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THE NICARAGUAN HEALTH SECTOR:
A PRELIMINARY ANALYSIS

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INTRODUCTION

This is an attempt to synthesize the results of dozens of interviews and the reading of dozens of documents concerning health in Nicaragua and the attempts of the Government to improve it. Unfortunately, but not surprisingly, the result is neither comprehensive nor complete. The author began in a situation in which there were no established contacts between USAID and the Ministry of Health or the donor community. A good part of the nine weeks that went into the preparation of this report were spent in establishing contacts and unearthing documents. Almost without exception officials of the Ministry of Health and representatives of bi-lateral and multi-lateral agencies were accessible, helpful, forthcoming and kind.

Two nation-wide strikes during the author's time in-country, minimal capacity by a USAID Mission scrambling to get up and running to provide secretarial support and a deplorable phone system also added to the challenge of preparing this report. It is partly for this reason that certain sections, such as those on the private sector, on finances and on the Ministry's interface with community organizations are not developed as completely as the author would have desired.

What the report does offer, however, is accuracy. Although the information is taken largely from published reports and is not the result of independent research, the author has attempted to cross-check information and to document sources and feels reasonably confident of the data presented.

It is the author's hope that this report can contribute to a long and fruitful relationship between USAID and the Government and people of Nicaragua for the betterment of their health and well-being.

LIST OF ABBREVIATIONS

ARI	Acute Respiratory Infections
CBD	Community Based Distribution
CCD	Control de Crecimiento y Desarrollo
CDD	Control of Diarrheal Diseases
CELADE	Latin American Center for Demography
CIDA	Canadian International Development Agency
CPS	Contraceptive Prevalence Survey
CYP	Couple Years of Protection
DHS	Demographic and Health Survey
ESF	Economic Support Fund
IDB	Inter American Development Bank
IMR	Infant Mortality Rate
INAA	Instituto Nicaraguense de Agua y Alcantarillado
INCAP	Nutrition Institute of Central America and Panama
INEC	National Statistics and Census Institute
INSSBI	Nicaraguan Social Security and Welfare Institute
IPPF	International Planned Parenthood Federation
JLAS	Local Social Welfare Boards
JNAPS	National Social Welfare Board
KAP	Knowledge, Attitudes and Practices
LBW	Low Birth Weight
MCH	Maternal and Child Health
MINSA	Ministry of Health
NGO	Non-Governmental Organization
OAS	Organization of American States
ORS	Oral Rehydration Salts
ORT	Oral Rehydration Therapy
PAHO	PanAmerican Health Organization
PRITECH	Primary Care Technologies Project
PVO	Private Voluntary Organization
SINEVI	National Vital Statistics System
SNEM	National Malaria Eradication Service
SNUS	National Unified Health System
SVEN	Nutritional Surveillance and Evaluation System
TBA	Traditional Birth Attendant
ULV	Ultra Low Volume
UNAN	National Autonomous University of Nicaragua
UNIVAC	UNICEF Purchasing Agency
USAID	United States Agency for International Development
UNFPA	United Nations Fund for Population Activities
URO	Oral Rehydration Unit

FINAL DRAFT

I. Epidemiologic and Demographic Data

A. Population Statistics

Prior to 1982 there was no vital statistics system in Nicaragua. In 1984 the Ministry of Health (MINSA) estimated that the national vital statistics system (Sistema Nacional de Estadísticas Vitales - SINEVI) would not be providing accurate data before 1988. As of December, 1989 SINEVI was registering 75% of all births and 60% of all deaths. (Evaluation, 1990)

With an estimated annual growth rate of 3.2% to 3.5% per year Nicaragua has one of the most rapidly expanding populations in this hemisphere. The following table presents basic demographic trends over the last forty years (Orellana, 1985):

BASIC DEMOGRAPHIC DATA

Indicator	1950 1955	1960 1965	1970 1975	1975 1980	1980 1895	1985 1990	1990 1995	1995 2000
Birth Rate per 1000	53.4	50.0	48.3	45.6	44.2	41.8	38.7	35.4
Death Rate per 1000	22.5	17.8	13.9	11.6	9.7	8.0	6.7	5.7
Life Expectancy	43.0	47.9	52.9	56.3	59.8	63.3	66.2	68.5
-Men	41.5	46.4	51.2	55.3	58.7	62.0	64.8	67.0
-Women	44.6	49.6	54.6	57.5	61.0	64.6	67.7	70.1
Growth Rate (%)	2.8	2.9	3.3	3.4	3.5	3.4	3.2	3.0

The actual 1990 population is estimated to be 3,870,000 with the following distribution by region (Plan de Salud, 1988-1990):

