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Epidemic Neuropathy in Cuba

An unusual number of cases of optic neuropathy were detected in the second half of 1991 by the Cuban epidemiological surveillance system in the province of Pinar del Río on the extreme western end of the island. The cases reported occurred mainly among middle-aged male tobacco growers who smoked heavily and drank moderately. The patients complained of weight loss, blurred vision, sensitivity to light, and gradual loss of visual acuity over a period of approximately one to four weeks. Upon examination they presented central or cecocentral scotoma, usually bilateral and symmetrical, with loss of red-green color vision, detected from their inability to distinguish colors on the Ishihara test, pallor of the temporal edge of the optic disk, and loss of axonal fibers in the papillo-macular tract. At that time a diagnosis of amblyopia due to tobacco and alcohol consumption was made, and the possibility was suggested of optic neuropathy of toxic-nutritional etiology.

By the end of July 1992 a total of 168 cases had been reported, with monthly figures of between 14 and 36 cases, all in the province of Pinar del Río. In December of the same year the number of cases had increased to 472, and cases were being reported in 5 of Cuba's 14 provinces (Havana, Sancti Spiritus, Holguín, and Santiago de Cuba, in addition to Pinar del Río).

A change was also observed in the pattern of the disease. Cases were presenting with complaints of pain in the upper and lower limbs, dysesthesia and paresthesia, mainly in the legs (ankles), burning sensation on the sole of the foot, weakness in the legs, an increase in urinary frequency, urgency in urinating, and, in some cases urinary incontinence. These cases now predominated among middle-aged women and were clinically characterized by a loss in bilateral and symmetrical sensitivity to vibration and touch, and tingling, mainly distal, in the hands and feet. The cases also presented diminished or absent Achilles reflexes, very intense patellar reflexes, presence of crossed adductor response, and absence of Babinski's sign.

These findings were consistent with predominantly sensory neuropathy, including

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dorsolateral myelopathy (a form of neuromyelopathy). Purely ocular cases (a form of optic neuropathy) and mixed cases (a form of myelo-optic neuropathy) also continued to be observed. Other signs were neurosensory hearing loss, sensory ataxia, dysphonia, and dysphagia. Biopsies of the sural nerves showed, under both light and electron microscopes, lesions compatible with distal axonopathy. The etiology of these lesions could have been nutritional, toxic, or metabolic.

In the early months of 1993 an exponential increase took place in the number of cases occurring in all the provinces in the country, making immediate attention to the problem imperative. A working group was set up with the participation of the Ministry of Public Health, Civil Defense disaster relief, six scientific groups from 55 institutions, and the Office of the President. As of 18 June 1993 the total number of cases reported was 45,584 with a prevalence rate of 418.7 per 100,000. Although those affected have ranged in age from 4 to 75, most of the cases (86.6%) have occurred in the 25-64 age group. Cases among children under 15 and adults over 65 have been exceptional. Likewise, cases among pregnant women have been unusual.

The disease is more prevalent among females than males, showing a specific rate of 494 per 100,000 for women and 344 for men. The initial optic form was more prevalent among men (231.9 as compared with 202.2 for women), whereas the neuromyelopathy has affected predominately women (136.7 as against 55.5). Table 1 provides specific information by age groups, as of 18 June 1993.

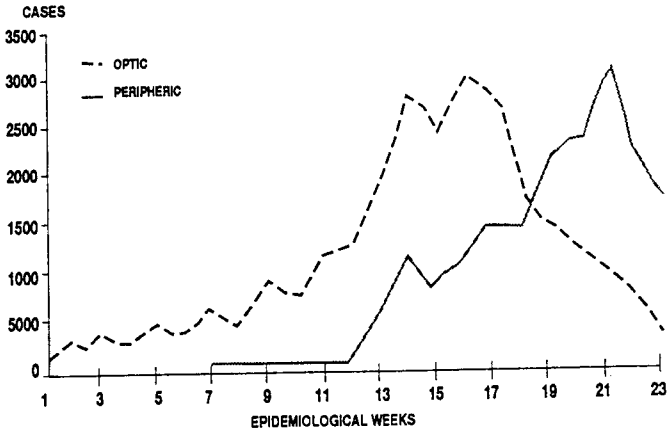
In terms of geographical distribution, the epidemic shows a pattern of decreasing numbers of cases from west to east, as is shown by the map indicating the rates by province. The most recent information shows figures of 1,310 cases per 100,000 for Pinar del Río and, at the other extreme, rates of 59 per 100,000 for Guantánamo and Isla de la Juventud. The peak incidences for the optic form of the disease occurred between epidemiological weeks 14 and 18 in 1993, with an apparent movement from west to east. The optic form appears to be abating, while the neuromyelopathic forms, which were increasing rapidly, currently appear to be reaching an epidemiological plateau (Figure 1).

Table 1. Cumulative prevalence[1] of epidemic neuropathy. Cuba, 18 June 1993.

Age	Optical	Peripheric	Total
<15	2,5	1,5	4,1
15-19	60,6	54,1	114,7
20-24	101,5	107,5	209,0
25-44	359,9	298,3	658,2
45-64	516,5	321,9	838,4
65+	162,1	128,4	290,6
Total	238,4	180,3	418,7

