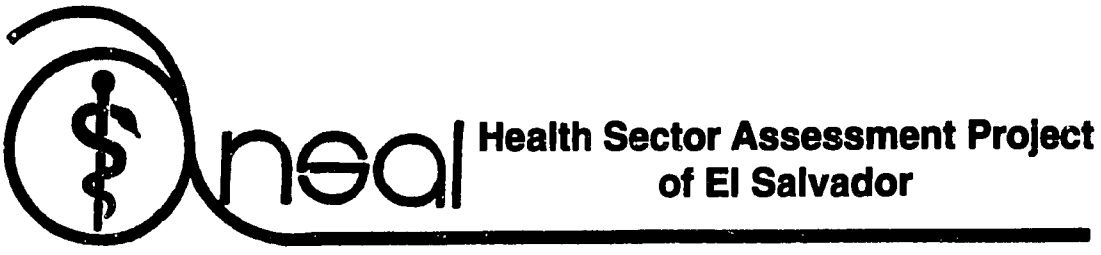


FINAL REPORT

Edited and produced by the
Health Sector Assessmtent of El Salvador Project
Funded by USAID, PAHO/WHO ,World Bank, and the IDB.

May, 1994

Jaime Ayalde

EPIDEMIOLOGICAL PROFILE

El Salvador

Health Sector Assessment

May, 1994

Opinions expressed in this report are those of the author and do not reflect the opinion of the funding agencies (AID, World Bank, PAHO/WHO, IDB). The mention of any commercial products does not imply endorsment by the author or the funding agencies.

May, 1994

b

INDEX

LIST OF ACRONYMS

ACNUR	United Nations High Commissioner for Refugees
ADS	Salvadoran Demographic Association
AECI	Spanish Agency for International Cooperation
AID	Agency for International Development (USA)
ALFAES	Disabled of the Armed Forces of El Salvador
ANDA	National Water and Sewage Administration
ANSAL	Health Sector Assessment, El Salvador
ANTEL	National Telecommunications Administration
APROCSAL	Salvadoran Community Promoters Association
ARI	Acute Respiratory Illness
ASALDI	Salvadoran Association for Integral Development
ASALDIG	Salvadoran Association for War Wounded and Disabled
ASAPROSRA	Salvadoran Association for Rural Health
ASDI	Swedish Agency for International Development
CALMA	Center for the Support of Breast Feeding
CERPROFA	Professional Rehabilitation Center of El Salvador's Armed Forces
CICR	Red Cross International Commission
CIDA	Canadian Agency for International Development
CISI	Intersectoral Committee for Child Survival
COMURES	Municipality Corporation of El Salvador
CONIAPOS	National Committee for Potable Water and Sanitation Institutions

CLAP	Latin American Center for Perinatology and Development (PAHO, Montevideo, Uruguay)
COPAZ	Commission for Peace Consolidation
DGLA	Directorate General for Food Logistics
DIGESTYC	Statistics and Census General Directorate, Ministry of Economy
ECOSAL	Ecology and Health
EEC	European Economic Community
F16	January 16 Foundation (FMLN)
FAES	Armed Forces of El Salvador
FIS	Social Investment Fund
FMLN	Farabundo Martí Front for National Liberation
FORTAS	Department for Social Strengthening (FUSADES)
FUNDASALVA	Anti Drug Foundation of El Salvador
FUNTER	Telethon Pro-rehabilitation Foundation
FUSADES	Salvadoran Foundation for Economic and Social Development
FUSAL	Salvadoran Foundation for Health and Social Development
GOES	Government of El Salvador
GTZ	Society for Technical Cooperation (Germany)
HD/SS	Hemorrhagic dengue/shock syndrome
HPN	Health, Population and Nutrition Unit of USAID/El Salvador
IDB	Inter American Development Bank
INCAP	Central America and Panama Nutrition Center
ISDEM	Salvadoran Institute for Municipal Development
ISSS	Salvadoran Institute for Social Security

JICA	Japanese Agency for International Cooperation
MASICA	Environment and Health in the Central American Isthmus
MASS	Metropolitan Area of San Salvador
MIPLAN	Ministry of Economic and Social Development Planning and Coordinatior
MSF	Médicines sans Frontier (France)
MSPAS	Ministry of Public Health and Social Assistance
OEDA	Water Specialized Office
OMS	World Health Organization
OPS	Pan American Health Organization
ONUSAL	United Nations Observers Mission in El Salvador
MOH	Ministry of Health
PLANSABAR	Basic Rural Sanitation Plan (MOH)
PMA	World Food Program
PNUD	United Nations Development Program
PRODERE	Program for the Displaced and Refugees (UNDP)
PROLIS	Program for the Productive Reintegration of War Wounded and Disabled
PROSAMI	Project for Maternal Health and Child Survival
SEMA	Executive Secretariat for the Environment
SNF	National Secretariat for the Family
SRN	National Reconstruction Secretariat
UEDA	Water Specialized Unit, ANDA
ULV	Ultra low volume
UNICEF	UN Fund for Childhood

VC	Vector control
WHO	World Health Organization

ACKNOWLEDGEMENTS

The health sector assessment team had the constant support of sponsoring entities and of public and private health officials, who generously took time to answer our questions.

The author wishes to especially thank Dr. Gustavo Argueta Rivas, Ex-Vice Minister of Health for facilitating access to all the Ministry's institutions and for being available to the ANSAL team whenever necessary; and also Mr. Paul Hartenberger and Mrs. Brenda Doe, USAID/El Salvador, who supported the team's work throughout the project.

Dr. Hugo Villegas, PAHO/WHO representative in El Salvador, and the technical team involved in the assessment of the health status and trends, facilitated information.

All ANSAL team members worked with devotion, creativity and comraderie. This report is a result of joint efforts, especially the group who worked in health status with whom the author feels especially obliged.

Finally, we extend our thanks to Dr. Alfredo Solari, Project Director, whose leadership skills made it possible to keep focused on the most relevant issues during this analysis of the health sector. He also facilitated communication and coordination among team members while preparing this report. The collaboration of ANSAL's support personnel was invaluable.

Our acknowledgements to all, for without their support, we would have found it difficult to finish the report before the deadline. Their hospitality made the experience especially gratifying.

INTRODUCTION

OBJECTIVES

- Analyze the health status of the population and its subgroups, as well as the main risk factors;
- Identify main morbidity and mortality data sources and associated risk factors. Integrate findings from different sources in order to categorize the main causes of mortality and morbidity.
- Carry out a detailed analysis of the status of some pathologies such as diarrheic diseases, cholera, HIV/AIDS, Chagas' disease, malaria, etc.;
- Analyze the epidemiological surveillance system, identify problems, and propose solutions.
- Evaluate health sector programs, or from other sectors, affecting the population's health.
- Discuss health interventions currently carried out as well as plan future policies.

METHODOLOGY

Data from secondary sources, such as existing reports, epidemiological and management information systems, and evaluations made by sponsoring and donor entities, as well as from agencies from the public and private sector was consulted. The Health, Population and Nutrition Unit (HPN) of USAID/El Salvador facilitated the task by making the library's technical files available. Primary information was not gathered for the purposes of this report.

The health status analysis sub-team was comprised by five members: a general epidemiologist, team coordinator; a maternal-child health care specialist; a family planning expert; a nutritionist; and an engineer a specialist in environmental health. The sub-team also had the support of specialists who carried out studies on infections due to the human immunodeficiency virus (HIV) and AIDS; breast-feeding; water and sanitation. USAID made available the report that resulted from the workshop "Development of a Strategy for the Integral Rehabilitation of the War Disabled and Wounded in El Salvador" held from September 27 to October 1, 1993.

The Health Status Analysis findings were organized into three technical reports targeting (1) Epidemiological Profile under the responsibility of Jaime Ayalde; (2) Maternal-Child Health under the responsibility of Francisco Becerra; and (3) Environment and Health under the responsibility of Roberto Argüello.

The following specialized reports are available besides the before mentioned technical reports:

- *Status of the HIV/AIDS and Sexually Transmitted Diseases* by Paula E. Hollerbach, J. Todd Weber, Victoria E. Wells, and M. Ricardo Calderón;
- *Breast-feeding* by Herbert Betancourt, Carlos Meléndez, Nair Carrasco, and Sandra Huffman;
- *Family Planning* by Charles A. Lininger;

- *Nutrition and Nourishment* by Fernando Vío;
- *Water and Sanitation* by Eladio Prado, Sergio de Oliveira Vieira, Carolyn McCommom, Rigoberto Sandoval Reinbold, and Antonio Carlos Parlatore; and
- *Integral Rehabilitation of the War Disabled and Wounded*, a workshop report, by Daniel B. Edwards.

As a supplement to the cabinet study, executive personnel of the central, regional and peripheric health sectors were interviewed as well as local personnel in charge of delivering health services to the population.

The team in charge of the sectorial analysis also had the support of officials and consultants of the different project sponsoring agencies and institutions, such as USAID, PAHO/WHO, World Bank and the Inter-American Development Bank. The AID's PROSAMI and APSISA projects provided technical and logistical support which added to the success of the mission.

Interviewed personnel contributed with valuable information both published and non-published. This information was analyzed and discussed within the team in charge of the sectorial analysis allowing to reach a comprehensive view of the situation which we hope is realistic. It also allowed us to identify the outstanding health problems and their conditioning factors, as well as to define possible future action lines.

At the time of this analysis the data of the 1992 population census was not yet available from DIGESTYC thus it was necessary to use preliminary information or in absence of the latter to resort to estimates as in the case of the percentage population distribution by age groups.

Compiled information was analyzed considering coverage, coherence and reliability. In this sense, from the two most important parameters for epidemiological studies - morbidity and mortality - it can be assumed that epidemiological surveillance provides reliable information contrary to mortality statistics, for which it is necessary to resort to special surveys and to draw up results by subsequent approximations.

The opinions hereby stated present the author's position and do not necessarily express the opinions of sponsoring agencies (AID, World Bank, PAHO/WHO, IDB). Naming trademarks neither implies a personal endorsement nor one from the agencies sponsoring this analysis.

EXECUTIVE SUMMARY

This work forms part of the health sector analysis of El Salvador (ANSAL-94) requested by the Ministry of Planning (MIPLAN) and financed by AID, the World Bank, PAHO/WHO and the Inter-American Development Bank.

The analysis of the country's epidemiological profile is complemented by two other documents: Maternal-Child Health and Environmental Health. These three documents include the findings of several specialists and as a set constitute the Analysis of Health Status in El Salvador.

According to the census carried out in 1992, the country's population is 5,047,925 inhabitants, with more women than men; this surplus is more notorious in the younger groups of fertile age (20-29 years), who account for almost 80,000. The number of girls currently between 5 and 14 years of age (660.361) is two and a half times greater than the number of women at the end of their fertile years (253.589, age group from 35 to 44 years). This situation indicates a greater number of births provided that the fertility-per-age rate does not fall in the new group. This illustrates the importance of future family planning programs.

The annual demographic growth rate is of 2.2%.

Urban populations are those that live in communities with more than 2,000 inhabitants. The remainder is considered rural and it is estimated to be 55 percent nationwide.

El Salvador's population has traditionally been migratory, a phenomenon increased by the armed conflict; at least one million Salvadorans live as emigrants in the United States alone. Others migrated to other countries or were internally displaced. The peace accords have encouraged the return of many refugees thus increasing the demand for health services.

The population pyramid is that of a young country and despite the progress made in the control of contagious diseases there are still high rates of child mortality, fertility, malnutrition, and intestinal parasitism. This profile is of an agrarian society in a "model of infectious diseases," with a five to ten-year horizon.

Mortality rates in the youngest groups (0-14 years old) declined between 1960 and 1990, but increased, most notably among 15 to 44 year-olds since 1973, especially among males.

Despite the increase in the incidence of cardiovascular diseases and tumors, the group classified as "external causes " is accountable for the greatest number of deaths.

Information systems have captured the morbidity data of the population served by health care but not the mortality data which is markedly understated, especially concerning infants. Information from infant mortality surveys indicate that variations in national estimates range from 42 to 55.5 per 1000 live births. In 1993 UNICEF reported a child mortality rate of 52 per 1000 live births.[1]

[1] Vital data records (births and deaths) are incomplete with a poor information system. This is a serious problem since it does not allow the country's authorities to have exact indicators essential for the country's well being.

Problems in coverage as well as in the timeliness of data processing which varies from region to region and exist as well as in the detection and recording of certain pathologies, such as HIV and AIDS whose data is not accurate.

Several factors affect coverage, besides service availability, such as culture, perception of the disease seriousness, cultural and economical factors and high self-medication indexes. These aspects were highlighted by the participants in the town meetings organized by ANSAL and held between February 7-16, 1994.

Regarding information there are two epidemiological reports. The first one is a weekly epidemiological report which includes 100 diagnoses and covers surveillance needs for immediate decision making. The second one is known as "Statistical Health Information and Epidemiological Integrated Data System - (SIEES)," which is processed on a monthly basis through a computerized system and allows the status and trends of all pathologies to be studied, including the 300 most frequent diagnoses.

The five most frequent causes of death among children between 0 and 4 years of age are: (1) diarrhea/dehydration; (2) acute respiratory infections; (3) low birth weight/prematurity; (4) congenital abnormalities; and (5) birth trauma/asphyxia. These causes will have to be taken into account when establishing the priorities of the maternal-child health care, education, and environmental health programs.

Among adolescents and young adults it has been observed that girls begin their sexual life at a very young age, increasing the risk for gynecological complications, sexually transmitted diseases (STDs), and cervical cancer. If this group of women has multiple sexual partners, the risk of AIDS can be added not only for them but also for their monogamous partners. This situation has been identified as an increasingly serious health problem in the country.

Boys become part of the informal urban labor force at a very early age (10-12 years of age), or become "street children" in growing numbers. According to UNICEF (as reported by PAHO) these numbers could be a high as 100,000. Some of these boys become part of the so called "maras" (gangs) who are accused of robberies, damage to property and acts of violence.

A census carried out in July-August 1993 by the European Economic Community (EEC) in ex-conflictive areas estimates that there are 12,000 war wounded (FMLN, national armed forces and civilians). The parameters for estimating the psychologically disabled have not yet been established.

In 1980 there were 95,835 reported cases of malaria. Thanks to the malaria program this number has been reduced to such an extent that in 1993 only 3,883 cases of *P. vivax* and 4 cases of *P. falciparum* were reported for a total of 3,887. However, if proper epidemiological surveillance and follow-up is not vigilant a serious outbreak could occur as in some Asian countries (Sri Lanka).

There is a dengue monitoring program carried out through surveillance posts, which is well conceived and reasonably executed but highly dependent on external cooperation for its functioning. Regional directors are responsible for the operational systems, but the surveillance and lab systems need their own funds that the MOH should identify on a timely basis.

The role that Chagas' disease plays in the country's health is not well known, although at least a modest amount should be earmarked to carry out investigations on the prevalence of the infection caused by

Trypanosoma cruzi, evaluate the process of myocarditis derived from the Chagas' disease, evaluate the importance of blood transfusions in its transmission, and identify areas of major risk.

The country is currently free of poliomyelitis and the agent that causes diphtheria was isolated for the last time in 1987. Whooping cough, measles and tetanus have diminished considerably.

Cholera arrived in the country in 1991. There were approximately 9,000 cases in 1992, and 5,525 in 1993 as according to MOH's data.[2]

Figures seem to indicate that tuberculosis is increasing, which could be aggravated by the worsening of the AIDS epidemic, since tuberculosis is an oportunistic disease.

No accurate table on the magnitude of the HIV/AIDS epidemic exists. According to recent data from the MOH's Epidemiological Unit, between 1984 and 1993, a total of 605 cases of AIDS were reported with growing rates (3.27 cases x 100.000 inhabitants in 1993). During the same period a total of 615 HIV (+) persons were reported, with a rate of 2.88 x 100.000 in 1993. Approximately 70% of cases were recorded during the 1991-1993 period. From this we can highlight that 78% are males, and 22% females. The origin is predominantly urban (89%) and 59% was recorded as heterosexual.

Nutritional status is one of the factors that influences child mortality. FESAL-93's preliminary data showed the prevalence of global malnutrition using the weight/age indicator of 11.1 percent; 22.8% with chronic malnutrition according to the height/age indicator; and 1.3 percent using the weight/height indicator with acute malnutrition (with a cutoff point of -2 DE) as compared to the WHO/NCHS reference population.

Iodine deficiency is very high, with a prevalence of goiter of 28.4 percent among women and 20.8 percent among men. In spite of salt fortification standards, salt analysis carried out in 1990 showed only 0.5 percent of the salt was iodized. Deficiencies in vitamin A and iron are also very high.

Potable water and sewage service coverage is poor, especially in the rural areas, becoming a risk factor for diseases such as amoebic dysentery, typhoid fever, acute gastroenteritis, intestinal parasitism, infectious hepatitis, and hepatic amoebic abscess.

As far as work related health risks, the great majority of accidents occur in the manufacturing industry, construction, transportation, storage, and communications (84.4 percent of all occupational accidents reported by the ISSS) in 1992.

Families living in conditions of extreme poverty not only lack income but also basic services which worsen health problems. In the rural areas, 84 percent of the people lack access to potable water, as opposed to 13.6 percent in the urban and suburban areas.

[2] Data on the outbreak of this illness as of December 1993 and the beginning of 1994 show 9.872 cases of cholera in five weeks, out of which 34 persons died. The disease affected the whole country highlighting the seriousness of the environmental status, especially concerning water.

Malnutrition in families living in extreme and moderate poverty affects the learning capabilities of their children. Consequently, this problem is related to the efforts made by the Ministry of Education and stresses the need to establish close coordination between the MOH and the Ministry of Education. The relationship between the nutritional deficit, comparing the height/age indicator and the child's school performance, has been proven for many years in several countries of the Americas. Nutritional deficit is associated with poor school achievement, higher repetition indexes, higher number of school dropouts, and lower job productivity in the future.[3]

Inadequate health care, the difficulty of access to existing services, as well as the existing models of care can constitute risk factors on the health-disease process.

The report is an analysis of the country's status as far as its demographic and epidemiological transition, the health status of the population in accordance with main indicators and health problems as by risk factors. Several critical issues were identified in this analysis which became the core issues for discussion with health sector leaders at different levels, as well as at community meetings that at the end allowed the ANSAL team to select ten priority areas. Five of these topics correspond to maternal-child health, three to the environment and two to the psychosocial area (violence, homocide, accidents), and to the recovery of health and quality of life of the war wounded and disabled.

[3] Mardones-Restadt, F., et al. *Studies on Nutritional Deficit and School achievement.* JUNAEB/Ministry of Education of Chile. Santiago de Chile (1987-1992).

I POPULATION

El Salvador is located in the Central American Isthmus, with an area of 19,641.7 square kilometers, politically divided into 14 departments, 262 municipalities and 2,196 cantons.

According to preliminary data obtained from DIGESTYC published in February 1993, El Salvador has 5,047,925 inhabitants, out of which 2,421,546 are men and 2,626,379 are women. Although adjusted to compensate for understatement, mortality and migration, the truth is that the recent census indicates a lower population than expected for 1992.