Region I:	377,300
Region II:	668,600
Region III:	1,062,000
Region IV:	697,000
Region V:	349,200
Region VI:	477,000
Zona Esp. 1:	126,400
Zona Esp. 2:	67,300
Zona Esp. 3:	45,300

Of note is that some 63% of the population lives in the Pacific coastal area (Regions II, III and IV - see map Annex 1) which is approximate y 25% of the Nicaraguan territory. Another 31% live in the central highlands (Regions I, VI and V). The Atlantic coastal lowlands, representing almost half of the land mass, is home to only 6% of the population. The urban/rural split is estimated by the *Instituto Nicaraguense de Agua y Alcanteriado* (INAA) to be 60/40.

The under one year of age group represents 3.9% of the total population. The age one year to under five years is 17.7%. Forty-six and four-tenths percent of the population is under the age of 15. The total fertility rate is estimated at between 5.5 (UNFPA, 1989) and 5.94 (Medina, 1988) children per woman of child bearing age.

B. Mortality Data

1. Infant Mortality Rates, Trends and Causes

As is often the case there are no firm and incontrovertible statistics regarding infant mortality rates (IMR). Two different references (Orellana, 1985 and Plan de Salud 1988-1990) citing the same source (Latin American Center for Demography) give somewhat different figures, but the downward trend in infant mortality is quite clear. The figures from each source (adapted for comparison) are as follows:

INFANT MORTALITY RATES
(Deaths per 1000 live births)

	1973	1977	1982	1987
Orellana		121.0	80.2	61.67
MINSA	100.0	93.0	76.4	

If we take MINSA vital registration system data we get a different IMR because of the under registration of deaths, but it serves to show trends based on real figures and not on projections such as those above:

INFANT MORTALITY RATES

	1981	1982	1983	1984	1985	1986	1987	1988	1989
IMR/1000 br		17.6	28.1	22.8	28.3	29.8	28.6	24.9	25.3

(1985-87 from Orellana, 1985 & 1988-89 from Evaluation, 1990)
(1982-80 calculated from data provided in IRA Norms for Secondary level and from Population figures in Valdez Tables)

MINSA data suggest that the reportedly rapid rate at which infant mortality declined from 1979 to 1985 was slowed after this period. (Corona, 1988)

Medina states:

"This reduction is believed to be the direct and indirect result of multiple transformations in the country since 1979. These reforms include: the National Literacy campaign which resulted in a decrease in the illiteracy rate from 50.3% to 12%; agrarian reform which redistributed 40% of the land, including many of the country's most fertile regions; sanitation improvements in some of the country; establishment of 179 new health posts, 12 new health centers and 5 new hospitals; and implementation of specific child health programs directed at major causes mortality and morbidity in children."

Medina also notes an apparent rise in infant mortality in the capital city

It can be estimated that of 1000 children born alive, 61 die in the first year. Of these 10 die in the first seven days, 20 die from seven to 28 days old and 31 from 28 days to one year of age (Medina, 1988).

The principal causes of infant mortality based on hospital statistics, which only record about 40% of infant deaths, for two different years are noted below:

	1987 (1)	1989 (2)
Acute Diarrheal Disease	34%	40%
Neonatal mortality	34%	27%
Hypoxia, Asphyxia or Respiratory	18%	
Neonatal Sepsis	6%	
Other Causes	5%	
Intrauterine Growth Retardation	4%	
Pneumonia	11%	11%

(1) Plan de Salud 1988-1990

(2) Evaluation, 1990 adapted

In 1988 Acute Diarrheal disease deaths in children under the age of one were 1433 (37% of reported deaths) and in 1989 were 1500 (40% of reported deaths). (Propuesto para Servicios de Diarrea, 1990)

According to Dr. Freddy Cardenas, Director of the Maternal and Child Health Division of MINSA, the perinatal mortality rate is 35/1000. Of these 22/1000 are late fetal deaths. Of the remaining

13, 6 die in the first seven days of life and 5 at seven to 28 days.

Region II has the highest perinatal mortality rates followed by Regions VI, V and IV.

2. Child Mortality Rates, Trends and Causes

The child mortality rate (rate for children from 1 to <5 years) was 1.48 deaths per 1000 children of that age in 1984, (Plan de Salud 1988-1990), 1.7 in 1988 (Medina, 1988) and 1.2 in 1989 (Evaluation, 1990). Central American rates for 1984 ranged from 0.7 per 1000 (Costa Rica) population to 12.7 (Guatemala) The principal causes of death with relative percentages in Nicaragua in 1987 were:

Acute Diarrheal Diseases.....	32%
Pneumonia.....	13%
Accidents.....	10%
Other accidents.....	5%
Poisoning.....	3%
Traffic accidents.....	2%
Malnutrition.....	4%
Asthma.....	3%

Fifty-four per cent of child deaths occurred in the hospital in 1987.

