982 was for black females (5.2 years), followed by black males (4.9 years), white males (3.5 years), and white females (3.2 years).

The 1982 life tables may be used to compare life expectancies at ages older than 0 year. They show, for example, that a person who has attained the age of 65 years may look forward to living to an older age, on the average, than one who has attained the age of 50 years. The person aged 50 years could expect to live an average of 28.3 more years for a total of 78.3 years, while the person 65 years of age could expect to live an average of 16.8 more years for a total of 81.8 years.

## Leading Causes of Death

Deaths assigned to the 15 leading causes of death accounted for 89% of the total number of deaths in

1982 (Table 1). (For ranking procedures, see Technical Notes.) The leading causes of death in 1982 were the same as those in 1981, but the rank of some causes changed between the two years. Because of declining mortality, Chronic liver disease and cirrhosis, and Atherosclerosis dropped in rank from 8th and 9th, respectively, in 1981, to 9th and 10th in 1982. As a result, the ranking for Suicide shifted from 10th to 8th.

Age-adjusted death rates are shown in Figure 4 and Table 2 for 13 of the 15 leading causes. Because deaths from the other two causes (Congenital anomalies and Certain conditions originating in the perinatal period) occur mainly among infants under 1 year, age-adjusted rates for these causes are not shown.

For 9 of these 13 leading causes of death the age-adjusted death rates decreased between 1981 and 1982. These causes were: Diseases of heart; Cerebrovascular diseases; Accidents and adverse effects; Pneumonia and influenza; Diabetes mellitus; Chronic liver disease and cirrhosis; Atherosclerosis; Homicide and legal intervention; and Chronic obstructive pulmonary diseases and allied conditions. Among these nine causes showing a decline in 1982, the largest decline was for Pneumonia and influenza (11%), followed by Accidents and adverse effects, Chronic liver disease and cirrhosis, and Atherosclerosis (8% each).

**Table 1. Death rates and percent of total deaths for the 15 leading causes of death, United States, 1982.**

| Rank[a] | Cause of death[b] | Rate[c] | Percent of total deaths |
|---|---|---|---|
| ... | All causes | 852.0 | 100.0 |
| 1 | Diseases of heart | 326.0 | 38.3 |
| 2 | Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues | 187.2 | 22.0 |
| 3 | Cerebrovascular diseases | 68.0 | 8.0 |
| 4 | Accidents and adverse effects | 40.6 | 4.8 |
| ... | Motor vehicle accidents | 19.8 | ... |
| ... | All other accidents and adverse effects | 20.8 | ... |
| 5 | Chronic obstructive pulmonary diseases and allied conditions | 25.8 | 3.0 |
| 6 | Pneumonia and influenza | 21.1 | 2.5 |
| 7 | Diabetes mellitus | 14.9 | 1.8 |
| 8 | Suicide | 12.2 | 1.4 |
| 9 | Chronic liver disease and cirrhosis | 11.9 | 1.4 |
| 10 | Atherosclerosis | 11.6 | 1.4 |
| 11 | Homicide and legal intervention | 9.6 | 1.1 |
| 12 | Certain conditions originating in the perinatal period | 9.0 | 1.1 |
| 13 | Nephritis, nephrotic syndrome, and nephrosis | 7.8 | 0.9 |
| 14 | Congenital anomalies | 5.9 | 0.7 |
| 15 | Septicemia | 5.0 | 0.6 |
| ... | All other causes | 95.4 | 11.2 |