1 Population growth

Population estimates and projections for the 1950-2025 period were established by the Ministry of Planning-CELADE-UNFPA, based on an annual growth of 2.2 %. It is expected that these institutions will adopt an official estimate of annual growth rate as soon as the detailed studies of the last population census (1992) are finished. These estimates take into account the natural population growth (births minus deaths) and the exit or migration of an important segment of the population due to the long civil war (12 years) and the fall in the income per capita during the 1980's, not to mention the high number of casualties during the armed conflict. In this sense, the direct consequences of the war that resulted in 70,000 deaths, a large number of disabled and a high internal displacement, as well as the migration of more than one million inhabitants to other countries are included in the document "Addressing health and nutrition programs for low-income mothers and children" prepared by the MOH, Ministry of Education, Demographic Association of El Salvador, Social Investment Fund, and Ministry of Planning/GAES, presented in Quito, Ecuador (June, 1993) during a Regional Seminar sponsored by the World Bank and PAHO/WHO.

The following projections are mentioned in recent publications relative to birth, death and migration rates:

Table No. 1

RATES OF POPULATION GROWTH
PER THOUSAND INHABITANTS.

Period	Births	Deaths	Net Migration	Net Increase
1990-1995	33.47	7.05	-4.57	21.85
2000-2005	28.49	5.88	-2.60	20.21
2010-2025	23.21	5.32	-1.48	16.41

Source: Lininger, *Family Planning*, ANSAL-94

From the 1950's to the 1970's, little change was observed in total fertility rates. These rates decreased between 1978 and 1993 according to demographic and health surveys. This reduction was greater outside the metropolitan area of San Salvador, already low, and especially in the rural areas, as seen in the following table:

Table No. 2

TOTAL FERTILITY RATES BY AREA OF RESIDENCE,
1978-1993 (Women from 15 to 44 years of age)

Area of Residence	1978*	1985	1988	1993
All areas	6.3	4.5	4.6	3.9
MASS	2.6	3.3	3.0	2.7
Other Urban	4.1	3.7	3.7	3.5
Rural	8.4	5.8	5.9	5.0

* Women from 15 to 49 years of age
Source: Lininger, *Family Planning*, ANSAL-94

Fertility rates specified by age are higher in rural areas, in all age groups, when compared to "other urban areas", and the latter are higher than in the urban area of San Salvador.

2 Population by region

In accordance with preliminary data from the 1992 DIGESTYC census, approximately 30 percent of the country's population is concentrated in the Metropolitan Area of San Salvador. Female population in El Salvador exceeds male population by approximately 205,000. This surplus in female population is higher in the MASS (98,000) and in the Eastern Region (47,000). The remaining (60,000) is distributed among the other three health regions. Table No. 3 presents population distribution by health regions in absolute numbers, as well as the percentage by sex.

Table No. 3

POPULATION BY HEALTH REGION AND SEX (1992)

HEALTH REGION	TOTAL	MEN	WOMEN	% MALE	% FEMALE
ALL	5,047,925	2,421,546	2,626,379	48.0	52.0
METROPOLITAN	1,477,766	689,860	787,906	46.7	53.3
WESTERN	1,066,824	521,026	545,796	48.8	51.2
CENTRAL	702,698	342,838	359,860	48.8	51.2
PARACENTRAL	685,201	333,804	351,397	48.7	51.3
EASTERN	1,115,436	534,016	581,420	47.9	52.

Source: DIGESTYC, preliminary data

3 Population by age and sex

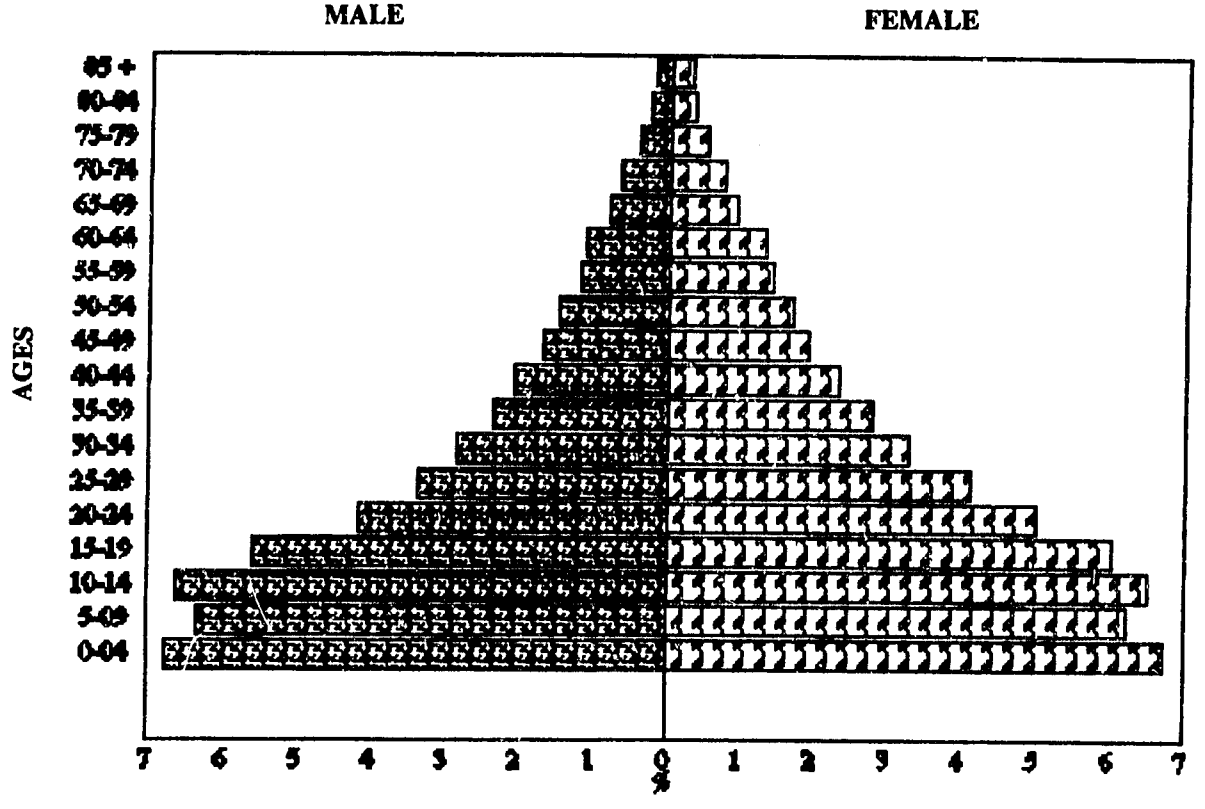
The distribution of population by age and sex in El Salvador is a marked by a surplus of 120,000 women within the young of fertile age (20-34 years of age). There are approximately 25 percent more women than men, which will cause an impact on marital status and fertility. The number of girls between 5 and 14 years of age is two and a half times higher than the number of women at the end of their fertility age, that is between 35-44 years of age. (684,000 to 252,000) which implies a greater number of births, provided that fertility by age is not reduced in the new group.

Annex I-1 shows population by age, sex and masculinity. This data was calculated by Lininger (ANSAL-94) based on the preliminary information from the population census and the percentage distribution found in the household survey. This data is unofficial and must be updated once the information of the 1992 census is available. The previous census was undertaken in June 1971.

In order to better appreciate the make up of the population by age and sex in El Salvador, see the population pyramid (Graph No. 1).

Graph No.1

POPULATION DISTRIBUTION BY AGE AND SEX
EL SALVADOR



UNOFFICIAL DATA, ACCORDING TO 1992 CENSUS

Populations tend to fall into three general profiles: populations under expansion have a greater number of young people and each age group is more numerous than the previous one; populations under retraction have a lower proportion of young people; and the stationary ones have approximately the same number of inhabitants in all age groups, that gradually decrease in older age groups (1). The graph shows that the population in El Salvador is predominantly young (40 percent under the age of 15), with an expansive profile. It does not present a retraction profile such as the one of developed countries, as the United States, or the rectangular, almost stationary profile of some European countries. This is an important aspect when considering the demographic transition the country is undergoing, its epidemiological profile and the health care model.

The pyramid also illustrates population distribution by age and sex which is necessary to analyze: there is a deficit of men which is more marked in the young age group, particularly between 15 to 34 years of age; this deficit continues but with less marked differences up to older age groups. It seems various factors affect this population profile: a twelve-year war affecting primarily young men in both combatant groups; migration to foreign countries of, primarily, but not exclusively, young men; the fact that many ex-combatants still live in anonimity; and finally, the fear of being recruited into the Armed Forces or opposing groups, before the signing of the Peace Accords, which interfered with the efforts to enroll, register, or complete surveys.

For further details on population, fertility and marital status, see the technical document on *Family Planning* by Charles A. Lininger of ANSAL-94.

4 Urban/rural distribution

Almost 30 percent of the population is concentrated in the Department of San Salvador, with 1,667 inhabitants per square kilometer. The least densely populated Department is Chalatenango, with 90 inhabitants/square kilometer.

It is estimated that the rural population of the country is 54 percent nationwide, but there are Departments with a greater proportion of inhabitants in the rural areas, like Morazan (82 percent); the Departments of Ahuachapan, Cabañas, La Unión, La Paz, and Chalatenango have a rural population ranging from 70 percent to 75 percent.

As previously mentioned, the population is young with an age group distribution of 40 percent under the age of fifteen.

There have not been major changes among the youngest population groups in the country during the last forty years, as far as its structure in relation to total population. Probably, the most important factor is that when these groups advance in age, they migrate in high proportions and are replaced by younger groups. In order to study disease patterns and their relationship to health service needs, it is important to also consider the proportion of elderly persons, 65 years of age or older, that increased from 3.0 percent in 1950 to 5.2 percent in 1992.

Annexes I-1A and I-1B show data for the years 1950-1971, taken from DIGESTYC's statistical yearbook (1984) and estimated data for 1992, that illustrate the previous item.

5 Internal migration, displaced and refugees

5.1 Agriculture workers

Internal migration is represented by farm workers who move, usually with their families, from *hacienda* to *hacienda* during the harvest season. These are generally predictable activities since they are regulated by seasonal conditions. This type of internal migration is voluntary and only implies a temporary abandonment of the habitual place of residence. Crops that mainly cause this displacement and have had major importance from the economic point of view are coffee, with an annual production of 3,200,000 qq oro (green coffee) and cotton until 1979-80, whose cultivation area was of 150,000 *manzanas*, now reduced to 9,000 (note: 1 *quintal*

= 100 pounds of 450 grams each; one *manzana* equals 6,400 square meters). For further information see ANSAL-94's technical report on *Environmental Health*.

At the time of planting and harvesting cotton, approximately 400,000 persons migrated particularly between temperate and coastal regions. With the reduction of cotton production, the labor forced for this crop has also diminished, probably to levels below 30,000 workers, but demand for labor for coffee continues in the temperate and high regions of the country.

From the epidemiological point of view these circular migratory movements (since the worker returns to his place of origin) imply risks both for the migrating workers and the inhabitants of the places of destination and return, since the migrating working can become a vehicle of contagious diseases. This type of mechanism has frequently been the cause of malaria outbreaks in rural areas of El Salvador, which have been fortunately been controlled by the activities of the MOH Malaria Division.

The migration of people in the urban areas accounts for classical dengue outbreaks due to the presence of *Aedes aegypti* that can lead to hemorrhagic dengue or dengue shock syndrome outbreaks which can be fatal. The MOH carries out monitoring activities with foreign funds and the entomologic personnel of the malaria program. In cities the migration of persons with viremia can become the most important vehicle of the dengue virus than the movement of the *A. aegypti*, which has a short-flight radius.

Another aspect to be considered is the one concerning the standard of living, because frequently the seasonal migratory worker lacks adequate housing, food and potable water for himself and his family at the work site. Under these conditions, children become frequent victims of gastrointestinal and/or acute respiratory infections.

5.2 Emigration

Besides worker migration during harvest seasons, Salvadorans have migrated due to economical reasons, which is considered a "normal" phenomenon in the country. For example, when the war with Honduras took place in July 1969, an estimated 300,000 Salvadorans were living and working there. The civil war migration worsened after 1980. Affected persons became displaced persons (people who leave their places of origin due to real or perceived violence and fear, who settled in other places within the national territory) and refugees (persons who leave their places of residence as a consequence of violence and terror and who migrate outside of their own country).

According to the research on displaced persons and refugees carried out by the Catholic University's Research Institute (1985), the Departments of San Salvador, La Libertad and Sonsonate are the ones who suffered the greatest immigration from within the country, while Morazan, Cabañas and Chalatenango received a very insignificant number since they were expellers.

Several researches have calculated that approximately 1,000,000 Salvadorans currently live in the United States. This migration constitutes a major problem for Salvadoran families, due to the conditions under which this occurs (forced migration, full of uncertainties and usually by illegal means); although it is true that migrants contribute substantially to family well being, by means of remittances in foreign currency, family fractioning constitutes an important psychological trauma in itself, affecting society as a whole and frequently ends up in home disintegration or family disfunction.

Last year, remittances amounted to approximately $800 million creating a high level of consumption among beneficiary families. The *El Salvador Proceso* issue of October 20, 1993 (year 14, number 584), a weekly publication of the University Center for Documentation and Information, highlights the data from the 1991-1992 household survey which shows that 76.9 percent of the remittances received are used for consumption; 2.8 percent is being invested, and approximately 22 percent is saved. In addition, 3.7 percent of remittance beneficiaries have been identified as unemployed and 59 percent are inactive. These data indicate less productive activities in favor of consumption. Frequently those lacking access to remittances resort to violent means to obtain resources which would bring them up to the level of their peers.

The *maras* (gangs) arise with an organized structure and have been involved in robberies, hold-ups and injuries to third parties. Gang members generally come from disintegrated or dysfunctional homes. When a child's basic needs are not satisfied, his view of the world will be hostile. Contrary to popular opinion, young gang members have not had direct contact with war nor have been displaced from their place of residence due to the war, but 41.4 percent of those interviewed by the UCA survey assert that the war facilitates the commitment of robberies.

5.3 Peace accords and demographic profile

As a result of the Peace Accords, and in some cases in the midst of the conflict, many exiled Salvadorans who had been living as refugees returned, some in small groups and others in larger repatriation operations; and still others as part of mass repatriations with international support and the coordination and support of the United Nations High Commissioner for Refugees (UNHCR). According to UNHCR almost 30,000 Salvadorans returned after a decade living as refugees mainly in Honduras, Nicaragua, Panama, Costa Rica, Belize, and Mexico, often settling on lands abandoned in the 1980s.

Civilians almost completely abandoned certain conflictive areas during the 1980's, thus resettlers settled in abandoned lands whose owners were unknown.

Returnees coming from Honduras concentrated in the refugee camps of Mesa Grande, Colomoncagua and San Antonio. The majority did not return to their places of origin but are cultivating lands that are not theirs, improving infrastructures which they lack titles for. This problem should be solved within the schemes of the Peace Accords. Migrants include people of all ages. In addition to titles, the new owners should receive the technical expertise necessary to make their plots productive.

Migration from the eastern to the western region of the country has resulted in increases in population and poverty levels. In the eastern region, the city of San Miguel has experienced a sharp growth, which is reflected in the increase in demand for health services. Health institutions expected one million outpatient visits in 1993. The ratio of ambulatory consultation services in the region is approximately one per person. The total population of the four Eastern Departments is 1,115,436 inhabitants.

The region has 712 trained midwives and 439 health promoters. Besides the regular team of doctors, nurses, lab technicians and other personnel, the Ministry appointed 40 new doctors in their social service year in order to strengthen health activities. Some posts (for example the one in Chapeltique) were promoted to the category of health units with a full-time doctor. Out of 2,184 medical posts, the eastern region has 366 regular posts (1993) (16.7 percent of the total). The region has 907 nurses (19.9 percent of the MOH total).

The most frequent causes for visiting health units are diarrhea, acute respiratory infections and intestinal parasitism. The overall epidemiological profile of ex-conflictive areas is similar to that of other rural areas of the country.

A total of 60 municipalities within the region were seriously affected by the armed conflict. Chapeltique and Moncagua have surpassed program compliance, for example, regarding immunizations, but on the other hand, their target population has increased due to returnees. It is necessary to reschedule activities, since inputs are sent on a rotatory fashion in accordance with the approved scheduled and significant deficits can occur at the end of the period. Malnutrition (mild and severe) is another problem in these municipalities and therefore, they are developing a supplementary food plan, within the WFP's program, with family rations including rice, beans, milk and edible oil.

Out of the 60 municipalities affected by war, 24 have been classified by the MOH as high-risk municipalities due to malnutrition factors, diarrhea and sanitation problems. There are also 49 municipalities included in the NRP due to damages to infrastructure.

The information system at health unit level is carried out manually; data is sent to the Region where it is processed in a well-equipped Computer Microcenter provided with trained personnel. The system includes the Statistical and Epidemiological Data Integrated System (SIEES) (epidemiology) and the MIS (management).

Two refugee camps were visited at the lowlands of the Lempa River, located in two adjacent Departments, Usulutan, Eastern Region and San Vicente, Paracentral Region. These are communities organized as cooperatives. They receive support under the coordination of UNHCR and one NGO, the Salvadoran Association of Integral Support (ASAI), which mainly supports the construction of small infrastructure.

The first community, Armando López Quintana, with 1,200 inhabitants, is located in Hacienda Monte Marilla. Originally, refugees had settled in the "Segundo Montes, Department of Morazan, but in face of the increasing population (approximately 8,000) and the scarce land available, they decided to separate and organize their own cooperative in Usulutan, in the lowlands of the Lempa River. They have a nursery for more than 100 children (up to 5 years of age), 2 female health promoters trained in Honduras by the Honduran Ministry of Health, a weekly visit of Medicins sans Frontier (MSF) whose contract expires next year, and referral service to the hospital of the Municipality of Jiquilisco, Department of Usulutan. The most frequent causes for consultation are diarrhea, bronchitis, dermatitis and "nervous and mental problems," probably originated by their living conditions as refugees. The MOH is represented by the hospital of Jiquilisco and a voluntary collaborator in Marilla (part of the malaria program).

The second refugee community visited in that area was Santa Marta in the low lands of the Lempa River, Department of San Vicente, in the Paracentral Region. This community has a female health promoter and a community center is under way. This is an ex-conflictive area which has its own school organization that is being assisted by Fe y Alegría, an NGO sponsored by the Catholic Church, with the idea of incorporating pedagogical systems and provide them with simple textbooks, which they lack at present. Twenty-five (25) ex-conflictive communities in the coastal zone of San Vicente have been chosen, which already have 40 teachers in 25 schools (1 per community), and 3,000 students for a two-year plan (January 1993-December 1994). Health promoters are responsible for tending to the health needs of the students. Once this pilot work ends, they will request the support and acknowledgment of the Ministry of Education so that the education program might continue.

6 Demographic transition

The term "demographic transition" was introduced after World War II to describe changes in birth and mortality rates which accompany the change from a traditional society (agrarian) to a modern society with a consolidated economy (industrial). It was observed that the reduction in the mortality rates went hand in hand with a reduction in birth rates, after a certain period of time. Eventually, birth rates stabilized and mortality rates decreased until reaching a stationary level in which both rates were low and balanced (Bash, *International Health*, 1990).