[1]Rates per 100.000 population

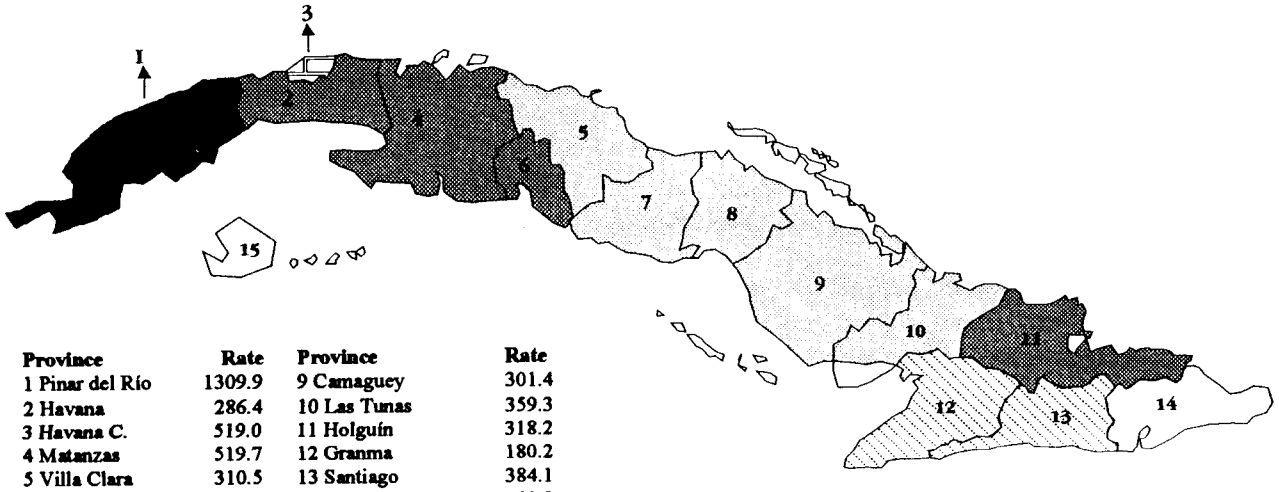
Figure 1. Weekly incidence of epidemic neuropathy, Cuba, 1993.



The evaluation, diagnosis, and treatment of the patients has required massive mobilization of Cuban resources, including a 30% increase in the number of hospital beds, the participation of 18,000 family doctors in initial diagnosis, the setting up and equipping of approximately 60 support centers in all the provinces for confirmation of the diagnosis by ophthalmologists, neurologists, and internists equipped with appropriate instruments: ophthalmoscopes, tangent screens for assessment of the field of vision, Ishihara's test, cards for examination of contrast sensitivity, and clinical neurophysiology equipment for measuring the speed of nerve conduction and sensory responses.

All patients have received parenteral treatmen' with vitamin B complex, alone or in combination

Cumulative prevalence[1] of epidemic neuropathy per province, Cuba, 1993.



Province	Rate	Province	Rate
1 Pinar del Río	1309.9	9 Camaguey	301.4
2 Havana	286.4	10 Las Tunas	359.3
3 Havana C.	519.0	11 Holguín	318.2
4 Matanzas	519.7	12 Granma	180.2
5 Villa Clara	310.5	13 Santiago	384.1
6 Cienfuegos	495.6	14 Guantánamo	59.8
7 Sancti Spiritus	360.0	15 Isla Juventud	59.6
8 Ciego de Avila	211.2		

[1]Rate per 100,000 population.

with other therapeutic forms. Most of the patients have shown a significant improvement in neurological status, and those with ocular manifestations have also improved, except for hose who have suffered damage to the optic nerve. However, a few patients have had relapses, either in the same form or with other manifestations. There have been no fatal cases, and generally only a small proportion have been left with severe sequelae.

Vitamin supplementation was initiated in early May 1993 among the entire Cuban population (11 million) and is continuing.

The etiology of the neuropathy epidemic appears to be related to various factors, including nutritional deficiencies and a probable neurotoxic factor. However, no cases of protein-caloric malnutrition were detected among the patients. Preliminary results have shown low levels of neurotoxic agents such as pesticides, heavy metals, and methanol. Consideration is being given to chronic cyanide poisoning resulting from the consumption of foods such as cassava, manioc, beans, and cabbage. An enterovirus (Coxsackie) was isolated in some of the patients, but complete identification is pending and the role that this agent may be playing is not yet clear. The evidence of contacts among the cases is low and there are few signs indicating contagion, although the pattern of spread of the disease may be consistent with an infectious process. Accordingly, intensive research is being carried out in several institutions in Cuba and abroad in order to determine the etiology of the disease as soon as possible.

Comments

Epidemic outbreaks of tropical neuromyelopathies (TNM) have been described in the Caribbean for more than 100 years *(1, 2)*. However, an epidemic of this magnitude had not heretofore been reported in Cuba. TNMs are a group of neurological conditions of multifactorial etiology that occur with high incidence and high prevalence in the equatorial regions of the world *(3)*. Their neurological manifestations include peripheral sensory and motor neuropathies, combined with dorsolateral myelopathy, tropical ataxic neuropathy (TAN), tropical spastic paraparesis (TSP), optic neuropathy, and neuro-sensory hearing loss. This wide spectrum of neurological manifestations was frequently observed in association with severe nutritional deficiencies among prisoners of war in the Far East during World War II. Tropical sprue may have contributed to the development of these syndromes, since no similar events occurred among prisoners of war in temperate or cold regions where nutritional and caloric deficiencies

were probably more severe than in tropical internment camps. In addition to the combination of malnutrition and tropical sprue, certain neurotoxins have been implicated, including tobacco, ethyl and methyl alcohol, arsenic and heavy metals, pesticides, industrial products, and drugs *(4)*. Chronic cyanide poisoning caused by consumption of cassava and other cyanogenic foods has been identified as the cause of large-scale epidemics of TNM, especially in Africa *(5,6)*. The description of the Nigerian case *(7)* is of particular interest as concerns the present epidemic. In regard to infectious agents, the HTLV-1 retrovirus has been associated with TSP, polymyositis, and neuritis *(8)*.

The clinical characteristics of the neuropathy epidemic in Cuba largely resemble the characteristics of subacute myelo-opticoneuropathy (SMON)*(9)*, except for the absence of abdominal symptoms that commonly precede the neurological manifestations. Between 1955 and 1970 approximately 10,000 cases occurred in Japan, with the highest incidence in August and September between 1965 and 1970. Circumstantial evidence implicated clioquinol as an etiologic agent; however, this drug was used widely in Japan and in other countries for more than 20 years before the appearance of SMON. Furthermore, the epidemic disappeared several months before clioquinol was banned, and approximately one third of the patients had not taken it before the onset of the disease *(10)*. An infectious agent was considered as the probable cause, although this was never demonstrated, despite the isolation toward the end of the epidemic of a viral DNA in the stools and cerebrospinal fluid of patients with SMON. The role of this agent has yet to be clarified *(11)*.