3. Maternal Mortality Rates, Trends and Causes

Maternal mortality rates are notoriously difficult to determine in developing countries because of poor vital registration systems. This problem is evident in Nicaragua. SINEVI cites a maternal mortality rate of 47.1 per 100,000 live births in 1984 (Orellana, 1985) while MINSA proposal for external assistance in 1990 cites a rate of 80/100,000. The United Nations Fund for Population Activities (UNFPA) calculates a rate of 87. The Latin American average according to the World Health Organization is around 300 per 100,000 births (Population Reports, September, 1988) and an intensive one year prospective study in Honduras, whose overall health status is very similar to that of Nicaragua, revealed a Maternal Mortality Rate of 220/100,000 live births (Preliminary data 1988 Honduras Maternal Mortality Study).

Dr. Cardenas stated that the maternal mortality rate is 97 per 100,000. This is a higher rate than those previously reported because the MINSA has its own information collecting system that gathers more data than the normal vital statistics system. The worst rate is in Region VI - 333/100,000. The rate for provoked abortion is 30/100,000.

Seventy to eighty percent of maternal deaths are from abortion,

hemorrhage, other direct obstetrical causes and toxemia, in that order (Componentes de Atención prenatal, undated). Induced abortions are playing an increasingly important role in fertility control in Nicaragua. The percent of all pregnancies resulting in abortion in the Berta Calderon Women's Hospital rose from 13.7% in 1986 to 18.1% in 1988, while in Leon in that year it was 22.0%. Authorities have determined that the spontaneous abortion rate in a normal population is around 8% (Corona, 1988).

4. General Mortality Rates, Trends and Causes

The ten leading causes of mortality in 1989 were (Evaluation, 1990):

Acute diarrheal disease.....	16%
Pulmonary vascular disease.....	13%
Pneumonia.....	7%
Acute myocardial infarction.....	4%
Nephritis & nephrotic syndrome.....	4%
Accidents.....	4%
Malignant tumors.....	3%
Traffic accidents.....	3%
Congenital anomalies.....	3%
Gastro-intestinal disease.....	3%

The CELADE estimate for the number of deaths in 1989 is 8 per 1000 population, however, these MINSA data are based on a registered mortality of 3.2 per 1000, less than half the expected number of deaths reflecting, once again, the deficiencies in data collection.

C. Morbidity Data

1. Rates, Trends and Causes of Infant Morbidity

About 10% of all visits to MINSA health facilities are for children under the age of one year. There are no age-specific data available on the causes of outpatient visits, but acute respiratory infections and diarrheal diseases are the two leading causes of visits to MINSA facilities for all ages. The leading causes of hospitalization for children under the age of one year in 1987 were diarrhea, pneumonia, perinatal illness, neonatal respiratory distress and intrauterine growth retardation.

2. Rates, Trends and Causes of Child Morbidity

Fifteen percent of all outpatient visits in 1987 were for children under the age of five and over the age of one year. Once again age specific outpatient data are not available. The five principal causes of hospital discharge for this age group are pneumonia, diarrhea, bronchitis/asthma, burns and malnutrition.

3. Rates, Trends and Causes of General Morbidity

The ten leading causes of outpatient visits in Nicaragua in 1986 with percentage weight were:

Acute respiratory infections.....	15%
Other intestinal problems.....	11%
Genito-urinary diseases.....	8%
Other respiratory infections.....	7%
Skin problems.....	7%
Acute diarrheal disease.....	6%
Sensory nerve problems.....	6%
Musculo-skeletal problems.....	6%
Pregnancy and puerperium.....	4%
Circulatory problems.....	3%

II. Analysis of Mortality and Morbidity Data

A. Diarrhea and Water/Sanitation

1. Preventive measures

a. Water

Fifty-one per cent of the population enjoyed access to piped water in 1989. This was up from the pre-revolutionary level of 35% (Evaluation, 1990). This includes 76% in urban areas and 14% in rural areas. In 1987 only 2.6% consumed chlorinated water (Evaluation, 1988). Forty-two per cent of the water systems provide an insufficient amount of water and one-half of them have water only intermittently. There is also a water quality problem in that thirty-six per cent of the 910 water quality samples taken in Managua in 1989 were positive for bacteria.

b. Sanitation

Only 35% of the urban population is served by sewer systems. In the rural areas 26% to 75% of the population defecate in the open according to the 1990 Evaluation, whereas Ing. Guillermo Herrera, Chief of Planning of INAA estimates rural latrine coverage at around 14%.