The necessary modernization level to reach this balance is unknown, since it is influenced by other factors such as human intervention in the promotion of behavioral changes related to fertility, family planning and education.

One of the visible signs seen in a country undergoing a demographic transition is a change in the percentage distribution of the population within age groups, represented in the population pyramid. In the case of El Salvador, the pyramid still has the expansion profile of a young country, with approximately 50 percent of its population in age groups under 20 years of age. Total fertility rates are high (3.9 in all areas and 5.0 in rural areas, where half of the population lives) and child mortality surpasses the Latin American average.

The country has an economy that allows it to see the future with optimism, and changes from an essentially agrarian society into a mixed society are now evident, where new industries are being developed and one can anticipate that major changes in its population structure and life indicators will be seen in a ten-year horizon.

Within the transition process, Latin American countries have been classified into four groups according to the stage they are in (*Health Conditions*, PAHO, 1990), starting from Group 1 (Bolivia, Haiti) having high birth and mortality rates. Group 2, which includes four Central American countries (El Salvador, Guatemala, Honduras and Nicaragua) plus Paraguay and Peru, combine high birth rates with moderate mortality rates, resulting in a relatively high population growth; as was previously mentioned, in the case of El Salvador, the population pyramid is under expansion. Nevertheless, it is worth mentioning that a beginning of change can be observed, that will take from 5 to 10 years to become more evident. This change will affect the relative volume of the youngest age groups (i.e. a reduction in the percentage of children under five years of age) but which should not affect the health care model by now, since there still are unsatisfied needs in this sector.

Group 3 comprises Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guyana, Jamaica, Mexico, Panama, Suriname, Trinidad & Tobago, Venezuela and some Caribbean Islands which have low mortality rates and which are making progress in their health systems, thus having an impact in survival and a marked reduction in fertility. The population pyramid in these countries has a greater concentration in intermediate age groups as compared to the previous groups of countries.

Group 4 includes Argentina, Barbados, Canada, Cuba, the United States, Guadalupe, Martinique, Puerto Rico and Uruguay, which combine low birth rates with moderate mortality rates.

7 Epidemiological transition

This term was proposed by Omran (1971, 1982) quoted by Basch (1990) and refers to health and disease patterns within societies, the increase in life expectancy at birth and to the changes in the epidemiological

profile, from pestilence and famine caused diseases to degenerative diseases and health damage caused by man, such as the so called "external causes" which include violence, war, homicides, suicides and accidents.

The changes that took place within this epidemiologic transition concept before the Twentieth Century were related to the improvement of the social and economic status during the industrialization period. In the Twentieth Century, changes, especially the ones ocurring in developing countries, have been related to medical advancements and especially to the application of new health protection methodologies and disease prevention, with technical and financial support of the international community. Therefore, it can be asserted that progress has been achieved in a way relatively independent from the social and economic status of developing countries.

If specific areas or pathologies are analyzed isolatedly, it can be observed that the situation in El Salvador is ambivalent containing elements from one and other epidemiological profiles. The view changes depending upon the specific universe observed, or on the epidemiological information sources used.

Within the "recorded mortality" concept, the MOH's Annual Report (1992-93) shows that in 1991, 4,530 deaths were reported within the external cause category, including homicides, accidents, suicide and other acts of violence. This cause per se accounts for 16.7 percent of the total causes of death reported in 1991, and for 41 percent of deaths due to defined causes (10,906). According to this information, external causes constitute the first cause of death in the country. Practically, all these causes pertain to the category of "man-made" causes which are part of predominant "diseases" in countries with a consolidated economy that have surpassed the epidemiological transition threshold.

Mortality and morbidity statistics have begun to highlight other diseases, such as circulatory system diseases and tumors that also pertain to the "chronic and degenerative" disease group, which characterize countries with a consolidated economy that have already completed their epidemiologic transition.

On the other hand, on the table on mortality by cause included in the 1992-93 Annual Report, neither diarrhea nor acute respiratory infections appear as cause of death, while the FESAL-93 surveys do identify them as major causes of death, to the extent that if the indicators found are applied to child mortality surveys, diarrhea would become the first in the list of individual causes of death (the data on violence previously shown are grouped by category).

The main causes for medical consultations of children under five years of age (1990) are due to acute respiratory infections, intestinal infections and intestinal parasitism which account for 80 percent of consultations and hospital releases. Up to June 14, 1993, a total of 12,574 cholera cases had been reported in El Salvador.

There has been a reduction in deaths due to contagious diseases in all age groups in El Salvador thanks to health interventions, discussed in the corresponding chapter, which as a result has increased the proportional weight of other diseases.

If we accept that in El Salvador's epidemiological profile there are elements of the two socioeconomic levels (developing and developed countries or with a consolidated economy), we must stress the fact that the classification of the country for health care model design purposes must be analyzed as a whole, including the demographic aspects.

The **chronic disease models** of industrial and postindustrial societies is recognized by its low fertility, 40 percent or less inhabitants under 21 years of age, and 8 percent or more over 65 years of age.

Chronic diseases prevail in this model: (1) coronary diseases; (2) cancer; (3) drug addiction; (4) accidents; (5) hypertension/apoplexy; (6) alcoholism; (7) dental pathology; and (8) new-born problems.

Concerning mortality, out of the total number of deaths, 51 percent or more occur in persons over 65 years of age. Life style has an important influence regarding the mortality and morbidity.

The infectious disease model, with an agrarian cultural influence, is characterized by: high fertility rates; over 50 percent of the population under 21 years of age; approximately 3 percent of the population over 65 years of age.

Child malnutrition leads to infectious diseases and parasitic problems.

There are high mortality rates in preschoolers or children under 5 years of age.

The health status in El Salvador can be compared to these two models adapted from the models presented by G.E. Alan Dever in *Epidemiology and Administration of Health Services* (PAHO/WHO, 1991). Despite the progress made in the area of contagious diseases, it can be observed that young groups prevail, and that there are high fertility rates, high malnutrition levels, high mortality rates in children under 5 years of age, a high level of external consultations and hospital releases of children suffering from diarrhea, dehydration, ARIs, and intestinal parasitosis. All this added places El Salvador within the "infectious disease model" with an agrarian cultural influence considering a five to ten-year horizon.

II HEALTH STATUS OF THE POPULATION

1 Main indicators

1.1 General mortality

It is estimated that there is a marked understatement of deaths which could reach 25 percent in some areas of the country. If we assume that understatement has been similar during the last three to five years, a slight reduction in the general mortality rate is observed, from 5.3 per thousand inhabitants in 1990 to 5.2 per thousand in 1991. The 1992 data are not available at present.

A total of 27,096 deaths were recorded in 1991, out of which 18,037 (66.6 percent) were medically certified, according to data from DIGESTYC. It must be noted that medical certificate could have been legally issued by a doctor from a health institution by interviewing relatives of the deceased, without having seen the patient personally. In fact, out of the 18,037 certified deaths, only 9,565 (53 percent) correspond to deaths of patients receiving medical care.

Annex II-1 shows the deaths recorded and mortality rates (per 1000) by region and by year, just as an example, since it is difficult to draw conclusions because: (a) the influence of marked understatement, especially in the case of children; and (b) the fact the gathering and compilation of vital statistics at the level are the responsibility of mayors, many of who were forced to abandon their positions in areas controlled by the FMLN.

The Analysis of the Health Status and its Trends, a program of PAHO/WHO, keeps a data bank on mortality causes for the Latin American region, obtained by means of questionnaires sent to national authorities, publications, tapes, diskettes and other means. This data bank is the basis for publications on health statistics, and especially on mortality. Based on this information, it can be deduced that in childhood (groups <1 year, 1-4 years and 5-14 years of age) mortality rates per 100,000 inhabitants decreased; however, mortality rates per age in males from 15 to 44 years of age increased starting from 1973.

Contagious diseases have decreased. It has been observed that there is an inverse relation, the greater income per capita the less mortality, mainly among infants and preschoolers, but in Latin America mortality rates have continued to decrease even during periods of economic crisis. The credit corresponds in part to the actions of health programs such as *Programa Ampliado de Imunizaciones* (PAI), the malaria and cholera control program, the broad use of oral rehydration salts, educational campaigns and activities geared to facilitate potable water consumption, water chlorination, breast feeding, family planning programs, growth and development control (*Health Conditions*, PAHO, 1990).

Cardiovascular diseases have increased, possibly due to the stress caused by the civil war, forced displacement, fear due to real or perceived danger, and the effects of family disintegration. Age distribution of the population does not seem to be an important factor since El Salvador continues to be a young country, with 40 percent of its population under the age of 15 and more than 50 percent under the age of 20. Another factor that affects the increase in mortality rates among males from 15 to 44 years of age is the direct effect of war, responsible for 70,000 to 75,000 deaths during the conflict. Homicides and acts of violence rank high in the country's social pathology, aamong those not necessarily directly involved in the war, but influenced by the conflict.

Annex II-2 presents the ten major causes of death in El Salvador for 1991, according to DIGESTYC. Integrity and data quality must be taken into account when interpreting information on causes of death. It was already mentioned that there is consensus on the understatement that mainly affects rural areas and certain age groups, especially children. This understatement affects the validity of death distribution by cause.

The lack of universal access of population to medical attention generates death certificates issued by doctors who have not treated the patient and who are forced to issue certificates based on information provided by family members or nonmedical witnesses. Besides, the "signs, symptoms, and undefined" category (SSM) for the majority of the countries of Latin America is equivalent to "unknown cause". On the other hand, some of the "defined" causes of the 9th edition of the *International Classification of Diseases* lack diagnostic meaning, such as heart attack, heart failure and cardiorespiratory failure.

Among the ten main causes of death recorded in the country in 1991, shown in the annex diarrhea is not included. Nevertheless, by applying the results of the household surveys carried out by FESAL-93, it can be inferred that there were at least 1,594 deaths due to diarrhea or dehydration in children under 1 year of age, during that year. This data is sufficient to place diarrhea among the first causes of mortality in the country.

Estimated mortality rates (per 100,000) by age and sex, from the 1960-1964 period to the 1985-1989 period, clearly show a sharp fall within the age groups under 15 years of age (male and female) while the group ranging from 15 to 44 years of age shows an increase in the rates, which mainly affects men, from 546.7 per 100,000 during the 1960-64 period to 1114.2 in 1980-84.

Mortality rates in women decreased in all groups, except in the age group from 14 to 44 years that from 1973 remained with stationary values or with a slight increase. In the case of men, the increase affected all groups over 14 years of age, with a greater impact on the group from 15 to 44 years of age as was previously mentioned. (*Americas' Health Statistics, Scientific Publication*, no. 542, PAHO/WHO, 1992).

The increase in mortality rates, more notorious in the group of 15 to 44 years of age, is explained by an increase in circulatory diseases and external causes (war, violence, and accidents). According to the MOH 1992-1993 annual report, in 1991 a total 1,464 deaths were recorded as homicides and intentionally inflicted injuries and 838 deaths due to "another type of violence" for a total of 2,302 deaths recorded as violent acts, (8.5 percent of the overall total, 27,066) of deaths recorded in the country.

By 1991 deaths due to specific causes were codified in six groups presenting the following structure:

Table No. 4

CAUSES OF DEATH

GROUP	CAUSES OF DEATH	NUMBER	%
1	Contagious	2,316	8.6
2	Neoplasm	U/D	--
3	Circulatory System	2,469	9.1
4	Perinatal Period Diseases	1,591	5.9
5	External Causes	4,530	16.7
6	Other Diseases	16,160	59.7
TOTAL		27,066	100.0

Source: Adapted from the MOH's 1992-1993 Annual Report.
Notes: (a) 10,906 deaths. 40.3 percent corresponds to defined causes of death; (b) external causes include homicide, accidents, other types of violence and mental problems (violence/suicide?); c) no diarrhea/dehydration was reported that would increase group 1; and d) for further detail see Annex II-3.

1.2 Child mortality

According to the MIPLAN's estimates child mortality rates per one thousand live births recorded decreased from 118 in the 1970-75 period to 57.4 in the 1985-90 period. Rates in ex-conflictive areas of El Salvador remain higher, estimated in 73.1 per thousand live births in 1990.

Child mortality rates constitute an efficiency measure of health services and reflect the influence of environmental, economical and educational factors. For example, in the 1989-90 period, child mortality rates in Latin America (approximately 55 per 1000 live births) were almost six time higher than those of more developed countries of North America, and 2.6 times higher than the non-latin Caribbean countries. Therefore, it is interesting to include this health component within the regional and sub-regional contexts. According to CELADE (1989) and the United Nations (1990), quoted in PAHO/WHO's *Health Conditions in the Americas*, (1990), rates for the period from 1950-1955, 1970-1975, 1985-1990, and projections for the year 2000 were as shown in Table No.5:

Table No. 5

CHILD MORTALITY RATES PER ONE THOUSAND LIVE BIRTHS

Country or Subregion	1950-1955	1970-1975	1985-1990	2000
Latin America	127	82	55	41
El Salvador	151	99	60	36
Non-Latin Caribbean	83	40	21	15
North America	29	18	10	7

Source: *Health Conditions in the Americas, PAHO's Scientific Publication,* No. 524 (1990).

The data on El Salvador are based on surveys and projections since the primary information is highly understated. For example, in Table No. 8 of the MOH yearbook no. 23 *Salud Pública en Cifras* (1991) states that child mortality rates per thousand live births in the country were 28.3 in 1987 and 24.9 in 1990, which are under the officially accepted rates by the MOH (about 55.5 per 1000). The technicians of the MOH's Health Statistics Unit agree that for the purpose of the Health Sector Analysis, rates estimated on surveys must be used since these are the ones handled internationally.

Table No. 4 shows the rate of 60 per thousand for the whole country for the 1985-1990 period. Child mortality research in El Salvador by 1990 carried out among 10,011 women being served by maternity services at 6 hospitals of the country, using the prior child method, found a child mortality rate of 55.5 per one thousand live births, which is the currently official rate accepted by the MOH. This rate is of 44 per 1000 for the metropolitan area, 60 per 1000 for the rural area, and 73.1 per 1000 for the ex-conflictive areas.

El Salvador has had child mortality rates higher than average in Latin American countries but with a slightly favorable trend for the year 2000, when a rate of 36 per 1000 live births is projected. Worth noting is that Chile, Costa Rica, Cuba and the Non-Latin Caribbean countries, specifically Trinidad & Tobago, Jamaica, Martinique, Guadalupe and Barbados, have been able to decrease the rates to levels lower than 21 per thousand. The United States has a rate of 10 and Canada has already achieved a rate of 7 per one thousand for 1990.

Available information indicates that in developing countries within the Latin American Region, the reduction in child mortality was mainly due to the post-neonatal component, with the neonatal component showing a lesser reduction, thus becoming a factor proportionally more important of child mortality. In the post-neonatal period, child mortality can be reduced by means of environmental measures as well as the control of diarrhea, respiratory diseases, malnutrition, and diseases prevented by immunization, while in the neonatal period, mortality is closely related to biological factors and mainly to the quality of hospital care services, of growing complexity, besides prenatal basic care, that do not need high technology but which are not applied in many areas.

According to the FESAL-93, one out of every 5 children (20.0 percent) die before the fifth birthday, due to diarrhea or dehydration. This figure is very high. In children under one year of age (infants from 0 to 11

months of age), diarrhea and dehydration, as primary cause, are responsible for 19 percent of deaths, mainly affecting infants in the post-neonatal period (35.6 percent).

FESAL-93's data alone affect the official statistics tables regarding the "country's first ten causes of death" reported by DIGESTYC and which are shown in Annex II, Table II. According to Vital Facts data presented in the MOH's 1992 and 1993 Annual Reports (source: DIGESTYC), El Salvador recorded a total of 151,210 births in 1991. If we apply a child mortality rate of 55.5 per 1000, in the same year there were 8,392 deaths (0-11 months of age) and out of these deaths 19.0 percent, that is 1,594, were caused by diarrhea or dehydration, becoming the first cause of death "of all ages", closely followed by "certain health problems originated in the perinatal period" (Code 45, CIE-9), claiming 1,541 deaths, that is 5.9 percent of the total deaths recorded (27,066). These data cannot be added because they come from different sources and in some cases they refer to the same universe. Despite of this exception, it is highlighted that diarrhea, dehydration and "health problems originated in the perinatal period" have a very important position as causes of death in the country, and could be accountable for approximately 10 percent of the total of deaths recorded (year 1991).

The results of FESAL-93 indicated that the following are the first five primary causes of death, per age of child at death.

Table No.6

DISTRIBUTION OF THE FIRST FIVE PRIMARY CAUSES OF DEATH PER AGE OF THE CHILD AT DEATH

Cause	0-4 years	0-11 months	1-4 years
Diarrhea/Dehydration	20.0%	19.0%	24.1%
Acute Respiratory Infections	18.6	16.3	27.8
Underweight/Prematurity	14.6	18.1	0.0
Congenital Abnormalities	9.5	11.3	1.9
Birth Trauma/Asphyxia	7.6	9.5	0.0

Source: FESAL-93

For further details on child mortality see the technical report on maternal-child health by Dr. Francisco Becerra, ANSAL-94.

1.3 Morbidity

According to data provided by PAHO/El Salvador there has not been variation in the ten first causes for external consultations in the services of the MOH during the 1988-1991 four-year period.

In 1990 MOH's health establishments provided care for 3.3 million first-time visits, out of which 6.9 percent were caused by ARIs, 4.24 percent were the common cold; 4.18 percent were undefined intestinal infections, and 3.32 percent were nonspecific intestinal parasitism. In lower numbers were: influenza; unspecific bronchitis; pharyngitis; cervical, vaginal and vulva inflammatory diseases; gastritis and duodenitis; and 1.32 percent were neurotic disorders, thus ranking in tenth place.

The ten main causes of morbidity in health establishments were similar in 1991, when care was provided to 2.5 million new cases.

The main morbidities for children under 5 years of age in 1990, were ARIs, intestinal infections and intestinal parasitism, accounting for 80 percent of consultations and hospital releases. The report of diarrheic diseases subject to special surveillance since 1991, increased 77 percent. From August 1991 on, cholera has become a growing problem, with an accrued total of 12,574 cases as of June 14, 1993 (PAHO/El Salvador).

1.4 Child survival

Child survival strategy was adopted by a work group comprised of representatives of WHO, UNICEF, World Bank, United Nations Development Program (UNDP) and the Rockefeller Foundation, who met in 1984 with the purpose of promoting, by every possible means the worldwide reduction of child morbidity and mortality. The purpose of designing child survival strategies was to identify factors related to pregnacy determining child mortality including: spacing pregnancies; environmental contamination; nutrition; monitoring growth and development; accident, injury, and disease prevention (especially those that can be prevented through immunization; PAI, PAI-plus); diarrhea; and ARIs.

This campaign quickly gained advocates with some criticism alleging that said strategy would increase population in underdeveloped areas lacking sufficient resources to maintain additional population; others alleged that no benefit would be gained, if the children that escaped from death in the first year of age, by avoiding contagious diseases through immunization, would die during the next two to four years due to other diseases such as malaria, diarrhea, ARI's, or as victims of malnutrition. Arguments in favor of the strategy were prompt stressing the humanitarian aspect of this strategy, the eventual voluntary family planning by parents, when better survival perspectives were offered, an especially if the child survival program was accompanied by an active family planning program and control or prevention of diarrheas, ARI's and other diseases.