Although malnutrition is not observed in the Cuban population, the intake of proteins has diminished as a result of economic difficulties, food availability has been restricted, substitutes have been introduced, and there has been an increase in the production and consumption of vegetable products and tubers, mainly cassava; in addition, food storage and refrigeration problems exist owing to the frequent and prolonged electric power outages that have occurred in recent years. It is also possible that the caloric and energy expenditure of the people has increased as a result of the widespread use of bicycles as a means of transportation for the adult population of Cuba These factors, in addition to the good response to the treatment, suggest that a nutritional deficiency may be an important component in the etiology of the disease, probably in combination with one or more naturally occurring neurotoxins.

The Pan American Health Organization is coordinating international assistance efforts and providing the scientific collaboration needed to study the etiology and pathogenesis of the neuropathy epidemic in Cuba.

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(Source: Report of the PAHO/WHO Mission to Cuba: G. Llanos (Coordinator), D. Asher, P. Brown, D. C. Gajdusek, R. Muci-Mendoza, M. Márquez, G. C. Román, J. C. Silva, P. S. Spencer, and B. Thylefors.)

Methodology for the Study of Inequities in Health Conditions

In recent years, the Pan American Health Organization has collaborated with Member Countries to promote the development of systems for evaluating and monitoring the health situation of different population groups based on living conditions[1]*. The main objective is to identify and adapt practical options that are economically and technically viable to strengthen the countries' capabilities to analyze the health situation and to evaluate emergent changes and trends taking into consideration existing disparities and inequalities. Preliminary results of initial studies have stimulated the interest of the authorities since they represent a feasible approach for analyzing national and local level experiences. In certain cases, an analysis of the health situation was done and in others there were projects to monitor priority problems. This article presents some methodological considerations for a study of inequalities in health conditions with emphasis on the use of secondary information for the identification of problems; other applications, such as monitoring and management of local health services are not discussed.*

Health situation analysis (HSA) consists of the production and processing of information for the identification of **profiles of priority problems** in various **population groups**. HSA is a fundamental function for **decision-making** on health and welfare policies, planning, and management and for **evaluating** the impact of such decisions on the population.

Health problems are not distributed randomly throughout the entire population, and their frequency and severity even less. It is easy to demonstrate that the profiles of priority health problems have changed in all societies throughout history. The health situation is related to the most **general** processes of such societies: long-term demographic and ecological processes, the development of their productive forces, their ways of organizing the production and distribution of goods and services, and their forms of political organization. In this regard it may be said that the health situation of a population bears a relation to the "historical times" of such societies.

However, in each "historical time" and in each society, different health profiles are found in different sectors of the population. These inequalities, at the group level, translate into different **particular** forms of insertion and participation in the general operation of the society, land use, and the goods and services that the society produces. Different living conditions are expressed in the daily life of each population group through different needs, risks, and health problems. The living conditions of each group thus mediate between the most general processes of the society and the health profiles specifically found in each of these groups. This is the field of public health actions.

At a third explanatory level, health differences are related to **singular** variations, that is individual (biological and social) variations that are translated into greater susceptibility, risk, or resistance with regard to certain health problems. This is the basic field of action of clinical practice. There are examples of good epidemiological studies on inequalities using this kind of approach, but their cost and operational complexity make them difficult to replicate and generalize in the health services.

These three levels of approach are complementary, each contributing to comprehensive knowledge of the health situation. Practically all categories and variables can be defined and operationalized in each of these approaches. However, the decision as to which level is to be employed has important practical consequences in terms of cost and usefulness. For these reasons the population-group approach is suggested for HSA in the field of public health.

Not every inequality can be considered an inequity, but any inequality that reflects

[1]See PAHO's *Epidemiological Bulletin*, 12(3):7-10, 1992.

differences in living conditions represents an inequity and raises a priority ethical challenge for health workers. As a result, the essence of HSA is the study of the inequalities and **particular** inequities of each population group, because these differences are precisely the area on which the health and welfare programs and services are expected to act.

At the group level and to the extent that it shows the relationships between health problems and living conditions, HSA is the indispensable basis for strengthening comprehensive social and intersectoral responses. Thus, it facilitates not only evaluation of the possible impact of such actions and decisions, but also the organized participation of the population, insofar as it relates the health problems of each social group to their daily life.

Some Practical Consequences of Methodological Problems

The study of inequalities and inequities in relation to decision-making in the area of health and welfare poses certain methodological challenges of great practical importance, for example:

1. It should use **relatively homogeneous population groups** *as study units.*

The use of large, highly heterogeneous population units, although easier, tends to conceal the true situation of each population group behind general averages and makes it difficult to adopt decisions and evaluate their impact. This may be useful in comparing major historical periods, but it has enormous limitations with regard to synchronization with the real political times of the decision-making processes. As a result it tends to become a purely academic or rhetorical exercise, more useful as a tool for criticism than for practical action by social leaders and those who govern.

2. It should use as study units **"real population groups"** *as they are organized and exist in* **daily life** *and as objects and subjects of health and welfare actions.*

The use of "artificial" population groups as units of analysis, classified into some individual attribute or variable, has great analytical potential in research aimed at establishing an association between a health problem and one or several determining processes. They are the basis of the studies of "individuals". However, they break with what is essential in all human groups--the interactions between their members--and as a result they make it difficult to appraise problems as they occur in the daily life of populations. Hence the use of units more closely linked to the way populations exist and interact in real life is related to the practical usefulness of HSA for governments and civil society. This is essential for "population studies."

3. It should refer not only to population groups but to **territories.**

At the present time, most social responses, both societal and community, are organized territorially. A territory is thus not only the space where a certain population has settled, but also where it has organized its life and where the interactions are established that make its own existence and social reproduction possible. They are, consequently, population-territories.

Hence, the practical consequences of the way in which the territorial units are organized must be considered . The more heterogeneous the territorial units are from the point of view of the living conditions of their populations, the less useful they will be for the study of health inequalities and inequities, and, as a result, for making and evaluating decisions concerning them.