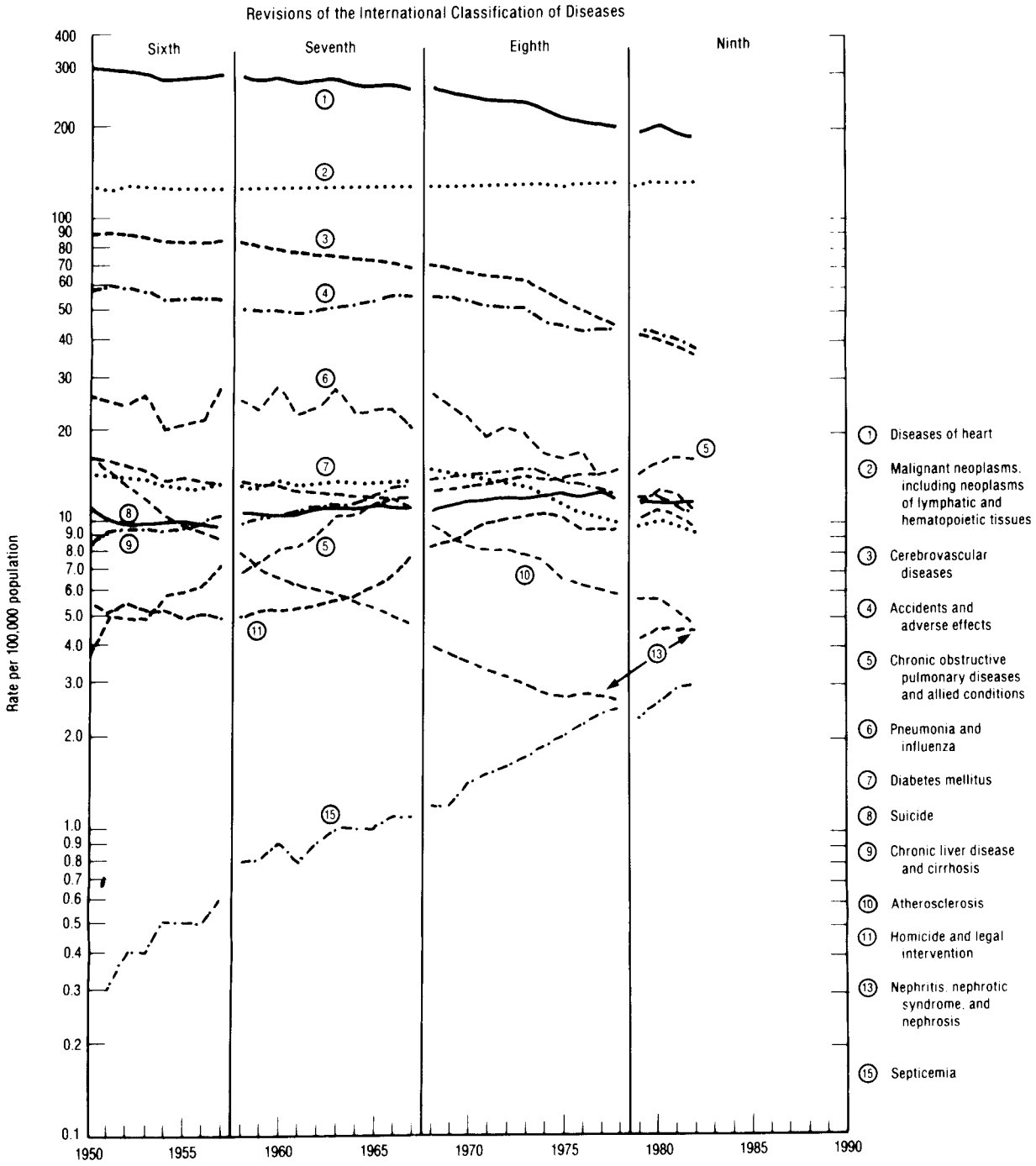
[a]Rank based on number of deaths; see Technical Notes.
[b]*International Classification of Diseases*, Ninth Revision, 1975.
[c]Rates per 100,000 population.

**Table 2. Age-adjusted death rates for the 15 leading causes of death for 1982; changes from 1981 to 1982 and 1979 to 1982; ratios by sex and race, United States.**