In the case of El Salvador it is very important that child survival programs be closely related to active family planning programs, since fertility rates are still high, particularly in rural areas.There is also a group of girls who currently range from 4 to 14 years of age whose number is two and a half times greater than the number of women reaching the end of their fertility years (35-44 years of age; 684,000 compared to 252,000), which implies a greater number of births if the fertility per age is not reduced in the new group.

It is worthwhile stressing that the child survival strategy is not limited to the immunization program (PAI) but that it has other integral components geared to improving the environment, providing potable water, controlling diarrhea and ARIs, strengthening nutrition/food programs and controlling the development of the child population, besides spacing pregnancies.

2 Health problems and control

2.1 Information systems

There are several parallel data systems in the country which cover the specific needs of various institutions or projects.

In order to study the epidemiologic profile of the country, the information generated by the MOH was reviewed, which includes information from other institutions of the health sector: ISSS, SM, ANTEL, universities, hospitals, and so on. Although data on hospital patient morbidities and mortalities exist, this analysis did not focus on hospitals but instead on all outpatient visits, including to hospitals and clinics (2.5 to 3.3 million new cases annually).

Data gathering, analysis and feedback processes have been standardized but not all health regions do it with the same timeliness. While ANSAL was carrying out its data revision and analysis (October/November 1993) the only official data for 1991 was the year book no. 23 from the MOH statistics unit. However, special programs such as the malaria, cholera and immunization were updated one month prior our visit.

The fragmentated maternal-child services and programs (nutrition, health education and environmental health) at the central level, negatively affect maternal-child health. The different programs have their own information system, burdening and confusing nurses and doctors who have to fill in or complete forms. As a result, reliable information on coverage and service impact is unreliable and untimely, which in turn affects supervision.[4]

The review of epidemiological data of the MOH was supplemented with the review of "parallel systems", such as the one on malaria, management information system, basic perinatal clinical history (CLAP-PAHO/WHO) and a visit to a representative sample of data generating institutions, as well as to entities in charge of the consolidation and analysis of data. In the special studies, (a) breast feeding, (b) nutrition, (c) AIDS, (d) water and sanitation, and (e) maternal-child health. Information related to each topic was reviewed as described in the corresponding technical reports.

Epidemiological data

Within the epidemiological area there are two types of reports with different periodicity and purposes:

(1) The epidemiologic surveillance report, the weekly epidemiological report, with contributions from the folowing: MOH, ISSS, ANTEL, universities, SM, the Ministry of Agriculture and Livestock (MAG), especially through its General Directorate for Plant and Animal Sanitation, and others such as Bienestar Magisterial (teacher's security system), seeks to gather information to take action and once the purpose is achieved it is temporarily filed and later destroyed. Generating institutions deliver the report to the regional headquarters and to the Epidemiologic Unit of the MOH. Only first visits are filed and are transmitted by mail, telephone or fax, according to a pre-established priority schedule.

[4] This problem was observed by the author during a visit to the health units and confirmed by the Food World Program that supports the Ministries of Health and Education in the development of PMA/ELS-3886 and 4508 projects. As of 1994, improvements are being introduced in the information system to monitor and evaluate supplementary food programs.

Depending upon pathology, the report must be accompanied by the epidemiological case study in a special form containing lab results (or samples). Although the responsibility for action is at a local level, the regional headquarters or the central level may send technical support and other resources if deemed necessary.

The weekly epidemiological report includes a list of 100 possible pathologies or epidemiological occurrences, grouped into 14 categories. There can be one or more pathological entities in each category identified as tracers for preferential care within the group. The report includes the ICD-9 classification and the number of cases per age group to date and accrued in the year. For further detail see Annex II-4.

The purpose of identifying a tracer disease is to promote actions within the whole group, should a selected disease case arise. For example, a case of flaccid paralysis requires to revision and reinforcement of PAI's activities, not only in the case of poliomyelitis but also in the DPT group and others such as measles and B hepatitis, A viral hepatitis. The increase in AIDS cases prioritizes actions within the whole group of transmitted sexual diseases. The dengue cases involved the whole control group of diseases transmitted by vectors.

The information from the Epidemiological Unit and from visits to health units, posts and centers, indicate that the institutions are complying with a timely delivery of information to the regional headquarters and to the central level of the MOH. The majority processes this information manually, although there are already some centers (Chalchuapa, just to name one example) that use electronic data processing.

The information delivered by the weekly report is mainly used to control epidemic outbreaks by means of immediate reaction. This information is also used to direct preventive and control actions.

(2) Morbidity Statistics. In order to study the epidemiologic status and its trends there is another information system on morbidity statistics called Statistical Health and Epidemiological Integrated Data System (SIEES) supported by USAID's APSISA project. The morbidity report is processed on a monthly basis.

At the central level, the MOH also receives reports directly from special programs (PAI, AIDS, TB, malaria, chagas, dengue and cholera).

In general the weekly epidemiological report is used not as a morbidity data source; but as an epidemiological surveillance tool in relation to one hundred selected pathologies, as mentioned before.

The monthly morbidity report, in contrast, which is processed through SIEES, records approximately 300 of the most frequent diagnosis, according to the information from ambulatory care of all institutions of the MOH (hospitals, centers, units, and posts), but not from other institutions of the sector (ISSS, SM, ANTEL and others). There are still many other entities that offer health services and do not render any type of information. Even with this limitation, it is estimated that information compiled, consolidated and analyzed by the MOH is a representative sample of general morbidity at the health region levels.

The MOH's institutions send a monthly morbility report to the regional headquarters and to the Ministry's central office. These sheets are received by the region and organized by sequential numbers.

This information is sampled at the regional level and only samples are codified (CIE/WHO, 9th Revision). This happens in all regions with the exception of six institutions of the Western Region, where all visits are codified and saved on a diskette. Outside the sampling, there are no regional level actions, with the exception of the Metropolitan Region, in which they "save, process and analyze" the sample, before sending the data to the central level (and returning them to the data generating unit).

At the national level, it is saved, processed and consolidated by regions and at a national level. Currently, only the Metropolitan Region sends diskettes; the remaining send documents (coded paper). Although the change has not been complied with at the same level in all Regions, starting from January 1993, the Health Directorate General ordered that all of them proceed in the same manner as the Metropolitan Region.

The Epidemiological Unit produces a document with comments on the epidemiological report including an efficiency analysis of the data gathered as well as of the epidemiological events reported during the period.

The MOH Statistics Unit is in charge of the processing, consolidation and publication of data at the central level. It uses a sampling system based on a mathematical approach developed through APSISA's support, so that it represent the whole universe. This codification can be carried out at any level. At present 70 percent of data generating units codify their own material, using the ICD-9, together with handbooks provided by the PAHO. The MOH's Statistics Unit has prepared a simplified list, with approximately 300 of the most frequent outpatient diagnosis. Contingency plans are ready for the adoption of the ICD-10 which is at its final revision stage with the participation of the Centers for Disease Classification that collaborate with WHO in Venezuela (Spanish version) and Brazil (Portuguese version) for the American Region. The French version of the ICD-10 is already available at the Documentation Center of the PAHO/WHO in San Salvador.

From 1987, the Statistics Unit adopted the following sampling guidelines varying from one out of every 12 sheets to one out of every 40 according to the Region. Once the procedure ends, and adjustment is made so that the samples represent the whole universe.

The review of the epidemiological and morbidity surveillance information system was assisted by the MOH's Epidemiological and Statistics Units. Field observations were carried out in the hospitals of Chalchuapa, Usulutan, and Chapeltique, Moncagua and San Miguel. Regional and hospital directors and the data system committees of each institution and a supervising doctor acting on behalf of the corresponding regional director, significantly cooperated in the fulfillment of the mission. For these activities, the logistical support and active participation of the MOH's Medical Care Division and of the APSISA Project was at all times present.

(3) Mortality Statistics. Mortality statistics by age and by cause are inadequate due to understatement, especially in the case of children, a high percentage (17.4 percent in 1991) of "signs, symptoms and unduly defined morbidity status" in the diagnosis of death cases; certifications made by doctors not

personally treating the patients and who make their diagnosis on data provided by nonmedical witnesses; information altered due to reasons of social unacceptance, such as information related to suicide, acts of violence and other external causes and certain diseases such as AIDS; insufficient knowledge on medical sciences, particularly in rural areas; lack of knowledge of the appropriate certification of the cause of death, especially of the handling of the basic cause and contributing cause; voluntary or involuntary age misinformation, in which real age is generally exaggerated in persons over 60 years of age.

Mortality certification problems also exist in other countries in Latin America (PAHO, Scientific Publication No. 542-Health Statistics, Year 1992), but in El Salvador they were worsened due to the twelve years of war. Many City Halls stopped operating totally or partially in conflictive areas and birth certificates were destroyed. UNHCR estimates that half a million salvadorans lacked documentation after the war.

2.2 Health problems by population group

2.2.1 Perinatal, infant and childhood

According to FESAL-93 the five major causes of death among children ranging from 0 to 4 years of age are: diarrhea/dehydration; acute respiratory infections; low birth weight/prematurity; congenital anomalies; and new born trauma/asphyxia that jointly are accountable for the death of 70.3% of children under five years of age. These data are more reliable than the data on mortality reported by the city halls to DIGESTYC as mentioned earlier. In visits to hospitals, health centers, physicians, and NGOs active in maternal-child primary care health personnel informed that diarrheas and respiratory infections in children are primary diagnosis in ambulatory care.

The five major causes of morbidity which occurred in the country's health facilities in 1991 are shown in Annex II-5. Although this data is not presented per age group, it confirms the importance that diarrheal diseases and acute respiratory infections have on morbidity (13.5% of the total outpatient care at health facilities).

Among 0-11 month olds (post-neonatal), diarrhea accompanied by dehydration together with ARIs are accountable for 68.3% of the deaths. There is a need to (a) promote and facilitate timely access to health care services to breast feeding mothers; and (b) introduce significant improvements in well child care, as a preventive strategy, especially improving the knowledge and practices of mothers with regards to maternal breastfeeding. Nutritious food and above all mother's milk allow children to be less vulnerable to these diseases.

For further details see the technical document on *Maternal-Child Health,* (ANSAL-94) and the *Diagnosis of Child Eating Habits in El Salvador* (ANSAL-94). This diagnosis was coordinated by the WELLSTART project financed by AID.

During the neonatal period, the low birth weight (LBW) or prematurity is accountable for 34.2% of all child deaths. This is a very high ratio, if we take into account that LBW is the primary cause of death among 14.6% of children under 5 years of age who died due to all causes. Therefore, pregnant mothers constitute a high risk

group, to whom access to health services and nutrition education should be facilitated, and who should benefit from food supplement programs whenever possible.

It is interesting to note that according to FESAL-93 deaths due to LBW occurred in a greater proportion within the urban areas (22.2%) than in rural areas (14.8%). An apparent explanation could be that infant deaths are not recorded in rural areas and that high risk cases are referred to hospitals in cities.

The five major cause of death among children from 0 to 4 years of age include congenital anomalies (9.5%), mainly in the neonatal period (14.5% of neonatal deaths are due to congenital anomalies; higher in urban areas, 12.1%, than in rural areas, 10.7%). Causes could be related to genetic factors, nutritional deficiencies, intake of multiple medications during pregnancy, alcohol consumption and exposure to pesticides widely applied in the country. According to Requena and Myton (see ANSAL's technical report on environmental health) during the years in which cotton was being produced, the pesticide load of in El Salvador was the highest in Central America, with a maximum of 593,5 kg of organochlorates and parathion per square kilometer. The organochlorates accumulate in the food chain and can be detected in fat and milk, as well as in human milk. The current trend in El Salvador is to use organophosphates. According the toxicological classification, 16% of imported products pertain to category 1 (extremely toxic).

Urban/rural distribution refers to the place of residence of surveyed families. There has been high migration to the cities during the last twelve years. Although in rural areas there is more exposure to farming insecticides, in the cities there is greater access to different medications, and selfmedication is common. The possibility exists that medications causing mutagenic effects could be used without prescription as well as drugs no longer manufactured or banned in other countries. The causes for congenital anomalies must be subject to a thorough investigation.

Birth trauma/asphyxia (the second-most usual cause) constitutes 7.6% of the total deaths of children under five years of age and 17.9% of neonatal deaths. The FESAL-93 survey showed that the ratio of children who died due to birth trauma was higher in the urban area (12.1%) than in the rural area (7.4%). Access to health services, referral of high risk cases to trained personnel, and training empirical midwives should reduce the percentage.

Mortality rates among children from 5 to 9 and 10 to 14 years of age are lower, when compared to children from 0 to 4 years of age.

Mortality statistics published by PAHO, and based on information provided by national authorities of El Salvador, show the following mortality rates per 100,000 inhabitants during the last fifteen years:

Table No. 7

MORTALITY RATES BY AGE AND PER 100,000
(All causes, both sexes)

Period	< 1 year	1-4	5-14
1975-79	8,725.0	1,215.0	116,6
1980-84	7,695.0	1,063.5	105,0
1985-89	5,741.0	783.0	80,0

Source: *Scientific Publication*, no. 542, PAHO, 1992.

It is interesting to note that:

(a) Children under 1 year old: contagious disease rates were almost stationary or increased slightly up to 1972, when they started to decline among both males and females.

(b) Children from 1 to 4 years of age: a marked reduction in contagious diseases among both males and females during the whole period reviewed (1960-89); tumors, circulatory problems and external causes increased among both males and females.

(c) Children from 5 to 14 years of age: a trend similar to the 1-4 year olds was observed, with a marked reduction in contagious diseases, especially since 1973.

(d) Those from 15 to 44 years of age: a reduction of contagious diseases as the cause for death continues among both men and women, but tumors, circulatory problems, and external causes increased, especially since 1973. External causes increased in men and women, but are higher in men, since 1973.

The fluctuations, since 1973, are marked among the 15 to 44 year old men and women, due to specific causes -- tumors, circulatory problems and external factors-- which could be the result of an information system artefact. Although the sudden change in the trend could be due to factors related to the civil war and immigration, which could have modified the epidemiological universe, access to health care (i.e., easier in the urban area and the population group which has the greatest representation within information system, due to growing numbers) also plays a role.

2.2.2 Teenagers and young adults

According to the WHO's definition, adolescence occurs in the second decade of life (10-19 years olds) and youth between 15 and 24 years of age. These chronological changes do not necessarily coincide with the biological, social and psychological changes which characterize these periods of life.

Females exceeds males in El Salvador by approximately 205,000 mostly in MASS (98,000) and in the Eastern Region. The youngest group of fertile age (20-34 years of age), more than 120,000 women, will have an impact on marital status and fertility.

The country's population continues being predominantly young, according to the 1950, 1961 and 1971 census as well as to preliminary data contained in the 1992 census, in which 50.8% are under 20 years of age and about 40% are under 14 years of age.

In 1991 DIGESTYC (see their statistical progress report no. 16) recorded 77,914 live births, of mothers under 25 (51.5% of the total) (151,210 births). Information supplied by hospital authorities indicates that sexual activity starts very early with girls becoming teenage mothers. In this group (up to 14 years of age), 724 births were recorded (0.5% of the total). Teenage motherhood occurs both in urban (349 births) and rural (375 births) areas, which coincides with the urban/rural distribution of almost 50/50% nationwide, although this proportion varies from one department to the other.

Commonly by age 25 these multiparous mothers (4-5 children) resort to sterilization. Approximately 50% of mothers have access to institutional care (FESAL-88 and FESAL-93).

Early sexual activity as well as economic pressures lead many young women to prostitution, often leading to violence, accidents and gynecological problems due to abortion, infections, STDs, and cervical-uterine cancer, (associated with early sexual activity and several sexual partners). Lately, AIDS has been added to the health problems faced by this group. The clients of these young girls are at risk of acquiring a sexually transmitted disease and as are their partners, who in the majority of cases are monogamous.

Boys join the informal labor force at a very early age (10-12 years of age) by selling newspapers, food, keeping an eye on cars, making exhibitions in the streets as fire-eaters or flamethrowers, or directing traffic dressed as clowns. UNICEF (1991) estimates that there are approximately 100,000 children (between 6 and 18, averaging between 11-12) in these circumstances. Approximately 10% have had at least one problem with police authorities, and an undetermined number becomes addicted to chemical products (such as fuel and glue).[5]

Youth gangs, who have always existed in larger or lesser numbers, have now evolved to form youth gangs known as *maras*, marked by violence. Most members (76%), according to studies carried out by the Catholic University (UCA), come from broken or dysfunctional families. Certain similarities exist between their organizational style and criminal activities with gangs in other big cities. This phenomenon is attributed to the influence of movies, television or simply the return of leaders from abroad where they have had an opportunity of participating in these types of activities. Drug consumption adds to the problem. Although gang members were not in directly involved with the war, its effect cannot be underestimated. It is difficult to estimate the influence of these factors, but for all practical purposes it is a local phenomenon, which must be corrected through education, healthy recreation, employment opportunities, improving the family's status, combating alcoholism, drug addiction, and so on.

[5] According to this estimate, 5-6 children, between 6 to 18, out of every 100 are exposed to this risk (1992 census). Some national authorities feel this number is too high and recomend the estimate be recalculated.

2.2.3 **Disabled**

The Training Resources Group, at USAID/El Salvador's request, organized a workshop (September 27 - October 1, 1993) with the participation of 38 persons representing 24 local and international organizations aimed at developing a long-term strategy for war disabled. The following comments are based on the workshop's report (Daniel B. Edwards, TRG, November 5, 1993).

The first beneficiaries included civil and military disabled from both the Armed Forces of El Salvador (FAES) and the Frente Farabundo Martí para la Liberación Nacional (FMLN). The problems in this target group include: physical disabilities from injuries requiring surgery and post-surgery care, prosthetics or orthotics, sensorial and nervous damage (eyes, ears), psychological problems, post-traumatic stress syndrome, withdrawal, psychotic episodes, physical violence, and rape.

From June 21 to July 4, 1993, a national war wounded and disabled census was undertaken and published in November 1993. This census was carried out by the National Commission for Peace Consolidation (COPAZ), the European Economic Community (EEC), the War Wounded Productive Reinsertion Program (EEC/MOH), and the Canadian Cooperation/UNDP, ALFAES and ASALDIG (who participated in the gathering of information). ONUSAL gave logistical and communication support.

The census registered 30,854 potential beneficiaries (within legislative decree no. 416, which includes former combatants of both armies injured during the war, injured civilians, and family members of the war victims). Neither the parameters nor a census to estimate the number of persons suffering from disabling psychological traumas been specified. The census did not try to deal with the problem of the displaced and refugees who did not participate directly in the armed conflict but who were nevertheless affected by its consequences. Fifty - five percent of the beneficiaries are concentrated in five departments (San Salvador, Chalatenango, Morazán, Usulután and San Vicente).

It is estimated that there are 12,000 physically injured persons (4,050 from the FMLN, 5,000 from the Armed Forces, and 2,500 civilians). Of these, 6,000 have already undergone surgery and require follow-up care. There are an undetermined number of war disabled residing abroad. For planning purposes, USAID estimates 10,000 physically injured. The number of psychologically affected has not yet been estimated.