4. Another important practical consideration refers to the **way of presenting the results** *of HSA. Even if it describes relatively homogeneous population groups, the mere enumeration of the leading causes of death and morbidity is of limited usefulness for decision-making.*

Reporting on avoidable deaths or cases, for example, has a greater impact. If, in addition, a procedure is used that does not use other countries as models for comparative purposes, but rather the lowest rates achieved in different population groups in the same country, its usefulness increases. Problems of inequity thus leave the field of rhetoric and become specific not only in terms of differences according to living conditions, but also as concrete and practical targets.

Methodological Proposal for the Study of Inequalities and Inequities

A synthesis of the principal phases of the methodology that was used in the actual project development in various countries of the Region is outlined below:

The **first step** consists of defining the minimum population-territory units (units of information). These are the territorial units with the smallest populations for which information can be obtained at the level of the entire country on the living conditions of the population, the health and welfare services, health impairments (deaths, morbidity, etc.), and basic demographic aspects (size of the population, structure by age and sex, growth). The smaller the unit, the greater its internal relative homogeneity.

The **second step** refers to the regrouping of these minimum population-territory units into "strata," respecting their relative homogeneity as much as possible. As a first approximation, we have promoted grouping based on the prevalence of poverty as shown in already existing poverty maps, or some similar indicator used for other purposes, when such maps are not available or when it is felt that other indicators are more discriminating in dealing with small territories.

It is suggested that from five to 10 population-territory strata be used, based on the prevalence of poverty, in order to enhance the power of the study.

Subsequent approaches may add other variables such as predominant economic activity, geoecologic location, and degree of urbanization. For each of these variables simplified scales have been developed which are being evaluated.

The **third step** consists of presenting the different profiles of mortality, morbidity, and other variables concerning the health services and impairments to health. For this purpose, the previously prepared data on the population-territory units incorporated into every "stratum" of relative homogeneity are regrouped. This is the step that requires the most preparation and requires the most caution because of the difficulties deriving from how the variables are grouped and from the potential for under reporting.

It is recommended that the list of cause groups, called 6/61 be used. This list, which is compatible with the Basis Tabulation List of the International Classification of Diseases (ICD-9) used by the countries[1], includes six large groupings based on the kind of intervention strategies that are employed and other criteria. It also permits, if necessary, subdividing each group into an average of 10 subgroups for a second, more detailed, scrutiny.

A procedure has also been developed for estimating unregistered and/or undiagnosed deaths and distributing them by age, sex, and cause group. This procedure was used in PAHO's *Health Statistics from the Americas, 1992 Edition*, Scientific Publication No. 542, 1992.

By constructing a vector with the lowest rates found in the different population "groups", a procedure has been adapted and promoted for estimating avoidable deaths in each population group[2]. By using this vector, the indirect adjustment procedure, and the standardized mortality ratio (SMR), the avoidable deaths in each group may be calculated.

Among the great advantages of this procedure is the use of the real values of the country for comparison purposes. In addition, the lowest rates for each age and sex do not usually correspond to a single population group and consequently point up the qualitative differences of living conditions and of health and welfare problems without proposing as a model the living conditions of any particular group.

Most of the work has been done with mortality because it usually supplies the most reliable and accessible information; however, adaptations of the same procedure can be utilized to estimate other kinds of avoidable events. Other technical precautions should be taken when required. For example, in countries with small populations it has been necessary to average information on mortality over a period of three years in order to stabilize rates.

[1]Groups are defined as follows: 0.00 Symptoms, signs and ill-defined conditions (780-799); 1.00 Communicable diseases, comprising all infectious and parasitic diseases (001-139), meningitis (320-322), acute respiratory infections (460-466), pneumonia (480-486) and influenza (487); 2.00 Neoplasms (140-239); 3.00 Diseases of the circulatory system (390-459); 4.00 Certain conditions originating in the perinatal period (760-779); 5.00 External causes of injury and poisoning (E800-E999), and 6.00 All other diseases (remainder of 001-779).

[2]Mortality analysis - New uses for old indicators. *Epidemiological Bulletin* 10(2):1-6, 1989.

Finally, based on the results indicated above, priority problems can be identified for use as "tracers" in observing the evolution over time of the various profiles of living conditions.

When it is useful and necessary, knowledge of the internal distribution of each stratum in population-territory units makes it possible to select typical units in each stratum for use as "sentinel" populations. Such selection would then make it possible to devote special care to these territorial units in order to obtain information, which, owing to their nature (for example, qualitative) or the quality of reporting, could not be obtained reliably for the entire national territory.

This is also the basis for the development of systems to monitor the health situation according to living conditions and to evaluate the impact of the decisions within relatively short periods of time.

Obviously, although these methodologies are still being developed, the challenges they pose are arousing the interest of researchers in the Region. However, even in their current stage of development these methodologies have already become tools that have demonstrated their technical and economic feasibility and viability, and more importantly, their usefulness for the authorities and social leaders of the countries.

Preliminary results obtained from studies in various countries which used this methodology will be published in future editions of the PAHO's *Epidemiological Bulletin*.

(*Source*: Health Situation Analysis Program, HDP/HDA, PAHO.)

Health Statistics from the Americas

Health Statistics from the Americas, 1992 edition, is the second in a series of yearbooks the Pan American Sanitary Bureau launched as part of its strategy to disseminate information on the health situation in the Region of the Americas. These yearbooks provide background data and complement the quadrennial publication, *Health Conditions in the Americas*.

This publication primarily presents estimated cause-group specific death rates for 24 countries, by age group and sex, for each five-year period between 1960-1964 and 1985-1989; rates by age group and sex, but not by cause group, also are provided for another two countries. The population of the 26 countries exceeds 99.5% of the total population of the Region of the Americas. In addition, this volume presents summarized mortality data for contry-year units that became available after publication of the 1991 issue of the yearbook, which represents 58 data years from 25 countries.

Starting with this yearbook, in addition to mortality, other types of health data will be progressively incorporated. To that end, the third chapter contains series of reported cases of certain communicable diseases. Future yearbooks will include series on other diseases, as well as health indicators and other types of data related to health status.

Pan American Health Organization. *Health Statistics from the Americas, 1992 edition.* Washington, DC: PAHO, 1992, 362 pp (Scientific Publication 542). ISBN 92 75 115427. Published also in Spanish (1992) with the title: *Estadísticas de Salud de las Américas, Edición de 1992.* Publicación Científica 542. ISBN 92 75 315426.