The construction of latrines was the responsibility of the MINSA up through 1982, after which it was decentralized and put in the hands of communities, INAA or international donors (Evaluation, 1990).

c. Hand washing

The last MINSA triennial plan identifies significant problems with sanitary behavior which increases the likelihood of diarrhea. Breast feeding is discussed below in the section on malnutrition.

2. Home management

There is a tradition of suspending feeding during episodes of diarrhea (Plan de Salud 1988-1990). Poor hygiene and feeding habits and lack of appreciation of the importance of diarrhea as a cause of death among both the general population and health workers contributes to high mortality and morbidity rates (Plan de Salud, 1988-1990).

3. Appropriate treatment: ORT (units, training, packets) and IV treatment.

According to Dr. Cardenas the oral rehydration program dates from 1979 and was the first of the major causes of infant mortality to be attacked by a national program. At present 80% of the health establishments have Unidades de Rehidratacion Oral (URO's). MINSA currently has sufficient ORS packets to last through September, 1990 after which it is expected that they will be provided by a local producer, SOLKA. The current program norms were developed four years ago and training of personnel was carried out in 1988. At that time they trained 1500 health workers in skills for supervising the acute diarrhea program. Another course in management of diarrhea programs for program managers was financed by the Pan American Health Organization (PAHO/OPS).

The *Campana por la Defensa de la Vida del Nino* tried to decrease mortality through community actions. Through campaign activities they tried to form inter-institutional/community committees in each municipality composed of INAA, municipal officials, religious groups, etc. to conduct basically environmental activities. The only place where they really had success was in Region II. One result of the *Campana por la Defensa de la Vida del Nino* was to increase the number of outpatient visits for children. This resulted in some measure from a policy of the campaign which permitted children under the age of one year to be treated before any other patients in all health units from the health post to the hospital. Campaign directives also insisted that mothers with dehydrated children stay in the URO for at least four hours. This provided time to evaluate clinical response and to carry out health education activities.

The principal diarrhea season is July through September during which 80% of the cases occur.

In 1989 the Ministry of Health developed a three phase strategy to attack diarrhea mortality. These phases were as follows:

1. Preparation: (Jan-Mar) This was to train or retrain all personnel, assure the existence of necessary supplies, assure that hospitals had the best and most appropriate resources in the emergency room and other units where the diarrhea patients would be entering. It was insisted that the URO's be opened for 24 hours.

2. Alert: (Apr) MINSA supervised to assure its ability to respond to the expected demand.

3. Intensification: (May-Oct) All information and direction coming out of the MINSA was directed at diarrhea.

Afterward MINSA conducted an evaluation which showed that they succeeded in keeping the number of cases of diarrhea from increasing, but also experienced a decrease in the effectiveness of their other programs (Cardenas, personal communication).

CHILDREN TREATED IN ORT PROGRAM
(Valdez Tables)

	1980	1982	1984	1986	1988	1989
Child. Treated	71,600	141,100	173,100	248,000	272,000	310,000

4. Program Structure and Problems

The diarrhea degree program begins at the community level with the brigadistas who have oral rehydration salts (ORS) and are trained in their use and preparation. In addition the brigadistas are the final link in the health education system which attempts to encourage appropriate health behavior. Every health unit and base house is required to have a section of the unit organized exclusively for oral rehydration and a person responsible for that unit. In smaller establishments the responsible person usually also has other duties as well. In general, all units have oral rehydration salts. In the one unit visited by the author where there were no salts the auxiliary nurse prepared a home solution. The number of cases and deaths is reported on a daily basis from the health post to the municipal health center, from there to the area and from the area to the region. Educational and environmental efforts are concentrated in those areas where diarrhea morbidity and mortality is the greatest. All diarrhea deaths which occur at the hospital level are discussed with the personnel from the health center which referred the case to determine how the death might best have been prevented.

In its 1988-1990 Triennial plan the MINSA noted a lack of dynamic inter-institutional focus and of mobilization of the grass roots organizations developed by the revolution as problems in reducing diarrhea mortality. Also, the very little research done in Nicaragua on diarrhea and the poor utilization of what had been done for decision-making purposes was mentioned. At that time personnel were not adequately trained in norms and referral criteria (Plan de Salud 1988-1990).