Prolis reports: 9,895 disabled former combatants; 2,219 disabled civilians; 18,662 relatives of war deceased; and 78 unknown (did not respond), which adds up to a total of 30,854.

As a direct result of the conflict, new demands for psychosocial adaptation and personal identity have arisen. The population, exposed to external traumatic situations, does not accept the psychological repucussions. There is a lack of trained professionals to take care of these problems.

Psychosocial problems arising from the war, include:

- Increased violence, alcoholism and drug addiction;
- Increased diseases and psychosomatic problems;
- Personality disorders, increased violence towards women and children;

- Apathy, distrust, loss of values and,
- Increased demand for psychological and orientation services.

The workshop encouraged communication between local and international organizations involved in the recovery of physical and mental health of the disabled and in activities geared towards their reinsertion into a productive life. Consensus was reached on the definition, components and activities that should be included in the strategy to achieve holistic rehabilitation and on a structure for a normative national executive committee.

Given the social and political environment prevailing in the country, activities geared towards health recovery, as defined by WHO, and improvement in the standard of living of disabled former combatants and civilians, and relatives of the deceased, should receive high priority in the national and international forum.

2.3 Health problems by disease type

2.3.1 Diseases transmitted by vectors

Malaria

The area originally affected by malaria in El Salvador covered 19,000 square kilometers (approximately 89% of the country's population; 5.047.925). The area most affected is the coastal area the habitat of the malaria transmitting mosquito, *Anopheles albimanus*. In 1900 malaria was the primary morbidity in the country, and was accountable for 22% of all deaths recorded in San Salvador.

DDT was introduced in 1945 in limited areas which were later expanded when in 1956 a decree for the defense against malaria was passed. The mosquito soon became resistant to DDT. At the onset of the program up to 260,000 houses were sprayed annually with insecticide which currently has been reduced to 20,000 houses in 1993 and only 12,000 are scheduled for 1994. The program now uses FICAM^{R} (Bendiocarb) which is a carbamate formulated at 80% for house spraying.

Other insecticides authorized to be used in vector controlled activities in El Salvador are: abate (emulsifiable at 44%, granulated at 1% or in pellets of slow release at 5%) for larvae control and permetrina (5%) in sprays (ULV) as an adulticide. The authorization is based on the findings of environmental impact studies.

During 1959-67, morbidity indexes rose; fluctuating in 1972-80, and from then on indexes have fallen from 20 cases per thousand inhabitants (1980) to 0.8 cases per thousand in 1992. This trend continued throughout 1993.

In 1980, 95,835 malaria cases were reported (80,053 corresponded to *Plasmodium vivax* and 15,782 to *P. falciparum*). In 1993 only four isolated *P. falciparum* cases and 3,887 *P. vivax* cases were reported. This is equal to an annual incidence of 0.77 per thousand inhabitants in El Salvador.

In 1980 El Salvador report 40% of cases detected in the Central American sub-region; currently that ratio has decreased to 3.0%.

The program's success is a result of the strategic approach based on using epidemiological data for local decision making. To this end, *caseríos* (hamlets) were used as the operational unit. *Caseríos* are classified by their annual parasite incidence (API per 1000 inhabitants) and this classification is reviewed three times a year. API is based on the passive search of cases by volunteers who take blood samples from 80 to 85% currently or recently feverish persons. For the purpose of classification, the API and the altitude of the *caserío* above sea level are considered the main risk factors.

The hyperendemic area is located below 300 meters above sea level; the mesoendemic area is between 300 and 600 meters above sea level; and the hypoendemic area is between 600 and 900 meters. The non malaria area is found over 900 meters above sea level.

Besides the altitude above sea level, the classification was based on retrospective studies of epidemiological data covering seven years (1970-1977). The following was defined:

- Non malaria zone, coffee planting areas, imported cases
- Hypoendemic (< 30 cases/VC/year)
- Mesoendemic (30-59 cases/VC/year)
- Hyperendemic (60+ cases/VC/year)

As the program progresses, classification is still by endemic area, but an operational priority scheme has been adopted according to the number of cases (0-9, 10-14, 15+) per VC/year.

This network operates with the help of 2,914 volunteers, with government medical services and 400 reporting posts. In addition, the Malaria Department carries out two annual parasite surveys to identify whether the malaria area has expanded. The lab network is distributed in epidemiological circuits.

The program has a computerized data system set up by the APSISA project which aids decision making regarding control measures.

Disease control measures are based on the free distribution of five-day curative drug scheme. For an adult, ten (10) tablets of 150 mg of chloroquine and 15 mg of primaquine (dosage: 3/2/2/2/1).

For vector control, the reduction of breeding sites is used through physical works, house spraying, focal treatment (ULV), and larvacide. The program has also built three 400-meter channels, a 30-meter dam, and a 230-meter outlet into the sea at the Ticuiziapa Estuary . The cost was US$400,000 and was developed by MOH with funds from USAID. It was inaugurated in 1989.

The second project was built in 1991-1992, at the San Diego Estuary and is made up of three 1 km long x 5 meter wide channels, cement dikes at the river shores, two 25-meter long dams and one 830-meter line pipe draining into the sea, costing a total of US$750.000, also financed by USAID.

This information was supplied by the MOH Malaria Department and the APSISA Project that supports the program. The author also had the opportunity to visit projects in the Department of La Libertad, the Central Region, and others (maximum cost per work US$10,000) in El Rosario, Department of La Paz, Paracentral Region all built with the support of the Nordic Governments. The works visited are cleaned and maintained by the malaria program brigades.

Undoubtedly the strategic approach of the malaria control program in El Salvador was well conceived and executed. The results are in sight. But El Salvador is not an island and malaria continues being a serious health problem in the region. The government and the MOH need to continue too give the program high priority so as not to lose what has been achieved and to promote the use of similar approaches in other countries in the region.

Several technicians are reaching retirement age, coinciding with the integration of the malaria program the other health services. As a result, malaria workers have expressed concerns about the possibility of losing logistical support.

As malaria cases decrease, the VC network detects and treats fewer cases. Regular health services will play an increasingly significant role in the maintenance of these achievements. Since the number of cases is below 5,000 annually, this situation should be evaluated.

The programs' efforts to reduce the use of chemical substances is commendable. The number of houses slated for annual spraying with residual action insecticides, decreased from 260,000 in the 1960s, to 12,000 scheduled for 1994. Will it will also be possible to reduce dosages of drugs without affecting the program's objectives?

Undoubtedly, environmental management (i.e., the construction of engineering works) is one of the best disease control strategies, with an excellent cost-benefit ratio, especially when one takes into account the reclaimed land which returns investment hundredfold. A classical example is the *bonifica integral* which eliminated malaria in southern Italy and reincorporated excellent soils into the economy. Another example is the Valle de Aragua in Venezuela where this approach has had great success.

The maintenance of these works, which up to now has been the program's responsibility, is of concerns; the communities refuse to maintain works built on private lands. The solution to this problem is not easy but the solution should be explored as new works are planned, especially secondary channels. Dam, dikes, primary channels, and drainage pipeline are maintained by the MOH and others.

Dengue

Diseases with symptoms similar to dengue have been reported in the Americas for more than 200 years. Until the sixties, these epidemic episodes occurred approximately every 10 years. More recently the intervals have been shorter.

The first serotype detected in the Americas, DEN-2 (Trinidad, 1953-54) never reached epidemic status. The first serotype that did, was DEN-3 which affected the Caribbean Islands and Venezuela in 1963-64. Later, 1968-69, during another epidemic outbreak in the Caribbean, DEN-2 and DEN-3 strains were isolated.

In 1977, DEN-1 was introduced in the region and caused several epidemics, affecting not only the Caribbean but also the northern part of South America and the southern part of the United States, Mexico and Central America.

DEN-4 appeared for the first time in northern Brazil, affecting 12,000 people in 1982. During the 1980s, geographical area affected by dengue increased significantly. The most serious episode of hemorrhagic/shock syndrome (HD/SS) occurred in Cuba (associated with DEN-2), resulting in 350,000 cases and with more than 10,000 people seriously affected by the disease. A total of 158 deaths occurred, 101 of which were children.

Serotypes isolated in El Salvador include DEN-1, DEN-2 and DEN-4, although only DEN-1 and DEN-4 have been confirmed in the last 4 years (1990-1993) (PAHO/FINNIDA).

Most cases are classic dengue, with a few of hemorrhagic dengue (74 in 1988). There was no hemorrhagic dengue during 1989-1992.

The dengue program, started in 1991, is under the responsibility of a National Coordinator for the Prevention and Control of Dengue and Other Metaxinic Diseases, which receives support of the Malaria Program and health regions for operational support. The PAHO/FINNIDA Project supports epidemiological surveillance and a network of sentry posts for detecting the virus which with the support of the malaria program maintains surveillance of the vector, *Aedes aegypti*.

The dengue lab is the serologic surveillance center. It has the necessary resources to carry out IgM tests (samples taken 6 or more days after the onset of symptoms for up to 60 days); if hemorrhagic dengue is suspected a second sample is taken 15 days after the onset for indirect hemaglutination tests.

For virological surveillance, the referral lab is the School Hospital in Tegucigalpa, Honduras, which carries out serotype isolation in cell cultures. The samples for virus cultures must be taken the third day after the appearance of symptoms, the latest on the fifth day since the viremia is short (3-5 days). During the last five years surveillance has demonstrated a greater concentration of cases in the metropolitan area of San Salvador, ISSS has reported many of the clinical cases. The CDC dengue lab in San Juan, Puerto Rico, also gives support when necessary.

The annual number of cases during 1988-1992 range from 518 (1989) to 2,381 (1990) according to the MOH Epidemiology Unit. During these years, cases were reported every year, from all five health regions.

Home infestation of the vector is high, ranging between 45% during the dry season to 68% or higher during the rainy season.

Up until October 30, 1993, of the 532 dengue samples sent to the lab, 213 (40%) resulted positive. Samples are preselected based on the patient's clinical symptoms (at least two of these need to be present) such as fever, headache, retro-ocular pain, erythema, adenopathies, bone-ache, myalgias, general malaise, conjunctivitis, tourniquet test (negative in the case of classical dengue, positive in HD/SS).

The regions reporting most of these cases are the the metropolitan area of San Salvador, and the western and paracentral ones.

Distribution of sex in 1993 was more or less the same: 51% females, 49% males (Dengue Lab/MOH, 1993).

Surveillance has recently been intensified, due to increased numbers (though not at epidemic levels) in Costa Rica.

Dengue is basically a sanitation problem and at relatively low cost, *A. aegypti* breeding places can be eliminated; without the need of chemicals. Physical means can eliminate the mosquito breeding areas.

On July 23, 1993, the Minister of the MOH issued Ministerial Resolution No. 622 approving the *Technical Manual for the Prevention and Control of Dengue in El Salvador*. This manual was prepared by the program's technicians and the PAHO/FINNIDA project, taking into account the recommendations of a group of experts who met in Washington, D.C. at the request of PAHO from December 16-20, 1991. It will guide the health sector on prevention and control measures, as well as case management.

The program's operation depend mainly on foreign assistance. The MOH only covers personnel salaries, and provides facilities and utilities (water, electricity, and telephone). The PAHO/Nordic Countries Project provide technical and monetary assistance for surveys, research activities, manuals, posters, forms, lab, promotion of community participation, and small amounts of insecticides.

Chagas' Disease

Chagas' disease or American trypanosomiasis is caused by a protozoan, *Trypanosoma (Schizotrypanum) cruzi*, and can be found in the Western Hemisphere from Argentina to the United States. Approximately, 90 million persons live in the endemic areas and approximately 16 million are infected. It is estimated that 27% of the infected persons will develop the cardiac form of this disease[6].

Poverty is the most important risk factor and prevention depends on socioeconomic improvement. Important transmission factors of the *T. cruzi* are the interaction of wild hosts with domestic and peridomestic environment reservoirs, and a habitat favorable to vector species, which feed on human blood. Transmission can also occur from one human to another in organ transplants and lab accidents, but the most common manner is through blood transfusions.

The presence of *T. cruzi* in El Salvador has been confirmed as well as chagastic cardiopathy, but available information is still scarce. Evaluation of its importance as a public health problem is yet to be assessed. As is to be expected, the majority of human cases originate in rural areas where adequate ecological conditions for transmission prevail, but the growing migration from the field to the city increases the danger risk through blood transfusions.

In a quick survey carried out by members of the ANSAL-94 team, it was found that at least one out of every three laboratories that carry out blood transfusions do not employ serologic tests to detect Chagas' disease because they lack the necessary reagents. Once the acute period is over, Chagas' is practically untreatable and can eventually develop into serious cardiac complications in patients at their most productive age (20-30 years of age), although it may appear earlier. Urrutia Centeno has identified chagastic myocardiopathy in children and teenagers at the Benjamin Bloom Hospital.

The test for Chagas' should be required, along with tests for hepatitis and AIDS, to protect patients needing blood transfusions.

The MOH reported 3.8% positive cases among blood donors (indirect hemaglutination reaction) in the 14 governmental hospitals. The hospitals of Sonsonate (10.8%), Ahuachapán (10.4%), La Libertad (8,9%), and Usulután (7.1%) had the highest number of positive cases.

---

[6]R. Tonn, Vbc Papel No.6, MSCI, Washington, D.C., 1991

Rhodnius prolixus and *Triatoma dimidiata* are the vectors in El Salvador (Cedillos, 1993).

R. prolixus dominates in the lower zones (0-300 meters above sea level) preferring huts with straw roofs and *bahareque* walls. *T. dimidiata* prevails in higher zones (600-1000 meters above sea level) in *bahareque* and adobe buildings. Both species coexist in intermediate zones (300-600 meters above sea level).

The use of insecticides to control malaria influenced vector distribution of Chagas' significantly. The absence of vectors has been observed in the malaria hyperendemic zone (<300 meters above seal level) which has been subject to residual action insecticides.

Domestic reservoirs for *T. cruzi* are dogs and cats, and wild reservoirs are frequently rats and mice. The role of *Didelphis marsupialis* in the life cycle is not known. Although wild, this marsupial frequently enters into contact with domestic environments due to its feeding habits.

The Chagas' Disease Program is under the responsibility of the Dengue Control and Other Mexatenic Diseases Program. It lacks its own personnel and resources. In fact, besides the research carried out by Cedillos some years ago, very little has been done to define the importance of this program within public health priorities. The coordinator foresees research on the distribution of triatomic vectors in three western municipalities, near Guatemala, for six months with the support of malaria VCs and the participation of entomological personnel of that same program. Depending on this activity's success, the approach will be expanded to other geographical areas and other aspects of the disease, such as the myocardiopathy distribution.

It is necessary to (a) carry out research on the prevalence of the Chagas to determine the importance that this disease has in the public health program; (b) promote longitudinal research to evaluate the process of the chagastic infection --chagastic myocardiopathy; (c) evaluate the importance of blood transfusions in the transmission of the *T. cruzi*; and (d) identify high risk areas to design prevention and control measures based on housing and environmental improvement with the participation of the community.

Leishmaniasis

Leishmaniasis occurs when man comes into contact with the parasite in zones where the reservoir and vector exist. In 1992, 20 cases of the non-ulcerous nodular form among ex-combatants concentrated in Santa Clara were detected, and later a center was discovered in the Department of San Vicente. In the Villa Victoria zone near the Honduran border another small focus was detected. The main vector species is *Lutzomya longipalpis*. Kalaazar cases have also been detected. Glucantime has been used to treat them.

2.3.2 Diseases prevented by immunization

According to PAHO/WHO's records, El Salvador has no cases of poliomyelitis. The last case was detected in 1988. The agent causing diphtheria was isolated for the last time in 1987. The rates per 100,000 inhabitants of the other diseases prevented by immunization during the 1988-1992 have declined as follows: Whooping cough (1.2 in 1988 to 0.5 in 1992); Measles (321.8 in 1988 to 9.4 in 1992); Neonatal Tetanus (from 0.6 in 1988 to 0.5 in 1992)

Regarding measles, as of November only 37 cases had been recorded for 1993, which is equivalent to a rate of 0.7 x 100,000. This contrasts with 1989 when more than 16,000 cases were recorded at a rate of 321.8 x

100,000. It is necessary to maintain coverage above 80% to avoid outbreaks of the disease. Currently, coverages are 30% in children under 1 year of age; 59% in the 1-4 group; and 59% in the 5-14 group.

Whooping cough shows downward trends. Coverages with DPT nationwide are good: (>80%) in 106 municipalities; intermediate (50-79%) in 95 municipalities and not enough (<50%) in 61 municipalities, out of the 262 municipalities of the country.

Neonatal tetanus is declining and vaccination coverages among women of fertile age are at 62%.

BCG vaccination has the best coverage. At the municipality level only 77 have a coverage over 80%, 85 have a coverage between 50 and 79%, and 100 municipalities have coverages under 50%.

In principle, the strategy should be timely immunization, but in practice such strategy is supplemented with nation-wide vaccination campaigns, lasting 15 days. The central office of the MOH Epidemiology Unit plans these campaigns while the health regions execute them. NGOs participate efficiently in these activities and have been particularly active and successful in former conflictive areas.

Preliminary results of the FESAL-93 survey show complete immunization of children under 5 years of age in the former conflictive areas to be 73.7%, better coverage than in the non-conflictive areas (72.9%). In urban areas the difference is greater--complete immunization is 81.7 in former urban conflictive areas, compared to 71.6% coverage in urban non-conflictive areas. The coverage in rural former conflictive areas is slightly lower (70.0%) than in the rural non-conflictive areas (73.7%).

The report on *Maternal-Child Health* by Francisco Becerra contains more detailed information on diseases that can be prevented through immunization and the vaccination programs.

2.3.3 Acute diarrhea and cholera

Cholera entered the country in 1991 and between August and December about 1,000 cholera cases were recorded with a death rate of 3.6%. The MOH Epidemiology Unit reported that from January to December of 1992, 8,778 cases were recorded, with a rate of 1.6 cases x 1,000 inhabitants for the whole country--seventh of major causes of morbidity due to contagious diseases. The mortality rate declined to 0.6%.

Cases were reported in all 14 departments--the five most affected were: Sonsonate, Chalatenango, La Libertad, San Salvador, and La Paz. The department of San Salvador had the the highest number of cases (3,431) and La Paz had the highest attack rate (4.8 x 1,000).

Males (62% of the cases) and the 15-44 years olds (3,971 cases; 45 %) were the most affected in 1992.

Until December 1993, the situation seemed to be under control. A total of 5,525 cases had been reported for the year, when between the last week of December and the first weeks of January 1994, a total of 9,872 cases were reported. The group most affected were the 15-44 year-old males living in urban areas. The greatest number are from the metropolitan area of San Salvador.

The rivers are biologically and chemically contaminated. This problem was highlighted during the community meetings held by ANSAL in different cities during February, 1994. Participants from the communities ranked

the need for potable water and treatment of sewage as the most important health issue. This problem is addressed in the ANSAL report on the environment. A clean environment, basic sanitation, personal hygiene, and education are strategies which compliment each other in the prevention and control of water-transmitted diseases.