| Rank[a] | Cause of death[b] | Age-adjusted death rates for 1982[b] | Change (%) | | Ratio for 1982 | |
|---|---|---|---|---|---|---|
| | | | 1981 to 1982 | 1979 to 1982 | Male to female | Black to white |
| ... | All causes | 553.8 | –2.5 | –4.0 | 1.78 | 1.46 |
| 1 | Diseases of heart | 190.5 | –2.3 | –4.5 | 1.99 | 1.27 |
| 2 | Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues | 132.5 | +0.7 | +1.3 | 1.50 | 1.33 |
| 3 | Cerebrovascular diseases | 35.8 | –6.0 | –13.9 | 1.18 | 1.82 |
| 4 | Accidents and adverse effects | 36.6 | –8.0 | –14.7 | 2.92 | 1.17 |
| ... | Motor vehicle accidents | 19.3 | –11.5 | –16.8 | 2.84 | 0.83 |
| ... | All other accidents and adverse effects | 17.3 | –3.9 | –11.7 | 3.01 | 1.58 |
| 5 | Chronic obstructive pulmonary diseases and allied conditions | 16.2 | –0.6 | +11.0 | 2.60 | 0.77 |
| 6 | Pneumonia and influenza | 10.9 | –11.4 | –2.7 | 1.90 | 1.51 |
| 7 | Diabetes mellitus | 9.6 | –2.0 | –2.0 | 1.05 | 2.10 |
| 8 | Suicide | 11.6 | +0.9 | –0.9 | 3.38 | 0.50 |
| 9 | Chronic liver disease and cirrhosis | 10.5 | –7.9 | –12.5 | 2.22 | 1.68 |
| 10 | Atherosclerosis | 4.8 | –7.7 | –15.8 | 1.35 | 1.04 |
| 11 | Homicide and legal intervention | 9.7 | –6.7 | –4.9 | 3.64 | 5.60 |
| 12 | Certain conditions originating in the perinatal period[d] | ... | –5.2 | –15.8 | 1.27 | 2.28 |
| 13 | Nephritis, nephrotic syndrome, and nephrosis | 4.5 | – | +4.7 | 1.56 | 2.87 |
| 14 | Congenital anomalies[d] | ... | –0.2 | –4.0 | 1.11 | 1.07 |
| 15 | Septicemia | 3.0 | +3.4 | +30.4 | 1.38 | 2.73 |

[a]Rank based on number of deaths; see Technical Notes.
[b]*International Classification of Diseases*, Ninth Revision, 1975.
[c]Rates per 100,000 population.
[d]Inasmuch as deaths from these causes occur mainly among infants, changes and ratios are based on infant mortality rates instead of age-adjusted death rates.

**Figure 4. Age-adjusted death rates for 13 of the 15 leading causes of death, United States, 1950-1982.**




Increases in the age-adjusted death rates between 1981 and 1982 occurred for three causes: Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues; Suicide; and Septicemia. For Septicemia the increase of 3% continued the increase observed for the past three decades (Figure 4). Increases for the other two causes were 1%. The age-adjusted death rate for Nephritis, nephrotic syndrome, and nephrosis was unchanged between 1981 and 1982.

Mortality levels for each of the 15 leading causes of death were higher for males than for females (Table 2). The largest differences were for violent and acci-

dental causes of death. Specifically, the age-adjusted death rate due to Homicide and legal intervention was almost four times as high for males as for females. The rates for Suicide and for Accidents and adverse effects were about three times as high for males as for females. The smallest sex differences were for Diabetes mellitus and Congenital anomalies, with a male-female ratio of 1.1 for each.

Mortality was higher for the black population than for the white population for 13 of the 15 leading causes. The largest differential was for Homicide and legal intervention, where the age-adjusted rate for the black population was nearly six times that of the white population. Other causes for which the differential was large include Nephritis, nephrotic syndrome, and nephrosis; and Septicemia, with black-to-white ratios of 2.9 and 2.7, respectively. Age-adjusted rates for the black population were lower than those for the white population for two causes: Chronic obstructive pulmonary diseases and allied conditions, and Suicide.