5. Analysis

The MINSA has an excellent diarrhea treatment program. Its "microlocalization" epidemiologic surveillance systems functions so well that MINSA personnel at the regional level can identify which "barrios" in its region are experiencing the highest morbidity and mortality rates. Every health unit visited by the author had a section set aside for ORT and personnel with a high level of awareness about its importance. This was true from the remote health post to the children's specialty hospital in Managua. In some areas the norms are not being followed, which may reflect a supervision problem. Specifically, both mothers and personnel resist having to have the child in observation in the health unit for the four hours required by MINSA norms. The principal program weakness is in addressing the environmental sanitation and nutrition problems which underlie the high incidence of diarrhea morbidity and mortality. Both these problems transcend MINSA. A major problem may occur if local production of ORS packets does not come on line as anticipated. Health education is a third problem area. Little evaluation has been carried out to determine the scope of the health behavior problems and effectiveness of interventions.

B. Acute Respiratory Infections (ARI)

1. Treatment norms

According to Dr. Cardenas they are just launching their ARI program. They have completed a first draft of treatment norms at the primary and secondary levels this year. They hope to conduct training at two training centers in Leon and Managua and will use non-traditional training techniques based on discussion of cases and seeing patients, rather than on lectures. The Pan American Health Organization is helping them with the training methodologies.

2. Program problems

In its triennial 1988-1990 plan MINSA identified the following as being its principal problems with respect to ARI:

- *No epidemiological investigations of the problems have been identified
- *Underlying nutritional and housing problem
- *Inappropriate training of personnel
- *No diagnostic or treatment norms
- *Lack of basic materials stethoscopes, blood pressure cuffs, oxygen valves, oxygen, specific medications

*High level of auto-medication leading to delayed seeking of qualified health care

3. Analysis

The acute respiratory infection program is not sufficiently developed to be able to comment upon its structure or effectiveness. The high degree of urbanization in Nicaragua and heavy dependence on physicians should bode well for the ARI program since reduction in mortality depends on timely diagnosis and treatment, often with antibiotics, which is, in turn, dependent on access to the formal health care system.

C. Neonatal and perinatal mortality/morbidity

1. Maternal nutrition and whole host of socio-economic factors

The major causes of neonatal mortality are intrauterine growth retardation, hypoxia, asphyxia and other respiratory problems. The early neonatal death rate (deaths occurring in the first seven days after birth) in 1985 was 11.1 per thousand live births. In 1987 these deaths represented 27% of all infant mortality. These estimates, however, are low due to widespread intra-hospital under-reporting of early infant deaths. (A live born baby which dies a very short period after birth is often reported as a stillbirth rather than a neonatal death because there is a lot less paperwork and reporting required of the physicians for a stillbirth.) In 1984 neonatal deaths (deaths of live born infants before 28 days of age) constituted 43% of all reported infant deaths.

According to Dr. Cardenas the three leading causes of neonatal death are asphyxia or respiratory depression at birth, prematurity and neonatal sepsis. Prematurity results to a great extent from inadequate socio-economic conditions, and is, therefore, less amenable to treatment by MINSA activities. Nevertheless, MINSA authorities believe that one-third of premature births could be eliminated by treating urinary tract infections in pregnant women.

The 1986 national study on maternal and child risk assessment found that for children being born in a hospital setting three social factors increased the risk of neonatal mortality: low educational status of the mother or her partner, being born to an agricultural worker, and being born in a family living in poor housing conditions lacking potable water and sewage systems. For children born at home, these three plus a maternal job that requires physical effort increased the risk of neonatal mortality. Other risk factors include: insufficient prenatal care, multiple pregnancies, pregnancy after 40 years of age, a previous history of miscarriage, fetal death or early neonatal death, short interval between pregnancies and mother's weight less than 50 kg prior to pregnancy (Medina, 1988).

The Risk Factor Study also found that 10% of babies were low birth weight (i.e. under 2500 grams at birth).

2. Access

Early on the Ministry of Health established the goal of having all births occur in hospitals by 1990. Within a few years, however, it was seen that this was neither practical nor totally desirable. As of 1989 only 43.9% of births were in MINSA facilities (Evaluation, 1990). The UNFPA states that 45% of births are in the home and attended by TBA's while 5% are in the home and attended by family members. Dr. Cardenas recognizes a preference by the women for home birth.

3. Family planning

Family planning is discussed below.