According to FESAL-93, 20% of the deaths among children under five years of age are due to diarrhea/-dehydration. Major causes of outpatient visits to health facilities among these children in 1990 were ARIs, intestinal infections and intestinal parasitism.

The MOH published and distributed an epidemiological bulletin (the January, 1994 issue) containing the protocol and treatment of cholera. This should contribute to improved case management and consequently to reduce cholera mortality. Preventive actions should not be neglected in order to reduce incidence.

2.3.4 Chronic contagious diseases

Tuberculosis
A rate of 46.3/100,000 inhabitants has been maintained, with slight variations, during the past 10 years (PAHO). In 1992, 2,267 new cases were detected.

The progress observed in the rate has been altered. In countries with more developed economies, the improved diet, housing, education, and the elimination of infected livestock resulted in a decreased rate of approximately 5% per year; a decrease that doubled (10-13%) when antituberculosis chemotherapy was introduced at the end of the 1940s. In Latin America this decrease has been slower, with an annual decline of 5%.

Child mortality due to tuberculosis is very rare, not only in developed but also in developing countries where BCG coverage is 90% or more.

The infection risk in North America is very low (0.2%) and this is also true for Cuba, some Caribbean islands, Costa Rica, and Uruguay (0.5% or less). The risk is higher in Haiti and Bolivia (2-4%). El Salvador and other Latin American countries are between these extremes (PAHO, 1990).

In El Salvador, many health units, virtually all health centers and hospitals, have the capacity to carry out lab diagnosis of the tuberclin bacillus. There is a reluctance among symptomatic patients to be tested.

The increasing number of AIDS cases complicates the situation. Tuberculosis is an opportunistic disease and it is common to find simultaneous infections of tuberculosis and HIV-1 and HIV-2 viruses. In autopsy studies carried out in a hospital in Abidjan, Ivory Coast, tuberculosis was the main cause of death in 35% of AIDS patients (*Tropical Medicine and Tropical Health Bulletin*, Vol. I, No. 1).

While the samples were not large enough to draw any conclusions, in visits to health centers in El Salvador, the executive personnel and epidemiologists stated that the incidence of tuberculosis in their areas was growing.

2.3.5 Respiratory diseases

Pneumonia, chronic bronchitis, unspecific bronchitis, emphysema, and asthma are among the first 10 major causes of death, and according to the MOH, 7 out of every 10 children under 5 have suffered an ARI in 1992. In 1992, the Epidemiology Unit recorded a total of 116,043 new cases of influenza respirator symptoms.

2.3.6 Rabies and other zoonosis

Human rabies
In 1991 only 7 cases of human rabies were reported, four of them in the eastern region. In 1992, 19 cases were reported involving all five health regions. The eastern region reported nine cases, the western region, 4, and the remaining regions 2 each. These were the only reported cases. In 43.7% of the cases, the disease was confirmed by a laboratory exam.

The Rabies Program of the Epidemiology Unit reported animal rabies (mostly canine, but also feline, bovine, and others) mostly in the Metropolitan area, followed by the western region. Only 12.5% of those bitten were vaccinated when the attack occurred. This is a risk factor and corrective measures should be taken.

Other zoonosis
Vesicular disease in animals is reported with outbreaks in the Departments of Usulután, Chalatenango and Sonsonate. It causes food loss, public health damage and meat trade loss.

It appears in two forms: vesicular stomatitis which affects Mesoamerica countries, including El Salvador, and foot and mouth disease which affects other Latin American countries. Both forms occur in Colombia, Ecuador, Peru, and Venezuela.

According to FAO, vesicular disease in animals causes losses--up to 35% of food production in Latin America. Equine encephalitis has increased from 19 cases in 1990, to 42 in 1992, with the greatest number of cases in the departments of Chalatenango and Cabañas. Human cases have not been reported. Approximately 100 cases of bovine tuberculosis are reported annually.

Bovine and porcine cysticercosis has increased from 120 cases in 1990, to 525 in 1991 and 412 in 1992 (MOH, unpublished documents). It is difficult to estimate the number of persons infested with *T. saginata* and *T. solium* cestoda or with their larvae *(Cysticercus cellulosae, Cysticercus bovis)* but there is evidence of incidence among people with poor hygiene. The cysterceri can affect the central nervous system (brain) and can also live in ocular or periocular tissues.

2.3.7 AIDS and sexually transmitted diseases

AIDS[7]

The magnitude of the HIV/AIDS epidemic in El Salvador is not known due to the lack of a reliable epidemiological information system. The number of cases of HIV/AIDS reported as of December 31, 1993 was 1,120 (605 AIDS cases and 615 asymptomatic HIV cases for the 1984-1993 period). The first cases were detected among men, who had travelled abroad. Nevertheless, the transmission pattern suggests that there is local HIV dissemination, which is worsened by frequent population movements both in and out of the country. HIV/AIDS distribution by sex has been modified from a man:woman ratio of 15:1 (1984-87) to 3:1 (1993). The primary transmission modality is through sexual contact (96%), especially heterosexual transmission and within the 15 to 34 years old age group (71% of the cases). HIV seroprevalence tests indicate 0.06% positive among blood donors, 0.3% among pregnant women, 0.3% among military personnel, and 2.2% among prostitutes.

MOH and PAHO projections on the magnitude of the epidemic show that approximately 30,000 Salvadorans are HIV positive. This figure is probably an understatement due to the lack of a reliable data system, the tendency to ignore the problem, the lack of understanding regarding HIV infection, ignorance, discrimination, refusal to face the problem, and fear. Although it is difficult to characterize the epidemic in terms of time, geographical space and demographic features due to the poor quality and scarcity of the information available, the authors believe that HIV/AIDS epidemic is increasing slowly but steadily and that it is firmly established among Salvadoran people.

El Salvador is behind other countries in the region in understanding the implications of HIV/AIDS. Current efforts by the HIV/AIDS program as well as institutional response to date are deemed insufficient to stop the increasing numbers of people infected with HIV. It is mandatory to promote awareness about this problem and to build consensus among political leaders and those who manage resources in all sectors and levels, from international donors to community leaders of the threat of AIDS to the social, economic and political welfare as well as to the development of El Salvador. This problem should not be seen as only a health problem but also as a major issue for the country's socioeconomic development.

The history of preventive efforts worldwide show that timeliness is very important. With the likelihood that the epidemic will grow exponentially, early intervention will have a disproportionately greater effect than similar programs introduced later in the course of the epidemic. Because HIV in El Salvador is primarily transmitted through sexual contact, a broad multidisciplinary and multisectorial prevention program is recommended. This type of program might reach individuals at risk of acquiring HIV. This program must include education, improved treatment and control of sexually transmitted diseases (STDs), reduction of high-risk behaviors (including a decrease in sexual partners); and increased to condom use. The combination of these interventions will provide the greatest potential to significantly reduce transmission.

---

[7]The AIDS situation in El Salvador was analyzed for ANSAL by a group of specialists (Ricardo Calderón et al.) whose detailed report is on file at USAID/El Salvador. The status of HIV/AIDS is analyzed in this technical report, *Evaluation of HIV/AIDS in El Salvador*, as well as current efforts undertaken to prevent and control the illness. The report includes an updated analysis of the institutional response to HIV/AIDS, epidemiological surveillance, sexually transmitted diseases (STDs), condom supply and distribution, initiatives to encourage behavioural changes, and the safety of the available blood supply. The report also includes a section on policy development and recommendations for a holistic HIV/AIDS prevention strategy.

The MOH, ISSS, and NGOs should be encouraged to increase prevention strategies, with internal as well as external technical assistance. This approach should be supplemented with coordination between the different sub-sectors and policies that will assure the program's sustainability. In addition, an evaluation component is crucial to assess the interventions' impact and effectiveness.

The group that assessed the HIV/AIDS situation in El Salvador thanks all professionals from the MOH, PAHO/WHO, ISSS, and NGOs for their collaboration and efforts aimed at controlling HIV/AIDS. It is hoped that this assessment and the resulting recommendations will generate discussions and support for the design and implementation of an integrated and broad program to prevent HIV/AIDS. Impact and progress of HIV/AIDS can be reduced if timely comprehensive control efforts are undertaken. USAID/El Salvador has an excellent opportunity to make an important and meaningfull contribution to the wellbeing and social-economic development of El Salvador.

For further details see the technical report on HIV/AIDS in El Salvador, prepared by M. Ricardo Calderón (ADISCAP) et. al. (November, 1993).

2.3.8 Nutrition and the food situation[8]

Food production. Even in the periods of greatest agricultural production (1970-1979), domestic food production was less than imports. The import coefficient is too high for a predominantly agricultural country such as El Salvador[9].

Food consumption. Per capita corn consumption increased during 1985-1989, decreased between 1990-1991, due to a drought, and then increased in 1992. The per capita consumption of rice has also increased since 1991. Bean consumption has not increased in spite of having two of the largest harvests the last two years. The basic daily requirement of 44 grams per person has not been reached.

Food donations. Donations come mainly from international humanitarian organizations (IRCC, CARITAS, WFP, EEC), as well as from international donations from the United States (PI-480 Title II), Canada, Argentina, Japan, France, and other countries. Concessional imports are mainly the ones carried out through Public Law 480, Title I, which enter the country as USA-El Salvador bilateral loans (which mature in 15 years), under the condition that the proceeds from the sale of these products be used to finance specific projects.

Food Accessibility and Consumption. Three surveys carried out (1965-1967, 1976, and 1988) (ESANES-88), showed an increasing deterioration in the diet of the rural population. The first survey identified 30% of the

[8] An assessment of the nutrition and food policy situation in El Salvador was carried out by Dr. Fernando Vio from the Nutrition and Food Technology Institute (INTA) of the University of Chile, in 1993 for ANSAL. The following is a synthesis of the executive summary of his report. The complete report can be consulted separately.

[9] The World Food Program states that there is a positive trend concerning the production of basic grains. El Salvador is in a transitional phase, from a country with a deficit in production to one whose status as far as food safety would be characerized by problems of access.

rural population as consuming less than 90% of the minimum calorie and protein requirements; 98% of these not getting the minimum requirements of vitamin A; and 41% not getting the minimum iron requirements. Food patterns were better in the urban area.

Between 1965 and 1976 the Salvadoran rural population experienced a severe deterioration in food consumption (although GDP for that period grew at an annual average rate of more than 5%).
The ESANES-88 data shows that 50% of those interviewed got under the 90% of the minimum caloric-protein requirements, with severe vitamin A and iron deficiencies. The January-February 1993 (part of the Nutrition Education Program) qualitative field study carried out, confirmed the food consumption patterns found by ESANES-88.

Comparing the findings of the three surveys and the 1993 study on household food availability, it appears that the nutrition status of Salvadorans has continuously deteriorated and that this deterioration is greater and more pervasive in rural areas even though it has also affected urban areas due to the increased immigration into the cities.

Population's nutrition status. There are no figures on the number of low birth weight babies (LBW) nationwide. Maternity Hospital figures show that 16-21% of the deliveries are LBW (attended by trained midwives). The weight gained by pregnant women under MOH prenatal care is recorded, but the nutritional status of pregnant women at a national level is still lacking. Nutritional status also affects infant mortality (120 per 1000 live births in 1970 and 56 per 1000 in 1989).

The family health survey (FESAL-93), carried out from March to July, 1993, using a methodology similar to the one used by ESANES-88, indicates malnutrition, as measured by the weight/age indicator, of 11.1%; of chronic malnutrition, according to the height/age indicator of 22.8%, and of severe malnutrition according to the weight/height indicator (with -2 S.D. as a cutoff point) of 1.3% compared to the control group of WHO/NCHS. The FESAL-93 data are preliminary, therefore, they are subject to review.

Iodine deficiency is very high, with a goiter prevalence of 28.4% among women and 20.8% among men. In spite of iodine fortification requirements, salt analysis carried out in 1990 indicated only 0.5% of the salt was iodized. Vitamin A and iron deficiencies are also high.

Current nutrition and food programs. The WFP-El Salvador 3886 Project has components on basic education and on preventive health care. It is a continuation of the WFP-2317 Project aimed at education on nutrition and supplementary food for vulnerable groups.

Two ministries (Health and Education) are involved in these projects. MIPLAN acts as the link between the WFP and GOES. Logistics management is the direct responsibility of the unit under the SNF. Quality control is carried out by the DGLA at its warehouses. Once food leaves the warehouses, suspect food is analyzed by the MOH Central Laboratory. The extension of the WFP-3886 Project for three more years will cost the institution approximately US$19 million and another US$16 million from other contributions.

The beneficiaries of the health component of the WFP-El Salvador 3886 Project are pregnant and breastfeeding women and malnourished children, mostly from rural areas, who receive a monthly food ration. The beneficiaries of the education component are pre-school and elementary school children attending schools, mainly in rural areas, who receive a lunch prepared at the school based on the project's food ration.

The WFP-ELS-4508 Project supporting the Ministries of Education and Health has two approaches. The first, supplementation with micro-nutrients a high nutritional value mix (*Nutricereal*) for children ranging from 6 to 36 months of age. This is still a pilot project covering 6,500 children. The goal is to cover 50,000 children in the first year and 90,000 children in the second year. These children are also benefitting from the MOH's maternal-child program. The second approach is school between-meal snack consisting of cookies and flavored beverages which provide 380 calories. Cookies are distributed in 78 municipalities where the EDUCO program is operating and is currently benefitting 30,940 children. According to the program, about 40,000 children will benefit in 1994.

Two food-for-work programs have recently been completed: Project 2725 (Rural Housing and Communal Infrastructure in Agrarian Reform Areas) which ended in March 1992; and Project 3097 (Soil Conservation, Water and Agroforestry Activities in the Eastern Region) that ended in April 1993. There are still two on-going projects:

3340: Rehabilitation and Development of Basic Infrastructure and Agricultural Product Diversification, executed by CONADES jointly with the Ministry of Agriculture and Livestock; and

2806: Rehabilitation Assistance to Displaced Populations, started by CONADES and then transferred to the SRN.

Food Policy. Food availability in El Salvador has increased during the last 5 years, but poverty remains at about 50% of the population, which means that half of the country's population is not able to buy the food necessary to meet minimum requirements.

In general, policies have been adequate during the last 5 years, focusing actions on vulnerable groups, but there are still some significant problems:

- A coordinating government agency is missing;
- Although programs are well focussed, their coverage is not enough;
- In 1992 pregnant/lactating women were estimated at 13.4%; 7.4% children < 5 years of age;
- There are no permanent and basic activities at the MOH and MINED;
- There is a lack of continuity (regarding education, lunch is provided 80-100 days out of 160 school days;
- Logistics is complex;
- The nutrition education component is weak or does not exist at a local level;
- No adequate information system with impact indicators exists; the MOH as well as the MINED have already taken measures to solve this problem;
- An organized quality control systems is needed and,

- Programs are based on donations, thus not guaranteed for the future.

Ideals for future nutrition programs
The goals established during the World Conference on Nutrition held in December of 1992 in Rome were ratified by El Salvador. Recommendations include:

- Create a Food Policy and Program Unit (UPPAN) to determine policies, act as the national counterpart, coordinate with designated institutions, supervise program compliance, control and organize logistics, assess progress, and carry out financial audits;
- Expand coverage;
- Integrate with the Ministries' regular activities;
- Continue food delivery;
- Setup information systems;
- Implement quality control and,
- Ensure financial sustainability.

2.4 Health problems by risk factors

2.4.1 Physical environment

The physical environment is directly and indirectly related to health. An example would be the forest. It is estimated that tropical forests in El Salvador have been reduced to 1% of their original size. Since there are no forests, the rainy season causes erosion, dragging organic wastes and contaminating water supplies. Diarrhea breaks out and is popularly referred to as *mal de mayo* (May disease).

The country consumes 729 x 10^6M^3 of water, but only 33.7% is designated for domestic use (*Evaluation of the Potable Water and Sanitation Sector*, USAID, PAHO/WHO, CARE INT. Nov. 1993). Only 54.8% of the population has a domestic water supply (the majority of which, 95.5%, have it piped to the house). Most rural dwellers do not have sewage connections, and use latrines (51.9% of the rural population).

The lack of potable water and sewage systems increases the risk of diseases such as, ameobic dysentery, typhoid fever, acute gastroenteritis, intestinal parasitism, infectious hepatitis and amoebic hepatic abscess.

The lack of water forces the population to resort to storing water in tanks and barrels which are ideal breeding places for mosquitoes, which transmit diseases, such as dengue.

The widespread use of insecticides and pesticides in farming is a health risk, especially as 16% of imported products pertain to category 1 (extremely toxic). Most of the intoxications occur among workers (15-29 years of age) but deaths are generally associated with accidents and suicides.

Housing is not only important for the quality of life but also as a potential health risk. Huts with straw roofs and those with *bahareque* walls at lower elevations (0-300 meters above sea level) host *Rhodnius prolixus* and adobe and bahareque houses in higher zones (600-1000 meters above sea level) host *T. dimidiata.* Both coexist in intermediate zones. These triatomic insects transmit *T. cruzi* which causes Chagas.

The Pan American Network for Air Sampling developed a pilot program (1970-80) which found concentrations of particles (pollen and sulfuric anhydride) in quantities greater than acceptable in San Salvador. Monitoring has not taken place recently, but it is estimated that with the increase in the number of vehicles, especilly those using diesel fuel, contamination has increased not only in the Metropolitan Area of San Salvador, but also in the other large urban centers of San Miguel, Santa Ana and Sonsonate. This environmental contamination is associated with increased incidents of respiratory diseases.

Lead contamination is not monitored either. Potential risk factors include the use of lead in fuel, paints, and in pipelines that supply domestic water. Soft and low pH water increases lead levels.

2.4.2 Work place related risks

ISSS was selected for analysis of work related health problems as it is the public sector institution directly accountable for the health of its affiliated workers (387,148 enrollees and 580,613 beneficiaries in 1992 (*Estadísticas*, ISSS, 1993).

Workers are exposed to physical risks such as noise, heat, radiation, and electricity in heavy industry; unsafe labor conditions in construction; dust and fumes in textile industries and cement plants; exposure to lead in the battery industry; and exposure to bacteria, viruses, fungi, X-rays, and cobalt in the medical industry. Most accidents occur in manufacturing, construction, transportation, storage, and communication industries, accounting for 84.4% of all accidents (PAHO, El Salvador, unpublished data, 1993).

The distribution of enrollees by sex is 70% men and 30% women. Death owed to occupational hazards is greater among men: in 1991, 123 deaths occurred out of which 102 were men (82.9%) and in 1992, 96 deaths occurred out of which 90 were men (93.7%).

For further details see ANSAL's Technical Report on *Environmental Health.*

2.4.3 Human behavior related risks

Most behavioral risks are associated with alcohol consumption and car accidents, which are frequently interrelated. Mental and psychosomatic problems have special importance among ex-combatants, the war disabled and their families. The suicide rate is up, often the result of ingestion of poisons and disguised as an accident.

2.4.4 Poverty related risks

ESANES-88 showed that families categorized as extremely poor lack not only income but, also basic services, aggravating their health problems. A total of 83.9% of the rural population lacks access to the potable water (as compared to 13.6% lacking access in the urban and periurban areas).