Tracing Infection by *T. cruzi* in El Salvador

Since 1913[1], El Salvador has reported manifestation of the presence of Chagas' disease. Although the availability of current information on this disease is quite limited, the most recent epidemiological information on American trypanosoma dates back to 1975 when *Rhodnius prolixus* and *Trypanosoma rangeli* were detected at altitudes as high as 330 meters above sea level, and *Triatoma dimidiata* and *Trypanosoma cruzi* at even higher altitudes. A human infection of 20.5% was also found, and identified cats and dogs as being the most prevalent domestic carriers. Relevant studies found that an average of 39.9% of all houses in the country were infected with this disease[2]. Currently, El Salvador is conducting a national study to determine the role that the donation of blood, through blood banks, plays in the transmission of Chagas' disease in that country.

Since 2 June 1992, the Ministry of Health and Public Welfare, through its laboratory units, has been conducting indirect hemagglutination tests to detect infection by *T. cruzi* in blood donors at the state health services' blood banks.

The antigen for this study was provided by the Ministry of Health of Honduras and a dilution level of 1:20 was used. From June to December 1992, tests were conducted in blood banks at state hospitals in 14 departmental capitals. As shown in the following table, a total of 2,039 blood samples were collected of which 78, or 3.8%, were positive.

It was also shown that a high risk of disease transmission through blood transfusion exists in the state hospitals' blood banks; one of every ten donors in hospitals in Sonsonate and in Ahuachapán were found to be infected with *T. cruzi*. Similarly, a high risk of disease transmission was noted in blood banks in La Libertad and Usulután hospitals.

Hospital	Samples Taken	Positive Samples	%
Santa Ana	261	12	4.6
Sonsonate	341	37	10.8
Ahuachapán	77	8	10.4
La Libertad	45	4	8.9
Chalatenango	10	0	0
San Vicente	200	6	3.0
La Paz	145	3	2.0
Cuscatlán	38	1	2.6
Cabañas	24	0	0
San Salvador	632	5	0.8
San Miguel	204	0	0
La Unión	18	0	0
Usulután	14	1	7.1
Morazán	30	1	3.3
Total	2,039	78	3.8

Although these studies are incomplete, they indicate that infection by *T. cruzi* is evident throughout the entire salvadorean territory and that the blood banks are playing a role in the transmission of American trypanosomiasis.

(*Source*: Based on reports from the Central Laboratory, Ministry of Public Health and Social Welfare. PAHO/WHO Country Office, El Salvador.)

Editorial Comment

American trypanosomiasis, along with HIV, hepatitis B and C, and syphilis, constitute a group of communicable diseases by transfusion, whose prevention is indispensable for safe blood criteria to become a reality. Studies as the one initiated in El Salvador are needed, to show implications of transfusion in the spread of American trypanosomiasis and the need to implement control measures at the level of blood banks.

[1]Peñalver, L.M. et al. Tripanosomiasis en El Salvador. *Arch. Col. Med. El Salvador* 18(2):97-134, 1965.

[2]Cedillos, R.A. Chagas disease in El Salvador. *Bull Pan Am Hlth Org 9:135-141, 1975.*

Caribbean Epidemiology Centre Scientific Advisory Committee

The 1993 meeting of the Scientific Advisory Committee (SAC) of the Caribbean Epidemiology Centre (CAREC) took place from 17 to 19 March at the CAREC facilities in Port-of-Spain, Trinidad. The meeting began with a presentation on the health situation of the population in CAREC member countries. Progress attained at the Centre during 1992 with regard to strategic and operational planning was reviewed in detail. In addition, a summary of the 1992 meetings of national epidemiologists and national laboratory directors was presented, as well as a summary of a cholera case-control study carried out in Guyana. The Director and staff of CAREC were commended by SAC on the high quality of the Annual Report.

Working group sessions were held on a number of topics, including: Disease surveillance with emphasis on the complementary use of information systems, non-communicable disease and injury surveillance, sexually transmitted diseases update and priorities, social science development at CAREC, and mycobacterial infections.

SAC developed recommendations intended to provide guidance and support to the scientific program at CAREC. Many are of general interest and are summarized below:

-The offices of Chief Medical Officers (CMOs) should be supported in their efforts to improve CMO annual reports.

-While recognizing the potential value of information systems for the Caribbean, they should be goal-driven and should meet decision-making and policy needs. National and local capacity should be strengthened, so that the systems can be implemented and sustained. Further, countries should be involved at all stages, including initial design.

-CAREC should seek to integrate health information and surveillance systems, as epidemiologists have the primary responsibility for ensuring compatibility and integration. Efforts should be made by CAREC to strengthen and promote data use and analysis as an integral part of the development and implementation of these systems.

-CAREC should continue its efforts to improve the quality and usefulness of mortality data, such as by assisting member countries in sensitizing and educating physicians about cause-of-death certification, as well as in developing methodologies for analysis and utilization of their mortality data.

-While existing data sources for mortality and morbidity may be used to assess disease burden, risk factor surveys and data on coverage and utilization of services are also appropriate components of surveillance systems. CAREC should assist member countries to develop and/or improve hospital discharge data and disease registries, and to use their data, as well as to explore mechanisms for systematic collection of data on risk factors.

-CAREC should seek to strengthen epidemiology capacity in the universities in the Caribbean, other scientific institutions and governmental and nongovernmental organizations.

-A strategic plan should be developed for the CAREC contribution to vector control in the Caribbean.

-CAREC should more fully assess current trends and issues relating to tuberculosis as a public health problem in the Caribbean, and propose feasible control and prevention strategies.

-The Ministers Responsible for Health should be advised that the integration of control programs for HIV/AIDS and other STDs should be reflected in their statement of health priorities under the Caribbean Cooperation in Health strategy.

-A working group of CAREC staff and external experts should be appointed to further the process of strategic planning in behavioral research adn communication.

-At its meeting of 22 and 23 March, the CAREC Council accepted the recommendations of SAC adn forwarded them to the Director of PAHO. As in 1992, and in tis capacity as the main governing

body of CAREC, created under the terms of the multilateral agreement for the operation of CAREC signed by all member countries, Council expressed its concern with the decline in quota contributions and consequent accumulation of arrears in payment, which is having a substantial negative impact on the operations of the Centre.