4. MINSA Program

a. Maternal Health/Prenatal Care

Every health unit has a maternal health program and, where sufficient personnel are present, a person is dedicated exclusively to that program. The program includes prenatal care, postnatal care, breast feeding, family planning and control of uterine cervical cancer. Whereas the MINSA's 1988-1990 triennial plan listed low levels of prenatal coverage as being a problem, in the 1990 evaluation coverage was at 92.6%. This compares to 73% in Guatemala, xx% in Honduras and xx% in Costa Rica. Prenatal attention has been shown in most studies to be intimately associated with reductions in infant mortality rates. Forty-five per cent of the women begin coverage in the first trimester and 22% of all prenatal controls are provided to women identified as being in a high risk category. Thirty-seven per cent receive appropriate anti-tetanus immunization. The average number of prenatal visits for women seen by the MINSA for prenatal care is 2.7, up from 2.2 in 1987. (Cardenas and Plan de Salud 1988-1990)

b. Midwife training

Although still officially proscribed because of the MINSA policy of institutional births, training of traditional birth attendants (TBA's or *parteras*) was initiated by Region VI in 1981. They were followed quickly by Region I in 1982 (Garfield, 1989) in which year the program was officially sanctioned and reactivated on a national level. In 1982, they did up a training manual and prepared an information system based on drawings so that it could be used by illiterates.

At present, the program with TBA's is best developed in Regions I and V. In Region I (Esteli) MINSA has a birthing center where they

train TBA's. They also meet monthly with the midwives and have on-going training program. In Region V they have PUDLI (UNICEF funded). That program has European trainers and gives follow-up through monthly meetings with the midwives. They also provide consumable supplies to the midwives. They have trained some 6,000 TBA's (UNFPA, 1989). The TBA training program has three objectives according to Garfield:

- *to encourage safe, hygienic delivery practices and discourage potentially harmful ones;

- *to open a channel of communication with the professional system of health care;

- *to involve TBA's in promoting prenatal care, immunization, oral rehydration, and well-child home visits.

c. Neonatal care units

Two of the three leading causes of neonatal death are asphyxia or respiratory depression at birth and neonatal sepsis. MINSA attempted to address these problems through improving the quality of attention in its neonatal care units. Dr. Victor Mantillas, ex-subdirector of the leading Women's Hospital in Managua, Berta Calderon, believes that the hospital's principal accomplishment has been in reducing the neonatal mortality rate within the hospital from 60/1000 live births to 14/1000 live births. This was done through administrative improvements such as making available physicians 24 hours per day and assuring the proper application of treatment and management norms through improved supervision.

d. Problems

There still seems to be some institutional prejudice against TBA's which, if felt by them, will make their incorporation in the health team as partners very difficult. The MINSA Triennial plan also notes the problem of MINSA's relationship with TBA's and that TBA's are not taught about risk (Plan de Salud, 1988-1990).

5. Analysis

As in other areas Nicaragua has scored some remarkable successes in the area of decreasing neonatal deaths. First, it should be mentioned that decreasing neonatal deaths is a relatively new focus of interest in developing countries and one whose importance has increasingly emerged as immuno-preventable and diarrheal disease deaths decline and infant mortality rates decrease from these events and the increase in levels of education and development in general. Nicaragua, it would appear, has made some significant new contributions and done well in implementing some proven technologies. The new contributions are in demonstrating the

feasibility in a developing country of reducing neonatal mortality through largely administrative and normative actions which improve neonatal care. The improvements in neonatal care have been largely administrative (i.e. assuring that management and hygiene norms are followed and having physicians present 24 hours per day) and not necessarily "high tech". The proven technology is that of prenatal care. They have a very high level of coverage and almost three visits per woman per pregnancy.

Problems of prematurity, low birth weight and intrauterine growth retardation are more difficult for a health care system to address. Fundamental is good maternal nutrition, maternal education and freedom from infection during pregnancy.

D. Immuno preventable diseases

1. Immunization levels

Although the MINSA states that it really doesn't know coverage levels (Plan de Salud 1988-1990) official figures give the following:

Immunization Levels in Children <1 Year

(1)	1980	1982	1984	1986	1988	1989 (2)
BCG	33%	81%	97.9%	100%	89%	94%
DPT	15.4%	26.5%	33.3%	45.4%	51%	68%
Polio	21%	69.6%	80.8%	93.9%	83%	87%
Measles	15.2%	40%	47.1%	48.8%	55%	63%

(1) Evaluation, 1989

(2) Valdez Tables, 1990

2. Morbidity and Mortality

Polio has been absent from the country since 1982 making it unique in this respect among Central American countries. Periodic epidemics of measles continue, the most recent being in early 1990, with over 9,000 cases and 339 deaths to date (August, 1990). This equals the levels of the 1980 epidemic and is larger than that of 1986. Given higher coverage, this raises issues of the effectiveness of the measles vaccinations. Cases of tetanus have been falling consistently since 1981. In 1981 there were over 130 cases and in 1989 about 42.