In rural areas, 51.1 % of the population use latrines for waste disposal. The remaining 48.9% have no disposal system.

The data (ESANES-88) showed that 50% of those interviewed had only 90% of the minimum caloric-protien requirements, with high vitamin A and iron deficiencies.

The *First National Census of Basic Education Student Height in El Salvador* (MINED & MOH) carried out in October 1989 showed that nationwide the low height prevalence is 29.8% with no marked geographical differences (low height prevalence averages 2.5% worldwide). This means that out of every 100 children, 30 come from communities affected by chronic malnutrition.

The lack of piped potable water results in water storage in containers of that become breeding places for the dengue mosquito. Unfinished walls (made of straw, bahareque and adobe host insects that transmit Chagas').

Poverty is a factor that negatively affects the educational level and health status of the population.

The lack of iodine in the diet impedes the normal synthesis of thyroxine and the hyper-secretion of hypophyseal-thyrotropic hormone which causes goiter. Cretinism or other types of mental disorders are frequent among children born to mothers with goiter.

2.4.5 Age and sex related risks

Sexual activity starts early among girls, resulting in 14-year-old teenage mothers. Multiple partners increases the risk of STDs, AIDS, and cervico-uterine cancer (the incidence of all these are increasing in El Salvador).

Teenage boys are part of the urban informal work force and many of them become members of gangs so called *maras,* notorious for their violence.

2.4.6 Model of care risks

The low coverage, difficult access, and inefficient health care services constitute risk factors in the health-disease process.

The MOH has had success in combatting contagious diseas' particularly those which can be prevented by immunization, as well as malaria.

High mortality during the neonatal period (0-28 days) is an indication that of failures in the delivery of maternal-child health care. Child mortality (0-11 months) is also high, ranging from 42 and 55.5/thousand live births.

The care model must encompass risk factors, that can be summarized in four determinants: the environment, life style, human biology, and the organizational system of health care (Blum, in Lalonde, 1974). The model

applies to primary, secondary and tertiary preventive strategies in relation to each one of the four determinant health factors, as proposed by Dever.[10]

Risk factors are prioritized and discussed in accordance with the epidemiological, mortality, morbidity, and demographic profiles. Life style is not stressed. Greater attention must be rendered to aspects such as recreation, diet, exercise, and habits related to alcohol and tobacco consumption.

[10] G. E. Alan Dever, *Epidemiology and Health Service Administration*, Pan American Health Organization. PALTEX Series (1991).

III CONCLUSIONS AND RECOMMENDATIONS

1 General framework and conclusions

1.1 Demographic aspects

Several indicators and criteria were used during this analysis, depending on health status effects and the relationship with the state's model of care.

The distribution of the population by age groups, according to preliminary data from the 1992 census (still being tabulated by DIGESTYC), indicates that the population pyramid is of a pre-transitional young country, with a more women (2,626,379) than men (2,421,546). This unequal distribution begins in the young fertile-aged women. Approximately 50% of the country's population is under 20 years.

Population growth is estimated in 2.2 percent a year. This estimate reflects the rates used by demographers (35.5 births x 1000 inhabitants; 7.1 deaths x 1000 and a net emigration of 4.7 x 1000).

Future population growth will be affected by two factors: (1) the potential return of Salvadorans who currently live abroad and (2) larger numbers of young girls will be reaching fertile age than fall out of that category. The number of girls between 5 to 14 years will be two and half times the number of women in the 33-44 year group.

Children between 0 and 4 years (651,238) and women of fertile age (between 15 and 44 years; 1,181,068) represent more than one third of the country's population.

Population distribution by age group, global fertility rates (GFR)(especially high in rural areas: GFR of 5.0% in those areas as opposed to 2.7% in the Metropolitan Area of San Salvador with 3.9% at a national level in 1993), early pregnancies (less than 20 years), and infant mortality rates (52/1000 live births recorded according to 1993 UNICEF estimates), are high compared to other countries in the region. Although it must be acknowledged that progress has been made in this area, more emphasis should be placed on maternal-child health and women in particular.

1.2 Epidemiological aspects

Review of statistical data (births and deaths) (DIGESTYC), indicates understatement of child mortality, in particular. As a result, information gathered through surveys was used.

In the absence of an integrated epidemiological information system, the different sources were reviewed. MOH's information was utilized as the main source. It is based on more than 2.5 million new cases per year in ambulatory care visits. This system includes epidemiological surveillance, with weekly information on 100 pathologies and the Health Statistical and Epidemiological Data Integrated System that the 300 most frequent diagnosisis are updated monthly. This information was supplemented with data from the surveys previously

carried out, and with visits to hospitals, health units, and to promoters (MOH and NGOs) by the author and by the authors of supplementary reports.[11]

El Salvador's epidemiological profile has elements from both socio-economic levels (developing countries and developed countries) but for the design of care models the situation must be analyzed as a whole, including the already mentioned demographic aspects. Within a five-year horizon, the infectious disease model should be adopted. Besides the general data submitted, this assessment is based on the fact that although progress has been made, malnutrition is still a health problem in some areas of the country. This is a result of other factors such as poverty levels, and leads to infectious diseases and parasitic problems.

Summarizing, for the purposes of planning, the country can be considered at a pre-transitional stage, both from a demographic and epidemiological point of view, and that disease prevention and control particular to said period should be given high priority.

Chronic or degenerative diseases are starting to appear in the epidemiological profile, which highlights the need for preventive programs to alleviate this problem, starting with education to promote healthy habits (diet, exercise, reduced tobacco and alcohol consumption, periodic testing--for the early detection of cancer, blood pressure and cholesterol control--and so on). These educational activities should include school children and adolescents on sexual education, STDs, AIDS, accident and drug addiction prevention. These activities are inter-sectorial, and can be developed with existing governmental and non-governmental infrastructure, if standards are redirected and with operative resources (modest investments if compared to the necessary resources needed to solve future problems).

This scheme basically implies the strengthening of disease prevention and control activities during a five-year period and the starting (targetting the younger population groups) of a disease prevention and primary care program.

1.3 Psychosocial environment

Both the identification and solution of social problems require an intersectorial approach. Existing epidemiological information, records on causes of death, information provided by hospital directors interviewed, and meetings with health personnel and community representatives identified serious problems in this area particularly relevant in this post-war period.

Besides external causes, such as accidents and violence, which rank first as cause of death in the country, the problems of the war wounded and disabled are critical issues.

1.4 Physical environment

Approximately 86% of El Salvador's urban population has potable water as compared to only 16.1% in the rural areas. As far as sanitation and waste disposal, 83.5% of the urban population has the service compared to 51.9% in the rural areas.

---

[11] Epidemiologal Profile, HIV/AIDS Status; Mother Lactation; Family Planning; Nutritional Food; Water and Sanitation; Environmental Health; Holistic Rehabilitation of War Wounded and Disabled (workshop).

According to the 1992 census, 55% of El Salvador's population lives in urban areas. ISDEM calculates that 50% of the solid waste generated in the cities of the country is not collected and none of the garbage, either domestic or commercial, is sorted.

An air quality monitoring program existed in the past but was discontinued. Technicians estimate that air contamination is high due to wastes from unburnt fuel oils, the use of leaded gas and smoke from domestic fires (associated with respiratory diseases, especially in children under five years).

The frequent use, importation, mishandling, and ignorance of the dangers of highly toxic insecticides is cause for environmental contamination and chronic exposure with the resulting harmful health effects.

Domestic sewage and outflows from coffee *beneficios*, sugar mills, maguey processing plants, alcohol manufacturers, as well as other industrial facilities are not treated before being discarded into water systems. Health care workers, technicians and community representatives agree that in El Salvador "almost all" superficial water resources are contaminated (biological and industrial).

The worsening cholera epidemic, high diarrheal and intestinal parasitism indexes, and the expression of community members during the review meetings, highlights the importance of clean water and adequate sanitation facilities.

2 Recommendations

2.1 Priority topic areas

On completion of data gathering and analysis, meetings with health personnel and community members, and discussions with sector leaders, the ANSAL team recommends the following 10 priority areas be addressed:

Maternal-child health

- Comprehensive prenatal, delivery and postpartum care
- Multiparous young women (under 20 years of age)
- Infant and child mortality due to diarrhea and acute respiratory infections
- Maternal and child malnutrition
- Epidemiological status of STDs including AIDS

Physical environment

- Lack of safe water in rural and marginal urban areas
- Inadequate treatment of sewage
- Inadequate disposal of solid waste

Social environment

- High mortality rates due to external causes (violence, accidents)
- War wounded and disabled (physical, mental)

2.2 Complementary recommendations

Maternal-child

- Target resources to high-risk groups in maternal-child (MC) health
- Strengthen operations in MC through the Superior Council of Public Health
- Offer a basic health package in rural areas lacking public services
- Create the Policies and Nutritional-Alimentary Programs Unit (PNAPU)
- Design educational programs complimentary to areas of high priority and risk
- Integrate different programs/departments carrying out MC activities within one coordinating body
- Strengthen supervision of prioritized programs
- Integrate local coordination entities with the SILOS' concept
- Increase the number of promoters and midwives (MOH and NGOs)
- Increase the decision-making capacity of promoters and midwives
- Integrate or at least standardize the management and statistical information systems
- Improve the information system on infectious diseases (especially HIV/AIDS)
- Improve the maintenance of municipal vital statistics

Physical environment

- Reorganize the institutional management of water systems
- Facilitate public and private organizations' improvements in water and sanitation
- Promote NGO, municipality and community organization participation
- Give priority to a water law with its corresponding regulations
- Include water quality for human consumption and regulations on drainage
- Greater cost recovery (ration use and allow for increaased coverage)
- Protect water resources (sanctions, fines, and education)
- Improve water supply to rural populations with support from FIS and MEA
- Design and implement hospital waste management plan
- Design and implement toxic waste management plan
- Strengthen COMURES, ISDEM and other municipal support entities
- Design sanitary fills where contamination will be minimized
- Design financing for an adequate garbage collection/disposal system
- Prepare regulations (MOH or SEMA) for garbage management, within the Health Code framework
- Support the adoption of an Environmental National Strategy (prepared by SEMA and other organizations)
- Support the *Regional Plan for Environmental and Health Investment* (PAHO)
- Support health and environmental programs such as MASICA (MOH/ANDA/SEMA)

Social environment

- Support the intersectorial approach for health education (MOH and Ministry of Education)
- Promote literacy with the participation of the public, private and voluntary sectors
- Strengthen and include in the APS mental health programs
- Support community-based rehabilitation programs and self-assistance groups
- Promote multisectorial efforts for poverty alleviation

- Target health care for the poor
- Support war disabled's reincorporation programs
- Give priority care to battered women and abused children
- Study the problem of "street children" and design comprehensive family health programs
- Support public, private and voluntary drug addiction prevention programs

ANNEXES

TABLE I-1

POPULATION BY AGE, SEX AND MASCULINITY

AGE	Sex			MASCULINITY INDEX
	TOTAL	MASCULINE	FEMININE	92.2
	5,047,925	2,421,546	2,626,379	
< 1	132,556	65,981	66,575	99.1
1	129,125	64,951	64,164	101.2
2	127,951	64,846	63,105	102.8
3	128,591	65,426	63,165	103.6
4	133,025	67,420	65,605	102.8
0-4	651,238	328,624	322,614	101.9
5-9	663,614	333,887	329,727	101.3
10 - 14	661,694	331,060	330,634	100.1
15 - 19	588,234	287,782	300,452	95.8
20 - 24	460,680	210,257	250,423	84.0
25 - 29	380,958	170,745	210,213	81.2
30 - 34	308,938	142,547	166,391	85.7
35 - 39	258,586	120,355	138,231	87.1
40 - 44	217,455	102,097	115,358	88.5
45 - 49	185,010	86,640	98,370	88.1
50 - 54	156,653	71,952	84,701	84.9
55 - 59	133,668	61,087	72,581	84.2
60 - 64	115,269	52,855	62,414	84.7
65 - 69	93,152	42,816	50,336	85.1
70 - 74	70,224	32,413	37,811	85.7
75 - 79	46,487	21,675	24,812	87.4
80 +	56,075	24,754	31,311	79.1

Source: *Muestra del Censo de 1992*, preliminary data, DIGESTYC, Feb. 1994

Annex I-IA

UNDER 20 YEAR OLDS

Census date	Total pop.	Pop. < 20 years	% of total
1950	1,855,917	962,244	51.8
1961	2,510,984	1,366,764	54.4
1971	3,554,648	2,010,279	56.5
1992	5,047,925	2,065,611	52.4

Source: 1950-1961-1971, *Anuario Estadístico, 1984*, DIGESTYC, 1992 data is estimated.

Annex I-IB

POPULATION 65 YEARS OR OLDER

Census date	Total pop.	> 65 year olds	% of total
1950	1,855,917	65,075	3.0
1961	2,510,984	80,602	3.2
1971	3,554,648	123,107	3.5
1992	5,047,925	263,502	5.2

Source: 1950, 1961, 1971 *Anuario Estadístico, 1984* DIGESTYC,
1992 estimated data

Annex II-1

DEATHS AND MORTALITY RATES (x 1000) PER REGION AND YEAR

REGION	OCCID	CENTRAL	METRO	PARA-CENTRAL	ORIENT
YEAR	#(RATE)	#(RATE)	#(RATE)	#(RATE)	#(RATE)
1987	7183 (6,1)	3960 (5,4)	7106 (6,2)	3634 (3,8)	5658 (3,6)
1988	7118 (5,9)	3991 (5,3)	7014 (5,9)	3886 (4,0)	5752 (3,6)
1989	7287 (5,9)	3809 (5,0)	7756 (6,4)	3835 (3,9)	5079 (3,1)
1990	7500 (5,9)	3798 (4,8)	7498 (6,1)	3959 (3,9)	5440 (3,3)
1991	N/D	N/D	N/D	N/D	N/D

Fuente: *Salud Pública en Cifras-1991* Anuario No. 23, MSPAS

Annex II-2
TEN MAJOR CAUSES OF DEATH, EL SALVADOR, 1991

No.	Code	DIAGNOSIS	Total	%
		Total registered deaths	27,066	100.0
		Signs, symptoms, undefined	4,702	17.4
		Total defined causes	10,906	40.3
1	45	Perinatal	1,591	5.9
2	55	Homicide and intentionally inflicted injuries by a third party	1,464	5.4
3	285	Heart dysrhythmia	1,445	5.3
4	21	Mental illness	1,141	4.2
5	471	Motor vehicle accident	1,087	4.0
6	270	Acute myocardium infart	1,024	3.7
7	016	Undefined intestinal infection	934	3.4
8		Other types of violence	838	3.1
9	321	Pneumonia	822	3.0
10	323	Chronic and acute bronchitis	560	2.1
		All other causes	11,458	42.3

Source: Statistics and Census General Directorate. *Annual Report*, MOH, 1992-93.

Annex II-3

DEATHS BY CAUSE CODED INTO SIX GROUPS

- Group 1, *contagious diseases*, including all infectious and parasitic diseases plus meningitis, acute respiratory illnesses, pneumonia, and flu. In PAHO/WHO health statistics (*Scientific Publication* 542, 1992) deaths caused by AIDS are not included in this group. When incorporating the information from the data base these deaths are assigned codes 279.5 and 279.6 (ICD-9). ICD-10 which is not available in Spanish and has not been adopted in El Salvador to date includes AIDS among infectious and parasitic diseases (French edition);

- Group 2, *neoplasms*, including malign and benign, carcinoma *in situ* and other neoplasms of unspecified nature;

- Group 3, *circulatory system diseases*, including acute rheumatic fever, chronic rheumatic cardiopathy, hypertension, cardiac ischemia, cerebrovascular accidents, and other cardiac and circulatory system diseases;

- Group 4, *perinatal complications*, including maternal and obstetric conditions affecting the fetus or newborn; newborn condition: low fetal growth, birth trauma, hypoxy, asphyxia, and other respiratory problems; perinatal period infections, and other undefined conditions;

- Group 5, *external causes* from injuries or intoxication, includes motor vehicle accidents, suicide, homicide, self inflicted injuries, and war injuries;

- Group 6, *all other remaining diseases* not included in Groups 1 through 5.

Annex II-4

WEEKLY EPIDEMIOLOGICAL REPORT SUMMARY

DIAGNOSIS	TRACER DISEASE
Diseases prevented through immunizations	Paralysis
Infectious and parasitic intestinal infections	Cholera
Sexually transmitted diseases	AIDS
Meningeal diseases	Meningococcal meningitis
Diseases of epidemiological concern	Leprosy
Diseases transmitted by vectors	Dengue, leishmaniasis, malaria
Zoonosis/anthropronosis	Human rabies
Chronic/degenerative	Cervical-uterine cancer, breast cancer
Metabolic/nutritional	Moderate/severe malnutrition
Intoxications/poisoning	Psychotropic drugs/sea food/fish
Accidents	------
Mental disorders	Attempted suicide
Others of social concern	------
Deaths	Infant and maternal death

Source: Epidemiology Unit, MOH

Annex II-5

MAJOR CAUSES OF MORBIDITY, MOH, 1991

No.	ICD-9	CAUSES	No. of Cases	%
		Total	2,463,786	100.0
1	465	Acute respiratory infections	208,912	8,5
2	009	Undefined intestinal infections	124,592	5,1
3	460	Common cold	103,320	4,2
4	129	Intestinal parasitism	81,380	3,3
5	587	Flu	58,356	2,4

Source: *Memoria*, MOH, 1992-93

Annex III

MAIN CONTACTS

USAID/El Salvador
Mr. Charles E. Costello, Mission Director
Dr. Paul Hartenberger, Director, HPN
Ms. Brenda Doe, Deputy Director, HPN

Pan American Health Organization (PAHO/WHO)
Dr. Hugo Villegas, El Salvador Representative
Dr. Angel Valencia Tellería, Epidemiologist
Engineer Ricardo Núñez Woitschach, Sanitation Engineering Advisor
Lic. Myriam de Castillo, Head, Documentation Center

World Bank
Magdalena dos Santos, Project Officer, Human Resources, LAC

Inter-American Development Bank
Fadrique Otero, Deputy Representative, IDB/El Salvador

United Nations High Commissioner for Refugees (UNHCR)
Ms. Patricia Weiss-Fagen, Head of Mission

Ministry of Public Health and Social Assistance
Dr. Gustavo Argueta Rivas, Vice-Minister
Dr. José Antonio Pereira, Head, Planning Division
Dr. Humberto Alcides Urbina, Deputy Director General of Health
Dr. Jorge Roldán, Director of Medical Care
Dr. Santiago Almedia, Head, Epidemiological Unit
Dr. Gladys de Bonilla, Sexually Transmitted Diseases and AIDS
Dr. Samuel Leiva, Leprosy and Tuberculosis Program
Dr. Genoveva Morales, Expanded Program of Immunizations
Dr. Angel Guerra, Head, Malaria Department
Dr. Luis Castaneda, Dengue and Other Metaxenic Diseases
Dr. Edgar A. Martínez, Head, Health Statistics Unit
Dr. Herbert Díaz Orellana, Assistant Head, Health Statistics
Dr. María Elizabeth de Vidaurre, Eastern Region Director
Dr. Saúl Filánder Murcia, Supervising Physician, Morazán, Eastern Region
Dr. Rómulo Vides, Epidemiologist, Eastern Region
Dr. Mayra Lissette Padilla, Health Unit Director, Chapeltique
Dr. Nuvia Chica de Asencio, Health Unit Director, Moncagua
Dr. Ramiro Luna Bosa, San Pedro Hospital Director, Usulután
Dr. Gustavo J. Domínguez Grimaldi, Regional Deputy Director, Santa Ana
Dr. Juan H. Jubis Estrada, Supervising Physician, Santa Ana Region
Dr. Víctor Umaña Serna, Emergency Serv. Head, San J. de Dios Hospital, Santa Ana

Lic. Edwing Morales, Administrator, San J. de Dios Hospital, Santa Ana
Dr. Jaime Arturo Salmán, Health Center Director, Chalchuapa

Ministry of Economy, DIGESTYC
Mr. Salvador Hernández, Information and Vital Statistics

Social Security Institute of El Salvador
Dr. Rafael A. Olivares Calderón, Deputy Director General

Health System Support Project - APSISA
Engineer Carlos Castaño, Group Head and Logistics Advisor, Clapp & Maine)
Dr. Ricardo Martínez Rozo, Advisor, Management Information System
Dr. Mauricio Sauerbrey, Advisor, Malaria Program

Non-Governmental Organizations
Dr. Elizabeth Burleigh, Director, PROSAMI
Dr. Herbert Betancourt, Pediatrician, FUSAL
Miss Adela Concepción López Morán, President of the Salvadoran Campesino Women Association (AMCS)
Miss Claudia Margarita Cáceres, Director, Salvadoran Association of Promotion, Training and Development (PROCADES)
Architect Elizabeth Murcia, Salvadoran Association of Integral Support (ASAI)
Mr. Petrus Sprangers, People's Education Coordinator (FE Y ALEGRIA)

Annex IV

PRELIMINARY REPORT REVISION

Introduction

The Health Sector Analysis of El Salvador (ANSAL) was conceived as part of the efforts geared towards expediting the social and economic development of the country. The analysis of the organization and operation of the sector's institutions should result in the identification of obstacles that once overcome could allow an improvement in the sector and in the population's health and well being.