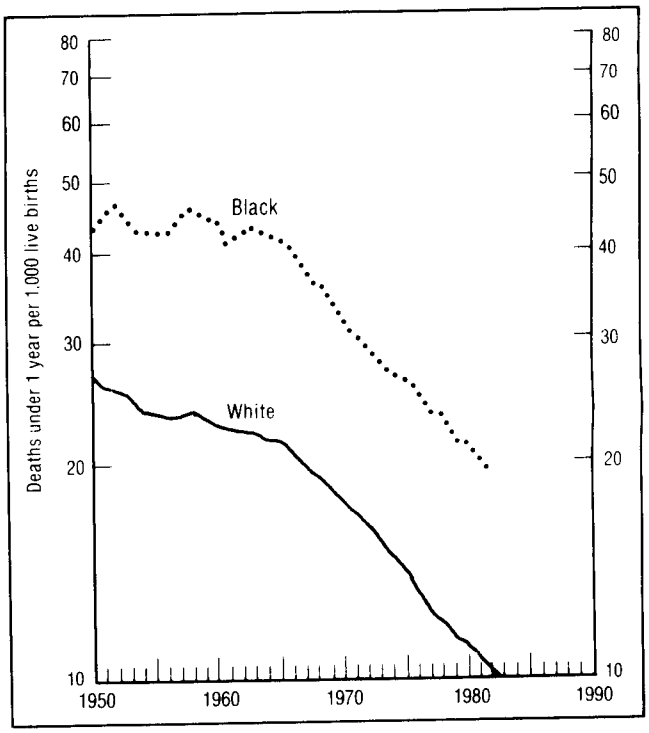
## Infant Mortality

In 1982 there were 42,401 deaths of infants under one year of age. The infant mortality rate of 11.5 infant deaths per 1,000 live births was the lowest rate ever recorded for the United States. The rate declined 3% from the level of 11.9 in 1981. Among white infants, the mortality rate (per 1,000 live births) decreased 4%, from 10.5 in 1981 to 10.1 in 1982, while for black infants the rate decreased 2%, from 20.0 in 1981 to 19.6 in 1982. The infant mortality rate for black infants was almost twice that for white infants in 1982, as it was 20 years earlier (Figure 5).

The leading cause of infant mortality was Congenital anomalies, with an infant mortality rate of 245.2 deaths per 100,000 live births. Rates for the next three leading causes were substantially lower: Sudden infant death syndrome (143.4), Respiratory distress syndrome (109.7), and Disorders related to short gestation and unspecified low birthweight (98.3). These four causes accounted for just over half of all deaths to infants under one year of age in 1982. Among the 10 leading causes of infant death, those ranking 5th through 10th accounted for 16% of all infant deaths.

The difference between infant mortality rates for black and white infants varied by cause, although the risk was higher for black infants than for white infants for all leading causes except Congenital anomalies. Expressed as the ratio of the infant mortality rate for black infants to that for white infants, the relative differences in the leading causes may be ranked, beginning with the highest ratio, as follows: Disorders relating to short gestation and unspecified low birthweight (3.3); Pneumonia and influenza (2.9); Newborn affected by maternal complications of pregnancy (2.1); Sudden infant death syndrome (2.0); Infections specific to the perinatal period (2.0); Accidents and adverse effects (20); Intrauterine hypoxia and birth asphyxia (1.9); Respiratory distress syndrome (1.7); Newborn affected by complications of placenta, cord, and membranes (1.4); and Congenital anomalies (1.0).

**Figure 5. Infant mortality rates by race, United States, 1950-1982.**




## Maternal Mortality

In 1982, 292 women died of maternal causes. As in previous years, this number does not include all deaths occurring to pregnant women, but only deaths assigned to Complications of pregnancy, childbirth, and the puerperium (*ICD*-9, Nos. 630-676). The maternal mortality rate was 7% lower in 1982 (7.9 deaths per 100,000 live births) than in 1981 (8.5); black women were three times as likely (18.2) as white women (5.8) to die of causes associated with pregnancy, childbirth, and the puerperium.

## Technical Notes

*Cause-of-death Classification*

The mortality statistics presented here were compiled in accordance with the World Health Organization regulations, which specify that member nations classify causes of death by the current *Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death.*

Causes of death for 1979-82 were classified according to the *International Classification of Diseases,* Ninth Revision. For earlier years, causes of death were classified according to the revisions then in use, as follows: 1968-78, Eighth Revision; 1958-67, Seventh Revision; and 1949-57, Sixth Revision. Changes in classification of causes of death due to these revisions may result in discontinuities in cause-of-death trends. Consequently, cause-of-death comparisons between revisions require consideration of the comparability ratios and, where available, estimates of their standard errors. Comparability ratios between the Eighth and Ninth Revisions, between the Seventh and Eighth Revisions, and between the Sixth and Seventh Revisions may be found in other NCHS reports.

Besides specifying the classification, the World Health Organization regulations outline the form of medical certification and the coding procedures to be used. In general, when more than one cause of death is reported, the cause designated by the certifying physician as the underlying cause of death is the cause tabulated.

Cause-of-death data presented in this report were coded by procedures outlined in Part 2a of the NCHS *Instruction Manual.*

*Population Bases for Computing Rates*

The population used for computing rates shown in this report (furnished by the U.S. Bureau of the Census) represents the population residing in the specified area. Death rates for 1982 are based on population estimates as of July 1, 1982. The estimates are based on the 1980 census count. The 1980 census counts by race were modified to be consistent with Office of Management and Budget categories and historical categories for death data. The modification procedures are discussed in detail in a Census Bureau report.