3. Cold Chain

The triennial plan admits to a deteriorated cold chain although no

recent inventory appears to have been done. Program managers suggest that approximately 75% of the cold chain is working. There are a number of health posts that have no refrigerators. In those centers the auxiliary nurse travels to the nearest health post to bring vaccines to the health post where they are kept in a thermos with ice packs. Personnel are required to register refrigerator temperatures twice daily, although field visits indicated that this procedure was not always observed.

4. Program Structure

The immunization program is based around a two-fold strategy of three annual campaigns and on-going active search for unvaccinated children under the age of one year.

Every health unit from the health post on up has a person assigned to the immunization program. In health units with sufficient personnel one auxiliary nurse is assigned exclusively to the program. Children are either brought in spontaneously by parents or they are identified in the visits which the auxiliary or other personnel make on a weekly basis to the community. In the health unit they maintain a card file with the date on which the child should present for his next vaccination. If the child does not come he is sought out at when the auxiliary visits the community. Some isolated communities are not visited because of transportation difficulties whereupon it devolves upon the *brigadista* to encourage the parent to take the child to the health unit for vaccination.

Three times per year they have *Jornadas Populares de Vacunacion*. These campaigns penetrate to practically all parts of the country and tend to capture children not captured by the on-going activity.

5. Analysis

The vaccination program is soundly structured and has admirably high levels of coverage. Coverage levels for regions are checked periodically by the MINSA using sampling methodologies developed by PAHO. Health workers are not able to get out of the communities within which their health centers are located because of the lack of transportation. Nevertheless, there is a standard that every health worker at the health unit level should spend a certain number of days per month or per week in the community. The urban communities, therefore, are very well covered. Coverage levels may well be skewed because of inaccurate population statistics. No census has been done in almost twenty years, and every year the margin of error of population estimates becomes larger. No studies of vaccine potency at the health unit level have been carried out to the author's knowledge nor have more expensive and technologically difficult sero-surveys. These studies can be very useful in testing the real effectiveness of vaccination programs.

E. Malnutrition/Breast Feeding

1. Level of malnutrition

In 1966 the Nutrition Institute of Central America and Panama (INCAP) carried out a national nutrition survey that showed that only 43% of the families studied had adequate caloric intake. Some 33% of the population studied did not even consume 75% of the energy, iron and vitamin A requirements. At that time 57% of children under the age of 5 years had weight for age under the 90th percentile, equivalent to one of the three Gomez grades of malnutrition. A 1977 study found 68% malnutrition in children zero to six years and a 1980 study 56%. In 1982 in Regions I and II about 20% of school age children showed signs of stunting and 10% wasting.

In the 1986 nutritional census of first grade school children stunting was found in 22% of the school age children of which 17% was considered moderate (between 2 and 3 standard deviations below the reference mean) and 5% severe (more than 3 standard deviations).

Stunting by region from that same study was as follows:

Region VI	29.5%
Region IV	27.4%
Region V	24.8%
Region I	22.6%
Region II	20.9%
Z. E. 3	16.0%
Region III	15.3%

Beginning in 1988, the Nutrition Division of MINSA began a Region-by-Region implementation of a nutritional surveillance system. To date the system has been implemented in Regions I, II, IV and VI. 1989 data indicate the following levels of malnutrition in children under the age of six years (SVEN, April, 1990):

Region IV	23.3%
Region I	20.8%
Region VI	17.2%
Region II	15.5%

According to Region V officials, 65% of all deaths from acute diarrhea disease in that region are in malnourished children.

A recent study carried out in the Velez Paiz hospital confirmed that the principal factor influencing pediatric mortality was the nutritional state of the child (Campana, 1988).

2. Breast feeding patterns

Studies carried out prior to the Sandinista Revolution indicated that approximately 84% of rural women and 64% of urban women breast fed their children. Of those urban women that did breast feed, 45% completely discontinued before the child was six months of age (Picado, 1989). Early in the revolution breast feeding was a priority. A National Breast Feeding Commission was formed, milk banks were established, educational activities were carried out and a breast feeding promotion law prohibiting advertisement of milk supplements was enacted. Unfortunately, over the years the Commission lost vision and effectiveness and now no longer exists (Cardenas, personal communication).

In the 1983 Breast Feeding Study (Estudio, 1983) it was found that 87% of mothers begin breast feeding, but only 10% exclusively breast feed for the first four months. At one week of age only 50% were exclusively breast feeding. Forty-six per cent have completely weaned their children by the age of four months. It was also found that approximately 1/3 of the urban women do not breast feed their new born infants at all, and, of those that do, approximately 45% discontinue breast feeding before the infant has reached the age of six months. Twice as many urban women do not breast feed as rural women.