Generally, projects focusing on economic and social development are conceived and designed by technical experts. They provide professional knowledge and expertise to identify problems, select potential solutions and design project components. Usually, the exchange of opinions in this process is restricted to those who have leadership positions within the sector and society. The potential user and personnel directly involved in the goods or services analyzed are not frequently included in this consultation process. Resulting projects do not benefit from the accrued experience of those on the front line, and consequently can be seen as foreign by the benefitted community.

Procedures

ANSAL's terms of reference established an expanded consultation process to avoid these limitations. The goal was that the participative process would have the same level of importance as the analysis. In order to achieve this, ANSAL's preliminary results, compiled in nine draft technical reports, were distributed among institutions and experts from the health sector to be reviewed and commented on. This approach included:

1. Written comments. Approximately 100 institutions and experts in the health field were invited to write comments on:

   - the reliability and integrity of the data presented;
   - the logic of the analysis; and
   - the feasibility of the recommendations.

2. Meetings with health care personnel and community members. Ten meetings were held in different parts of the country, with the participation of health personnel at all levels (health promoters, midwives, physicians, and pharmacists), community leaders (mayors, members of the MOH's support commissions and/or community health boards, members of the community education associations or EDUCO schools, and local community leaders) as well as MOH officials and regional and local authorities.

3. Working days with sector leaders. Two working days with public institution leaders (MOH, MIPLAN and ISSS), NGO leaders, medical association representatives, and health leaders of political parties. The Dean of the School of Medicine of the National University of El Salvador was invited but did not attend.

Results

Enthusiastic participation proved useful to validate or reject ANSAL's preliminary results.

Written comments from 30 institutions were received, including the main public sector organizations (MOH and MIPLAN) and the most important NGOs.

Approximately 250 persons representing the health sector attended community meetings. Community leaders were the least well represented.

Twelve of the thirteen leaders invited to the work days participated and attendees stayed during the whole exercise.

A general concensus was reached regarding the main problems faced by the sector and the most effective ways to solve them. Some MOH Department and Regional Program Directors objected to some of ANSAL's findings. Some of these specific comments are summarized in each one of the technical reports.

Written comments received

As mentioned, the draft of this report, as well as the other technical reports,[12] were broadly distributed in order to gather reactions. Written comments were received from individuals and public and private institutions. Of these, the following apply most directly to this report:

- Official Letter No. 94-6510-159/February 15, 1994 from the MOH's Planning Director
  Comments were received on four specific topics: Street children, potable water and sewage, malnutrition and school performance, participation by other ministries. The text was expanded or corrected.

- Summary of observations made by different health regions:
  - 18 observations on the executive summaries (the compilation included 5 summaries); it is not clear which one is referred to in each comment;
  - infant mortality rates have improved, which is true; the IMR which was 150/1000 live births in 1950, has been reduced three times, while Nicaragua for example, only reduced by one half, but the current rate (52 x thousand live births) is still high compared to other countries in the Americas;
  - Comment No. 12 indicates that the global fertility rate (GFR) is currently 4.6 children per woman, quoting FESAL; that data corresponds to 1980. According to the National Survey on Family Health, FESAL-93, Preliminary Report, September 1993, page 5, the GFR is of 3.85 children per woman. There are differences between the Metropolitan Area of San Salvador (2.69) and the rural area (4.96) children per woman (almost double).
  - Eleven observations were presented regarding the draft technical report; some will be mentioned as examples, but all were taken into account.

[12] These are: Health Status; Maternal-Child Health; Pharmaceutical Products; Organization and Operation of the Health System; Health Service Financing; Health Human Resources; Health Sector Infrastructure and Investment; Community Health Demand and Perception; Environmental Health.

Item 4. They mention that there are other "more reliable" sources than FESAL-93, but do not name them;
Item 7. (Pages 32 and 7) NGO's "participation" does not belitle the good work being carried out by the MOH in the vaccination area.

- WFP/ELS/ORG/30 MINSALUD-110, World Food Program's Director
  Presents 6 valuable contributions on the Maternal-Child Health Technical Report and 3 on the Epidemiological Profile.

- Observations by the Director of the Knapp Foundation. Comments on the lack of conclusions and recommendations in the draft reoirt. Questions the report's structure and content and submits observations on the sources of information (the MOH's).

- War Disabled Reincorporation Program. Stresses the importance of the PROLIS Program and makes available to ANSAL the General Results of the National War Wounded and Disabled Census (November 1993) that was not available when the preliminary technical report was drafted. This information was very useful for program planning in this field.

- Salvadoran Associacion of Community Promoters (APROCSAL)
  Defense Center for the Consumer (CDC)
  National Development Foundation (FUNDE)
  Humanitarian Aid Association (PRO VIDA)
  Santa María Clinic
  - Highlight the importance of water, sanitation and solid waste disposal programs; also the need to protect air quality, suggesting limitation of vehicle imports to those that save energy, improve collective transportation system to discourage the use of private cars and promote the use of non-motorized transportation.
  - They recommend the adoption of a unique and binding information system, including all public and private institutions that render health services.
  - They would like to have a prospective analysis of the epidemiological status.

- Armed Forces Institution for Social Provision (IPSFA)
  Comment the lack of information from the Armed Forces and suggest procedures to obtain it. ANSAL consultants made repeated efforts to obtain information without success.

- Intersectorial Commission for Child Survival (CISI)
  CISI's Board of Directors stressed the water problem, the small supply systems organized by communities with "adequate technology" in the rural areas of the country. They mentioned the limitation that many water sources are located on land whose owners do not want to share water with the communities and that there are no (apparent) legal mechanisms to intervene them.

- El Salvador's Antidrug Foundation (FUNDASALVA)
  - Mentioned studies related to epidemiological surveillance financed by the OAS/CICAD, carried out by FUNDASALVA/MOH.
  - They find a lack of stress on: Post-traumatic stress, AIDS and drug addiction.
  - Note: Mental health, violences, and AIDS are prioritary topics in this final draft.

- Salvadoran Foundation for Woman and Child Development (FUNDAMUN)
  - Agree with the classification of "pre-transition" within the epidemiological profile and compare it to the profile of poor countries;
  - Agree with the definition of the main health problems in the report;
  - Think that cholera will not be controlled while the extreme poverty existing in some areas of the country is not eliminated;

- Concha v. de Escalón school No. 2/District Supervisor

- Salvadoran Demographic Association.

  - Problems were found with page order. Numbers are correct. Problem will be corrected in the final report.
  - We agreed that a reasonable explanation was not submitted on the problem of low-birth weight. This factor must be the object of a special study within the pre-natal control context. We noted that the difference in the percent distribution of deaths due to diarrhea and accute respiratory infections between the urban and rural areas was relatively small (diarrheas 20.0 vs 18.0 and respiratory infections 16.2 vs 16.4 for the period under study 1988-1993).
  - Regarding dengue (5), all three hypotheses (a, b, c) are valid. It is also necessary to take into account vector distribution which is mostly urban
  - Regarding AIDS (9), all 1,124 cases have been notified/recorded. The remaining 30,000 correspond to an estimate based on observations in other countries. The epidemic is serious and reality could be even worse.

  Surveillance board of the nursing profession.
  - Recommend a periodical analysis of epidemiological data.
  - Greater attention to adolescents, prostitution and child abuse indicators.
  - Intersectorial coordination with the Ministry of Education (nutrition, disease and accidents prevention).

The author is grateful for all comments which helped correct, broaden or update information, and in general review the contents of the report. Comments and suggestions were also considered during the national Seminar/Workshop.

It was not possible to include those suggestions that implied a complete structural change or further investigation.

Findings, conclusions and recommendations were discussed with the national sector leaders following the procedures described.

Meetings with health personnel and community representatives

ANSAL's preliminary findings, conclusions and recommendations were presented at these town meetings in three topics: health status, health services, and human and financial resources.

Representatives from the following groups were invited to participate: mayors, EDUCO, health promoters and midwives (MOH and NGOs); physicians(MOH, NGOs and private doctors); MOH authorities (regional directors, hospitals and centers located in the area); NGO authorities providing health services; church representatives carrying out health activities; hospital community health board members; community leaders; and other professionals (i.e., pharmacists).

Ten meetings were held with health personnel and community representatives as follows:

2-7-94	SAN SALVADOR	SAN SALVADOR
2-9-94	CHALATENANGO	SENSUNTEPEQUE
2-11-94	SAN MIGUEL	SAN FRANCISCO GOTERA
2-14-94	SONSONATE	USULUTAN
2-16-94	SANTA ANA	SANTA ANA

The priority varied slightly as was expected depending on the geographic origin of attendants, professional profile and institutional linkage. Nevertheless, a common denominator was observed: in all consulting meetings with health personnel and community representatives, the following five were selected as priority issues: acute diarrheal diseases (ADDs), acute respiratory infections (ARIs), safe water, and environmental sanitation.

The following are the ten most important critical issues selected and comments.

No.	Critical Issues	Comments
1	Diarrhea (including cholera)	First place in San Salvador, Usulután and Chalatenango and third in Santa Ana. The problem of diarrheas and intestinal parasitism was stressed.
2	Respiratory diseases (ARIs)	First place (together with ADDs) in Usulután, second place in Chalatenango, San Salvador and in one group in Santa Ana.
3	Potable water	The need to improve and broaden coverage of waste disposal and potable water in San Salvador and in the rural areas as priority number two after health education and sex education (first priority). Water ranked third place in Usulután; fourth in Chalatenango; third in Morazán, and first in Santa Ana.
4	Sanitation	Second place in Usulután; second in Morazán; second in Santa Ana; fourth in San Salvador.
5	Malnutrition	First place in Group B in Santa Ana; third place in San Salvador and in Chalatenango; fourth place in Usulután and in Group A in Santa Ana; fifth place in Morazán.
6	Demographic Growth	Fifth place in Chalatenango, Santa Ana and San Salvador; rapid population growth was mentioned as a major problem in San Miguel (first place).
7	Air pollution/ smoke in houses	Mentioned in all meetings with priority ranking between fifth and tenth places, but linked to ARI's problem.
8	General education	Mentioned in all meetings as an intersectorial priority, related to high-risk pregnancies (<20 years); lack of pregnancy spacing; STDs/AIDS; malnutrition; the low demand for prenatal control and other preventive care in mother-child health compared to installed services; late tests for cancer detection, mainly cervical cancer cases, and breast cancer to a certain extent. Social, cultural and religious aspects were mentioned in this context. San Salvador gave high priority to this aspect (first place) identifying school and adolescent population as the priority target population. Sonsonate also gave first priority to education addressing both service providers and users to overcome cultural hindrances and to improve health care. Education was also ranked first place in San Miguel in the struggle against illiteracy, and in Morazán first place was gived to health education.
9	STDs/AIDS	This critical issue was mentioned during discussions but apparently it is not given the high priority that it deserves. It is not considered an important problem in the rural areas, but it is growing in major cities. Sex education is weak and there is opposition in some sectors of society to have sex education included in school curricula. In San Salvador it was granted sixth place.
10	Stress/anxiety	This was mentioned as a consequence of the civil war, therefore mainly affecting former conflictive areas. It also affects those areas with refugees and displaced persons. For example, in Sonsonate the demand for health services, including mental health, has increased.

Working days with sector leaders

Working days with sector leaders, which were described in the chapter on procedures, were held on February 21 and 22, 1994. As mentioned, consensus was reached on the areas of priority identified by ANSAL.

Areas were identified to which more resources will be allocated. This does not mean that the efforts being carried out successfully will be neglected, such as the expanded immunization program (EPI). On the other hand, it was also clarified that, although "critical issues" were discussed in community meetings, ANSAL's proposal takes a more global approach.

The following are the ten topic areas selected:

- Comprehensive prenatal, delivery and postportum care
- Multiparous young women (under 20 years of age)
- Infant and child mortality (mainly due to diarrhea and acute respiratory infections)
- Mother and child malnutrition
- Epidemiological status of STDs including AIDS
- Low coverage of safe water in rural and marginal urban areas
- Deficient treatment of sewage
- Inadequate disposal of solid wastes (municipal, hospital, and toxic)
- High mortality rates due to external causes (violence, accidents)
- War wounded and disabled (physical and mental health)

Consensus was reached on the selection of these priority areas and the participants recommended attention be also given to the following related topics:

- Cervical cancer (associated with STDs/AIDS)
- Immunizations
- Lack of micronutrients
- Drug addiction
- Air pollution
- Mental health
- Drug addiction
- Tobacco and alcohol consumption

Participants agreed that these ten topics covered more than 80% of the country's health problems.

BIBLIOGRAPHY

G.E. Alan Dever, "**Epidemiología y Administración de Servicios de Salud,**", Pan American Health Organization. PALTEX Series (1991)

Paul F. Basch, "**Textbook of International Health,**" Oxford University Press (1990)

"**Health Conditions in the Americas,**" 1990 Edition, Scientific Publication No. 524, Pan American Health Organization, Washington, D.C., (1990)

"**Health Statistics from the Americas,**" 1991 Edition, Mortality since 1960, Scientific Publication No. 537 PAHO/WHO, Washington, D.C., (1991)

"**Estadísticas de Salud de las Américas,**" 1992 Edition, Mortality (1960-1990), Morbidity, PAHO/WHO, Washington, D.C., (1992)

"**Estadísticas - 1992,**" Social Security Institute of El Salvador, Planning Unit, Actuary and Statistics Department, San Salvador, April 1993

"**Salud Pública en Cifras-1991,**" Yearbook No. 23, Health Statistics Unit, Ministry of Health and Social Assistance, El Salvador, C.A. 1991

"**Memoria, 1991-1992,**" Ministry of Public Health and Social Assistance, San Salvador, July 1992

"**Memoria, 1992-1993,**" Ministry of Public Health and Social Assistance, San Salvador, July 1993

"**Avance Estadístico" No. 16,** Live Births per Area and Sex and per Mother Age Groups, V National Population Census-1992, DIGESTYC/Ministry of Economy

"**Anuario Estadístico 1984,**" Volume II - Demographic Status, San Salvador, El Salvador, C.A., February 1986

"**Consulta Técnica al Programa de Control de la Malaria en El Salvador,**" 20-24 July, 1992, MOH-USAID/CDC-PAHO/WHO

"**Chagas' Disease,**" VBC Tropical Disease Paper No. 6, Medical Service Corporation

Rafael Cedillos, "**Epidemiología de la Enfermedad de Chagas en El Salvador,**" Handwritten Work to be published

"**Investigación sobre Desplazados y Refugiados Salvadoreños,**" Investigations Institute of the "José Simeón Cañas" Central American University of El Salvador, UCA, San Salvador, from May 1984 to June 1985

Lalonde, 1974 **A New Health Perspective of Canadian Citizens**. Ministry of Health and Social Welfare of Canada.

Segundo Montes, "**Salvadoreños Refugiados en los Estados Unidos,**" El Salvador, 1987, Investigations Department - "José Simeón Cañas" Central American University of El Salvador, UCA, San Salvador, 1987

Argueta et al., "**Diagnóstico sobre los Grupos Llamados Maras en San Salvador, Factores Psicosociales que Prevalecen en los Jóvenes que los Integran,**" Psychology Journal of El Salvador, No. 43, January-March, 1992

Caballero, José et al., "**Repatriación y Salud Psico-social,**" Psychology Journal of El Salvador, No. 45, July-September, 1992

"**Encuesta Nacional de Salud Familiar**", FESAL-93 Preliminary Report, San Salvador, September 1993.

"**Encuesta de Hogares de Propósitos Múltiples,**" Urban and Rural (2 Volumes), Ministry of Planning and Coordination of Economic and Social Development, Sample Investigation Department, Information Directorate, October 1991-March 1992

"**World Development Report 1993,**" Investing in Health, Published for the World Bank, Oxford University Press

Renderos Godofredo, Advisory Report, PAHO/WHO, "**Diagnóstico de Salud Ocupacional en El Salvador,**" San Salvador, September 1993

Environmental Health Series No. 3, "**Water and Health,**" National Institute of Hygiene, Epidemiology and Microbiology, Cuba, 1992

Dengue and Other Metaxenic Diseases Control Program, "**Manual Técnico para la Prevención y Control del Dengue en El Salvador,**" PAHO/FINNIDA-MOH, El Salvador, 1993.

Technical Manual. Epidemioligal Surveillance Bulletin of the MOH's Epidemiological Unit. Risk Factors, Damages and Trends. Vol. 1 - January 1994. **Content: Cholera Treatment Protocol.**

Childhood Status in El Salvador. **Los niños en circunstancias especialmente difíciles.** UNICEF 1991.

War Wounded and Disabled National Census. **Informe de Resultados Generales.** War Disabled Productive Reintegration Program (PROLIS), San Salvador, November 1993.

Mardones-Restad, F. et al. **Estudios Sobre Déficit Nutricional y Rendimiento Escolar.** National Board for School Aid and Scholarship (JUNAEB), Ministry of Education, Chile, Santiago de Chile (1987-1992).

Tropical Medicine and Tropical Health Bulletin, Vol. I, No. 1.