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

Calendar of Meetings

Second Chilean Epidemiology Congress

The Second Chilean Epidemiology Congress will be held from 26 to 29 October 1993 under the sponsorship of the Ministry of Health of Chile, the Pan American Health Organization, the Chilean Public Health Society, the Chilean Medical Association, the Pontificia Universidad Católica de Chile, and the Universities of Chile, Concepción, Frontera, Valdivia, and Valparaíso.

On 26 and 27 October national and international professors will offer refresher courses on the following subjects: EPIINFO; stratified and multivariate analysis; survival analysis; case control; use of epidemiology in planning and evaluation of health services; risk, population, causality, and environment–the four basic concepts of epidemiology; clinical epidemiology; epidemiological methods in environmental health; and epidemiology in workers' health.

The sessions on 28 and 29 October will be devoted to presentations and roundtables on current topics in epidemiology, with participation by prominent invited panelists. Research projects selected by the Scientific Committee of the Congress will also be presented during these days, either at programmed sessions or through exhibits of information.

Additional information may be obtained from: Secretariat, Second Chilean Epidemiology Congress, MacIver 515, Casilla Postal 50.960, Correo Central, Santiago, Chile. Telephone: 639-4001, extension 160. Attention: Claudia Morales or Sandra del Valle.

Sixth Latin American Congress and Eighth World Congress on Social Medicine

The Sixth Latin American Congress and Eighth World Congress on Social Medicine will take place from 20 to 24 March 1994 at the University of Guadalajara in Guadalajara, Mexico. The theme for the Congress will be "Health at the End of the Millennium: Challenges and Alternatives for Change." This event is being organized by the Latin American Association of Social Medicine, the International Association of Health Policy, and the University of Guadalajara.

The issues that will be discussed include the theoretical-methodological perspectives of social medicine; neoliberal policies and their impact on health; health care policies and models; population, gender, age groups, and health; financing of health research; human resources education; history, health, and society; urban health; new epidemiological profiles; living conditions and health; health of ethnic groups and minorities; the process of work and health; citizen participation, management, and health; health financing; poverty and health; mental health; ethics and health; violence and health; alternative medicine; ecology and health; and culture and health.

Information may be obtained from: the Organizing Committee of the Sixth Latin American Congress and Eighth World Congress of Social Medicine, Jesús Galindo y Villa 2941, Jardines de la Paz, 44860 Guadalajara, Jalisco, Mexico. Electronic mail: alames@ leon.dea.udg.mx. Fax: 52-3-617-55-06. Telephone: 52- 3-617-78-46.

International Classification of Diseases

A meeting of Directors of Collaborating Centers of the World Health Organization was held at the Pan American Health Organization in Washington, DC, from 20-26 April 1993. The purpose of the meeting was to discuss the preparation of the 10th Edition of the International Classification of Diseases (ICD-10) and the progress made towards its implementation.

There are three centers in the Region of the Americas: the WHO Center for the Classification of Diseases in Portuguese (Sao Paulo, Brazil); the WHO Center for the Classification of Diseases in Spanish, (CEVECE) (Caracas, Venezuela), and the WHO Collaborating Center for North America for the Classification of Diseases (United States of America). In addition, there are two national centers: The Mexican Center for the Classification of Diseases (CEMECE) (Mexico D.F.) and the Cuban Center for the Classification of Diseases (Havana, Cuba).

The ICD-9 has been used in the Region since 1978. It consists of two volumes: the first contains the introduction and a tabular list and the second contains the alphabetical index. The ICD-10 will consist of three volumes: the first will include the tabular list; the second, the instruction manual and, the third, the alphabetical index.

The three collaborating centers are progressing with the revision of the ICD-10 in their respective languages. Studies are underway to determine the quality of information recorded on the Medical Certification of Cause of Death, especially when there are Multiple Causes of Death, and when the principal cause of death is AIDS.

The center in Sao Paulo reported that the Portuguese version of Volume I of the ICD-10 is in the process of translation and should be published in 1994. The Center also mentioned the growing problems related to data quality owing to the requirements that confidentiality be maintained in the certification of death when the principal cause of death is AIDS-related. In general, mortality statistics indicate a problem when death is caused by external causes of injury. The need for confidentiality has occasioned the tendency to omit certain diagnoses in mortality reporting. Similarly, in morbidity reporting, there is the tendency to omit sensitive diagnoses or only use the ICD codes for these conditions. This introduces the potential for errors and underreporting.

The center in Venezuela reported that the Spanish version of the ICD-10 has been completed. It was also reported that the national classification of surgical procedures and treatments has been revised based on the ICD-9. There was continuing investigation of the quality of death certificate coding, and a study into coding multiple causes of death when one cause was an infectious disease.

The North-American Center reported on the continuing progress on the development of a computer system for the assignment of ICD codes from national language entries on death certificates. This is being converted for use with ICD-10 and further enhanced by the inclusion of external cause of death entries. This center also reported on the progress of work on the development of procedures classification and further work is pending until test results have been authorized.

The World Health Organization/Geneva reported that the English version of Volume I of ICD-10 was published in June 1992 and that Volume II will be published in August 1993; the French language version is in preparation. The Index will be published in February 1994. Translation rights for ICD-10 have been agreed for publication in approximately 20 languages.

The Nordic center reported on the production of the third edition of a bibliography on ICD and other health-related classifications which will be ready during 1993. The London center commented on their experience with the analysis of the WHO recommended perinatal death certificate which was introduced in England and Wales in 1986. This analysis was designed to provide useful information to epidemiologists and planners on grouped causes of death.

The topic of equivalence tables between ICD-9 and ICD-10 was also discussed. During the construction of the index, ICD-9 terms are assigned ICD-10 codes thus allowing for equivalent tables to be constructed. Nevertheless, the use of "national bridge coding" exercises was recommended.

The next meeting of the Collaborating Centers of the World Health Organization will be convened in Caracas, Venezuela. After discussions on the proposed schedules for the implementation of ICD-10 in the areas represented, it was the consensus that most countries would implement ICD-10 in 1995 or 1996.