*Cause-of-death Ranking*

The cause of-death rankings shown in Tables 1 and 2 are based on the List of 72 Selected Causes of Death. The group titles Major cardiovascular diseases and Symptoms, signs, and ill-defined conditions are not ranked from the List of 72 Selected Causes of Death; and Certain conditions originating in the perinatal period and Symptoms, signs, and ill-defined conditions are not ranked from the List of 61 Selected Causes of Infant Death. In addition, category titles that begin with the words "Other" or "All other" are not ranked to determine the leading causes of death. When one of the titles that represents a subtotal is ranked (for example Tuberculosis), its component parts (in this case, Tuberculosis of respiratory system and Other tuberculosis) are not ranked.

*Age-adjusted Rates*

The age-adjusted rates presented in this report were computed by the direct method, that is, by applying the age-specific death rates for a given cause of death to the standard population distributed by age. The total population as enumerated in 1940 was selected as the standard. The rates for the total population and for each race-sex group were adjusted separately by using the same standard population. The age-adjusted rates were based on 10-year age groups. It is important not to compare age-adjusted death rates with crude rates.

(*Source:* Adapted from: National Center for Health Statistics. Advance report, final mortality statistics, 1982. *Monthly Vital Statistics Report.* Vol. 33, No. 9. Supp. DHHS Pub. No. (PHS) 85-1120. Public Health Service, Hyattsville, Md. Dec. 20, 1984.)

References for the publications mentioned in the Technical Notes are available on request from the Epidemiology Unit, Pan American Health Organization, 525 Twenty-third Street, N.W., Washington, D.C. 20037, U.S.A.

## Editorial Comment

The inclusion of this article serves several purposes. It presents epidemiological information for one of the most developed countries of the Region, and thus pro-

vides an important point for reference and comparison. In addition, this analysis illustrates the wealth of information contained in mortality data obtained from the vital statistics records. This is true even though the article deals with a preliminary report restricted to national data, stratified only by age, sex, and race, and which does not take into account other sources of variation, such as geographic area or social and economic factors.

Finally, attention is called to the excellent Technical Notes section, which contains a description of the definitions, classification criteria, and statistical procedures used in the preparation of the article. All too frequently published papers lack such explanatory technical notes, which reduces their utility and makes more difficult the interpretation of the data and their comparison with other publications. The omission of such technical notes is even more serious when procedures other than the internationally accepted ones have been used, or when there are deficiencies in the completeness and reliability of the data being used. In these cases it is doubly important that there be an explicit description of all procedures employed, as well as discussion of the quality of the data, including an estimation of the direction, probable magnitude, and distribution of the most frequent systematic errors. Often it is sufficient to give rough estimations of the deficiencies due to data collection; sometimes it is enough to indicate the direction of their effect, whether they are evenly distributed or which population groups are most affected and in which direction they have changed over time. The discussion of these aspects should be imperative since it provides the basis for deciding on the levels of analysis, interpretation, and conclusions that will be admissible.

# Diseases Subject to the International Health Regulations

**Cholera, yellow fever, and plague cases and deaths reported in the Region of the Americas up to 30 April 1985.**

| Country and administrative subdivision | Cholera cases | Yellow fever[a] | | Plague cases |
|---|---|---|---|---|
| | | Cases | Deaths | |
| BOLIVIA | – | *1* | – | – |
| Cochabamba | – | 1 | – | – |
| COLOMBIA | – | *4* | *4* | – |
| Antioquia | – | 1 | 1 | – |
| Guaviare | – | 2 | 2 | – |
| Meta | – | 1 | 1 | – |
| ECUADOR | – | – | – | *3* |
| Loja | – | – | – | 3 |
| PERU | – | *3* | *2* | – |
| Leoncio Prado | – | 3 | 2 | – |
| UNITED STATES OF AMERICA | – | – | – | *1* |
| New Mexico | – | – | – | 1 |

[a]Note: Since the publication of the last issue of the *Epidemiological Bulletin* (Vol. 6, No. 1, 1985), *Colombia* has reported an additional two cases of yellow fever, one in Casanare and one in Meta, for a partial total of 16 cases in 1984.

# Calendar of Courses and Meetings

## Intermediate Course in Epidemiological Methods Applied to Research and to Development of Health Programs

This course will be held from 22 July to 30 August 1985 at the Mexican School of Public Health. A postgraduate educational opportunity, it is open to all types of Spanish- and Portuguese-speaking graduate professionals in the health field, whether in academic or service institutions. It is directed especially toward those who work in clinical investigation; in medicine, nursing, or preventive dentistry; in public health teaching and research; in planning and evaluation of health and development services; and in implementation and evaluation of health programs.