(Source: Health Situation Analysis Program, HDP/HDA, PAHO.)

AIDS Surveillance in the Americas

Cumulative number of cases reported by year, and cumulative number of cases and deaths, by country and sub-region. As of 10 June 1993.

SUBREGION Country	Number of Cases Through 1987	1988	1989	1990	1991	1992	1993	Cumulative total(a)	Total deaths	Date of last report
REGIONAL TOTAL	79,523	43,206	51,321	58,056	66,336	65,494	6,709	371,086	217,276	
LATIN AMERICA b)	7,850	7,294	9,357	13,165	15,332	14,029	1,633	69,089	29,206	
ANDEAN AREA	623	734	940	1,468	1,536	900	25	6,226	3,134	
Bolivia	6	10	2	9	17	8	8	60	45	31/Mar/93
Colombia	247	319	410	765	782	434	...	2,957	1,483	30/Sep/92
Ecuador	35	29	22	42	51	57	17	253	161	31/Mar/93
Peru	62	65	118	141	155	73	...	614	216	31/Mar/92
Venezuela	273	311	388	511	531	328	...	2,342	1,229	31/Dec/92
SOUTHERN CONE	246	268	352	606	758	875	149	3,594	1,489	
Argentina	145	169	228	388	478	605	103	2,456	915	31/Mar/93
Chile	77	67	83	130	184	162	20	723	352	31/Mar/93
Paraguay	7	4	3	12	10	18	2	56	38	31/Mar/93
Uruguay	17	28	38	76	86	90	24	359	184	31/Mar/93
BRAZIL	4,017	3,868	5,094	6,884	8,746	7,640	232	36,481	15,619	13/Apr/93
CENTRAL AMERICAN ISTHMUS	280	359	491	907	911	1,151	260	4,436	1,559	
Belize	7	4	0	19	11	12	...	53	46	30/Sep/92
Costa Rica	43	52	57	86	91	117	24	470	285	31/Mar/93
El Salvador	23	34	72	54	132	114	41	470	120	31/Mar/93
Guatemala	31	18	32	92	96	94	25	434	148	31/Mar/93
Honduras	119	189	251	585	495	709	142	2,510	657	31/Mar/93
Nicaragua	0	2	2	7	13	6	6	39	30	31/Mar/93
Panama	57	60	77	64	73	99	22	460	273	31/Mar/93
MEXICO	1,049	964	1,499	2,395	3,166	3,219	967	13,259	6,789	31/Mar/93
LATIN CARIBBEAN c)	1,635	1,101	981	905	215	244	...	5,093	616	
Cuba	16	14	15	28	38	57	...	168	94	31/Dec/92
Dominican Republic	347	356	513	247	177	187	...	1,839	225	31/Dec/92
Haiti	1,272	731	453	630	...	...	...	3,086	297	31/Dec/90
CARIBBEAN c)	836	493	725	701	872	951	102	4,692	2,869	
Anguilla	0	1	2	1	1	0	0	5	3	31/Mar/93
Antigua	3	0	0	3	...	...	...	6	5	31/Dec/90
Bahamas	176	93	168	162	235	259	68	1,161	700	31/Mar/93
Barbados	56	15	40	61	80	78	20	350	271	31/Mar/93
Cayman Islands	3	1	1	2	4	4	...	15	11	31/Dec/92
Dominica	5	2	3	2	...	...	...	12	11	30/Jun/90
French Guiana	103	34	54	41	...	...	...	232	144	30/Sep/90
Grenada	8	3	8	5	7	4	...	35	25	31/Dec/92
Guadeloupe	88	47	47	...	...	...	...	182	85	31/Dec/89
Guyana	10	34	40	61	85	160	...	390	102	31/Dec/92
Jamaica	43	30	66	62	133	99	...	433	299	31/Dec/92
Martinique	48	30	51	45	28	25	10	237	164	31/Mar/93
Montserrat	0	0	1	0	0	0	0	1	0	31/Mar/93
Netherlands Antilles	18	13	16	30	23	10	...	110	55	30/Jun/92
Saint Kitts and Nevis	10	9	5	8	1	4	1	38	24	31/Mar/93
Saint Lucia	8	2	8	3	7	9	...	49	25	31/Dec/92
Saint Vincent and the Grenadines	7	8	6	4	14	7	3	49	34	31/Mar/93
Suriname	9	4	35	35	16	29	...	128	100	31/Dec/92
Trinidad and Tobago	236	160	167	173	235	257	...	1,228	787	31/Dec/92
Turks and Caicos Islands	5	6	7	1	2	4	...	25	23	31/Dec/92
Virgin Islands (UK)	0	1	0	2	1	2	0	6	1	31/Mar/93
NORTH AMERICA	70,837	35,419	41,239	44,190	50,132	50,514	4,974	297,305	185,201	
Bermuda	72	28	35	33	23	17	7	215	156	31/Mar/93
Canada	2,116	1,068	1,238	1,199	1,184	931	34	7,770	5,128	29/Apr/93
United States of America c)	68,649	34,323	39,966	42,958	48,925	49,566	4,933	289,320	179,917	31/Mar/93

a) May include cases for year of diagnosis unknown.
b) French Guiana, Guyana, and Suriname are included in the Caribbean.
c) Puerto Rico and the U.S. Virgin Islands are included in the United States of America.

Evaluation of Epidemiology Course in Haiti

The epidemiology course was started in 1987 to strengthen the practice of epidemiology in the health services in Haiti by developing a more critical and scientific approach to health problems through analysis of the health situation, evaluation of health services, epidemiological surveillance, and research of the natural history of diseases.

A second course, directed by the Ministry of Public Health and Population (MSPP), was organized in 1989. The Haitian Community Health Institute (INHSAC), a nongovernmental organization, was assigned the task of running the third course in 1992.

From 15-18 February 1993, an evaluation mission was conducted in Port-a-Prince to: 1) determine the relevance of the course to Haiti's current situation; 2) evaluate the guidelines, organization, and implementation of the 1992 epidemiology course; and 3) make recommendations for a possible fourth course.