The course will last six weeks (30 working days, 178 hours of instruction and individual and group work, for which exclusive dedication is required). It consists of seven modules, with theoretical and practical contents covering biostatistics and epidemiology related to the practice of public health and to the performance of epidemiological research.

Basic courses in statistics and epidemiology are prerequisites. Participants who pass the course will receive a diploma from the Mexican School of Public Health.

For further information, those interested may write to: Dra. Lucía Yáñez, Directora de Asuntos Académicos, Escuela de Salud Pública de México, Av. Francisco de P. Miranda No. 177, Col. Merced Gómez, 01600 México, D.F., Mexico.

## Training Program in International Health

The Training Program in International Health has been organized by the Pan American Health Organization (PAHO) to offer a one-year experience in international health for professionals who have recently, and with distinction, received a master's degree in public health or equivalent training and are interested in pursuing advanced studies and acquiring practical experience in this field.

The Program's guidelines give priority to strategic components of the goal of health for all with emphasis on primary care, intersectoral articulation, technical cooperation among developing countries, and the managerial process of national health development. There will be broad orientation to the international cooperation system, and general orientation to PAHO and all its program areas. Concentration in a selected field of work will also be included, as well as participation in a country project.

The Training Program in International Health involves instruction, research, development, and operational support. The participant will be designated a "resident", and, for PAHO's administrative purposes, will be awarded a "specialization grant". The resident will receive a total of US$18,000 for the year, payable on a monthly basis, a round-trip air ticket in economy class from his or her place of residence, plus US$600 to cover installation costs and purchase of an accident and health insurance policy. Proof of the insurance purchase will be required. The Program includes no provision for any further benefit or subsequent contractual obligation with PAHO.

The selection process is essential to the success of the Program. It will be based on an extensive examination of the candidates' qualifications. Selection will be through international competition at the highest level. In order that the Program constitute a source of encouragement to postgraduate training and a stimulus to academic excellence, a prerequisite for acceptance is that the candidate must have demonstrated outstanding performance in his graduate studies. Specific requirements are:

- Education: A master's degree in public health or equivalent graduate training; working, teaching or research experience highly desirable.
- Age: Not more than 35 years.
- Nationality: From a PAHO Member Country in the Americas.
- Language: A command of English and at least one of the other three of PAHO's official languages: Spanish, Portuguese and French.

Applications, addressed to the attention of the Health Manpower Program (HSM), Pan American Health Organization, should be submitted to the PAHO Office in the applicant's country. Every application must include:

- A curriculum vitae, proof of degrees, and a photograph.

- Transcript of courses taken during graduate studies.
- An essay of no more than 10 double-spaced letter-size sheets stating the reasons for the applicant's interest in the Program, his or her area or areas of interest, and the possibilities for utilizing the experience on returning to his or her country.
- Copy of one or more scientific papers authored by the candidate.
- Proof, from a recognized training institution, of knowledge of languages other than the mother tongue.
- The names and addresses of three professionals in the field, to serve as personal references.

Applications received will be reviewed and finalists selected. Final selection will be determined on the basis of personal interviews. The candidates selected will be notified by the first week of August, each year. Their training activities will start in mid-October and continue for one year, and will take place at PAHO's Headquarters, in Washington, D.C., U.S.A.

The Program will be coordinated by PAHO's Health Manpower Program. An advisory committee will provide guidance on all technical and administrative aspects of the training. Daily supervision and counseling will be provided by a senior staff member designated according to the trainee's specific area of interest.

## Principles of Epidemiology

The New England Epidemiology Institute will present a three-day course on modern concepts in epidemiology and their application to the study of etiology, natural history of disease, and strategies in preventive medicine and public health. The course is especially appropriate for persons not actively engaged in epidemiology research but who are required to evaluate and interpret such research.

Among the topics to be covered are: principles of study design, principles of data analysis, interpretation of study results, control of confounding factors, and interactions among causes.

The course will be offered 7 to 9 October 1985 at the Shamrock Hilton Hotel, Houston, Texas; 3 to 7 March 1986 in Washington, D.C.; and 6 to 10 October 1986 in Boston, Massachusetts, all in the U.S.A.

For more information contact: The New England Epidemiology Institute, P.O. Box 57, Chestnut Hill, Massachusetts 02167, U.S.A.

## International Symposium on African AIDS

This meeting to take place in Brussels, 22 and 23 November 1985, is being organized by the Brussels Pasteur Institute and the Institute of Molecular Biology and the Division of Infectious Diseases, St. Pierre Hospital, of the University of Brussels. The World Health Organization, the Fond National de la Recherche Scientifique, and other institutions are providing support.

The purpose of this international symposium is to summarize and discuss the most recent data on the clinical, epidemiological and virologic aspects of African AIDS. In many respects, African AIDS presents remarkable features, and recent studies indicate that the situation now prevailing in equatorial Africa poses a crucial public health problem. It is hoped that this symposium will contribute to better control of the AIDS epidemic.

For further information write to: D. Shanni, SDR Associated, Rue Vilain XIIII, 17a, B-1050 Brussels, Belgium.

## 53rd Conjoint Meeting on Infectious Diseases

The 53rd Conjoint Meeting on Infectious Diseases will take place 25 to 27 November 1985 in Toronto, Ontario, Canada. It is being organized by the Canadian Association for Clinical Microbiology and Infectious Diseases along with the Canadian Public Health Association, the Canadian Society for Tropical Medicine and International Health, the Canadian Association of Medical Microbiologists, the Canadian Society of Microbiologists, the Pan-American Group for Rapid Viral Diagnosis, and the Canadian Infectious Diseases Society.

The plenary sessions will include lectures on herpesvirus, the genetic probes for the diagnosis of infectious diseases, and AIDS: the LAV virus story. Scientific sessions are in the format of 15-minute presentations. The subjects are wide-ranging, covering all aspects of human clinical microbiology and infectious diseases and including epidemiological, environmental and basic studies.

For more information write to: Dr. Pierre Payment, Institut Armand-Frappier, C.P. 100, Succ. L.D.R., Laval, QC, Canada H7N 4Z3.

**Second International Conference on Oral Rehydration Therapy**

This conference will be held 10 to 13 December 1985 in Washington, D.C., U.S.A. It is sponsored by the U.S. Agency for International Development (AID) in cooperation with the International Centre for Diarrhoeal Disease Research/Bangladesh, the United Nations Children's Fund, the United Nations Development Program, the World Bank, and WHO.

Topics to be discussed at the conference include: Communications and Social Marketing; Distribution and Logistics; Health Personnel Training; Supervision and Monitoring; Evaluation and Cost Issues; and Other Interventions for the Reduction of Diarrhoeal Diseases. Topics for the plenary sessions include: New Understanding of the Diarrhoeal Disease Process and New Therapies; Interventions to Prevent and Control Diarrhoeal Disease; and Diarrhoea, Nutrition, and Other Interventions.

For further information regarding the conference and registration, write to: Ms. Linda Ladislaus, ICORT II Conference Staff, Creative Associates, Inc., 3201 New Mexico Avenue, N.W., Suite 270, Washington, D.C. 20016, U.S.A.

# Publications

**Occupant Protection and Health Promotion.** David Sleet, ed. Special Edition of *Health Education Quarterly* (Official Publication of the Society for Public Health Education) Vol. 11(2), 1984. 110 pages.

Motor vehicle occupant protection issues in community, medical care, corporate, and school settings are treated in 11 articles. Reviews of successful child safety seat intervention efforts are presented along with selected research studies, position papers, and epidemiological approaches that show the relevance of occupant protection to health promotion activities. This information should be valuable to health and safety professionals interested in structuring more comprehensive and effective occupant protection programs. Bibliographies and resources on child restraint and safety belt research activities are included.

This publication is available from John Wiley and Sons, Inc., Journals Division, 605 Third Ave., New York, N.Y. 10158, U.S.A.

**Guide to Public Health Practice: HTLV-III Screening in the Community.** Kensington, Maryland, Association of State and Territorial Health Officials Foundation, 1985. 20 pages.

This publication presents the recommendations of a conference convened by the Association of State and Territorial Health Officials of the United States of America to develop a suggested national policy for HTLV-III testing in the community. It contains information related to the establishment of alternative testing sites and to the division of persons with repeat positive test results into high risk and low risk groups based on a recommended medical assessment, and counseling recommendations for both high risk and low risk individuals.

Copies of this publication can be obtained by contacting: Gary J. Clarke, Executive Director, ASTHO Foundation, Suite 207, 10400 Connecticut Avenue, Kensington, Maryland 20895, U.S.A.

PAN AMERICAN HEALTH ORGANIZATION
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