Background and description of the context

First epidemiology course (1987-1988)

The course sought specifically to train doctors/ epidemiologists from the four MSPP regional offices, i.e. one for each of the health districts. Although the populations of these districts varies greatly, the initial proposal provided for one epidemiologist per 1.3 million inhabitants on average.

The general course guidelines were: 1) to train epidemiologists on the job, as this is where health problems arise and the resources are available for solving them; 2) to narrow the gap between the profile of the professional trained outside Haiti and the profile of the professional best suited to the demands of the Haitian situation; 3) to begin integrating the epidemiologist into regional health groups during training, and 4) to develop training activities which will also help to strengthen the health services.

The teaching method designed was dynamic, interactive, geared toward problem-solving, with a limited number of lectures and more seminars and workshops. Hence, the proposal was based on a training model adapted to the Haitian context rather than the more traditional academic approach. The training period would be about 45 weeks long, 28 of which would be spent in the field.

Second epidemiology course (1989-1990)

The objectives and structure of the second epidemiology course were similar to those of the first, except for the addition of a new training module on introduction to management and computer literacy. Eight students participated in the course, 3 nurses and 5 doctors.

Third Epidemiology Course (1992)

The structure of the course was basically unchanged. Following a three-week preparatory period, it was opened on February 19, 1992. It was divided into three sessions of two parts each, a six-part structure with alternative theoretical training in Port-au-Prince and field training.

Recommendations

After analyzing the Haitian health situation and carefully reviewing the 1992 epidemiology course, the evaluation mission finds that training epidemiologists in the field is a high priority in Haiti and makes the following recommendations:

1)To keep training institutionalized to ensure better continuity between the various courses, benefit from the experience, and contribute to the institutional strengthening of the country.

The organizational basis of training should be stabilized in order to enhance the course and develop expertise. INHSAC is still, indisputably, the institution of choice. However, it must increase its capacities, especially in the selection of professors.

2)To specify the objectives of the course with a view to practical training in epidemiology.

The training objectives should be more explicit and based on the level of skills and knowledge to be acquired by the participants. These objectives should be regularly reviewed to ensure that they are compatible with the needs of the health sys-

tem and the functions of an epidemiologist. The concept of "practical training" has a dual meaning: it refers to the subject of training and the training strategy. The subject of training is understood to be applied epidemiology, adapted to the national context. Emphasis should be placed on descriptive epidemiology, its role in health planning and program evaluation; it must also have a management component, with a view to decentralizing services. Training strategy refers to the ability to apply the acquired knowledge to a real, practical situation. Training objectives must be clear about the results expected from both the theoretical part and field work.

3)To develop an instructive evaluation system to ensure that training objectives are met.

Special attention should be paid to the preparation and use of instructive evaluation instruments, possibly in the form of corrected exercises, quizzes, and examinations, which provide for continual feedback from course participants, allow for assessment of their performance and ensure that training objectives are met.

4)To proportionally increase the amount of time spent in the field and radically improve supervision of this part of the course.

Supervision of field work needs to be thoroughly reviewed and its quality assured. The mission considered various alternatives, which should be explored in greater depth. The first consists in identifying and developing training sites, i.e. a limited number of communes, mixed NGOs, or departments where there are qualified human resources for field training in keeping with the overall training objectives. A second alternative envisages traineeships in NGOs engaged in epidemiology in the field, who offer their services in the form of projects (IHE, Cornell Group). The last alternative gives priority to traineeships in the agencies where the participants will work after training, be they NGOs, communes, or departments, involving trainees intensely in the organization and preparation of the relevant structures with epidemiologists and ensuring that the course field work coordinator has a definite presence and role to play. At least 50% of the course should be conducted in the field. On-site training should be combined with the theoretical training provided by INHSAC, and the professionals acting as supervisors must be certified as "associate professors" of the Institute.

5)To progressively steer the course toward strengthening the communes, with increased participation by candidates from these communities and the NGOs working in them.

This recommendation implies a change in the candidate selection process and the drafting of a plan to strengthen epidemiology in the communes. An analysis should be done of the potential, resources, and needs of the communes to determine the priorities for training epidemiologists; coverage objectives should be set over time, taking into account the attrition rate. The proposals in the plan will affect both the number of students admitted to the epidemiology course and the frequency of the course.

6)To change the structure of the present course by creating two additional shorter courses at different levels, to cater to a wider range of needs and availability for training.

The present course would be split in two, with the creation of an introductory course, level 1, and an advanced course, level 2, each approximately 24 weeks long. The two courses would be alternated. The first course would target specific objectives to meet the needs of the communes. The departmental epidemiologist should have additional input into both courses. The current system of two alternating cycles, 6 weeks of theory and 6 weeks of field work seems suitable for a 24-week program.

7)To award an academic title for the training received.

The competent authorities should be consulted about academic recognition of the training received. The credits awarded for each course should count possibly toward the preparation of a masters in public health or community health in the years to come.

8)To actively seek an institutional cooperation project with international financing to strengthen INHSAC as the principal Haitian public health training institute and to guarantee

the desired standard of training in the practical epidemiology course, particularly with regard to field work supervision.

An institutional cooperation project would help to considerably strengthen INHSAC in a relatively short period of time. A French-speaking institution should be given priority. Financing could come from a bilateral cooperation agency or the multilateral financial sector, in particular the World Bank or the Inter-American Development Bank.

9) To review PAHO's future role in the practical training of epidemiologists in Haiti.

Through research into new sources of funding for the institutional development of INHSAC, PAHO could progressively reorient its support toward measuring the impact of the project, refresher courses for trained epidemiologists, and their mobilization in pursuit of common objectives and initiatives in an effort to strengthen communal an departmental teams and their interaction.

10) To conduct a survey of practical epidemiological needs in the communes and departments and a study to evaluate the impact of the project.

It is advisable now, six years after the first epidemiology course, to evaluate the impact of the project and redefine needs. These studies, without being costly or very complex methodologically, would provide the information essential to future evaluations of practical training in epidemiology.

(*Source*: Division of Communicable Disease Prevention and Control HPC, Special Program on Human Resource Development HRD, Caribbean Epidemiology Centre CAREC, Haiti Country Office, PAHO, and Dr. Yves Bergevin, McGill University, Montreal, Canada.)

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