The most recent study, cited by Picado and Artunduaga, on a sample of children under the age of two years in Managua found that only 45.7% of children under the age of three months were still being breast fed and only 33% of those between three and five months. The principal reasons for discontinuance were rejection by the child (63%), lack of milk (40%), mother working (32%), mother ill (22%), child hospitalized (10%), advice of a physician or family member (9%) and pregnancy (4%).

3. Health education

MINSA lists poor health habits as one of the factors leading to malnutrition. As in many countries, weaning is a particular health risk for infants. Weaning occurs early and is often accompanied by inadequate caloric intake. Weaning also increases the risk of exposure to environmental contaminants, especially water and food.

4. Program structure and problems

Each health unit has a person assigned to the Control of Growth and Development (CCD) program. This program is directed to children under the age of six years. In the first months of life children are supposed to be brought to the health unit for weighing and developmental assessment. If growth is satisfactory the frequency of visits is gradually lengthened. If growth or developmental problems are identified the child is seen regularly and the parent

is provided with feeding instruction or other education and, if available, supplemental food. In the case of severe malnutrition the child is sent to the nearest hospital for recuperation. The program, however, seems to have a much lower level of coverage than other priority programs.

The Nutrition program was largely a step-child of MINSA until 1988. It had suffered from low priority, high turnover of personnel and lack of focus. In the Triennial Plan MINSA identifies the following as being its principal program problems:

- *problem in identifying and enrolling malnourished and LBW children

- *poorly equipped and trained personnel for managing nutritional problems

5. Analysis

The foregoing makes apparent the pervasive impact of malnutrition on almost all of the leading causes of infant and child mortality. The program has a dynamic director and access to \$19 million in World Food Program supplemental food. Nevertheless, the resources are programmed for only 11,000 families in eleven of the 95 health areas. Personnel mentioned that many malnourished children drop out of the CCD program, because mothers don't perceive any benefit from repeated visits. If health units have access to supplemental foods, however, attendance is much improved.

The relatively low levels of breast feeding not only impact on earlier and more profound malnutrition in infants, but also on increased fertility. Exclusive and prolonged breast feeding have well recognized impact on delaying the onset of ovulation after pregnancy, thus decreasing fertility.

F. Tropical Diseases (Malaria & Dengue)

1. Malaria

a. Cases

NUMBER OF MALARIA CASES AND BLOOD SAMPLES EXAMINED

	1977	1984	1985	1986	1987	1988	1989
Exams	218148	451942	424681	510289	448314	489906	523700
Cases	25,960	15,370	15,130	20,300	17,010	33,051	45,982

Sixty per cent of the cases in 1989 were in Region II. In 1989 4% of the cases were the more dangerous Plasmodium falciparum species compared to 8% in 1988.

b. Current Program and Problems

As is true elsewhere in Latin America, the current malaria program of MINSA is an outgrowth of the National Malaria Eradication Service (SNEM) established in the mid-1950's. It was a vertical program run with military discipline until the revolution in 1979. At that time there was a tendency both in the country and internationally to regionalize malaria programs. In 1981 MINSA instituted a massive, country-wide collective treatment program. A collective treatment program attempts to simultaneously treat every potentially susceptible person in a population, thereby eliminating the parasite from the human host and stopping transmission. From 1982 onwards efforts were made to rapidly identify cases and provide prompt treatment, thus keeping the potentially infective population minimal. This approach was very successful until 1988 when cases began to increase dramatically. In the last few years the program has suffered from low morale due to low paying salaries, inadequate per diem, lack of transportation, considerable internal migration, lack of access to the war zones, loss of personnel and, despite the scarce resources available, no prioritization of activities. Dr. Eric Prado, Chief of the Malaria program during its best years in the 1980's, has recently reassumed leadership and it is expected that cases will begin to decline once again. MINSA strategy now will be to focus limited resources on the areas most heavily impacted by malaria and to continue to rely on curative treatment of all febrile patients in those areas. In the areas where the epidemiological pattern is less critical they will continue to provide presumptive treatment followed by blood testing and radical treatment for positive cases.

2. Dengue

a. Epidemiology

Dengue, according to Dr. Prado, is a problem confined almost exclusively to Managua. The most widely used measure of risk for dengue is the aedes aegypti infestation rate. This is a measure of the percentage of homes in which the mosquito vector of dengue fever, aedes aegypti, is present. If more than 5% of homes are infested with the vector there is a definite risk of a dengue outbreak. The most recent measures in Managua show an infestation of 1%. The rate for aedes aegypti in 1989 was from 1.02% to 4.3%. Region IV was the worst with a high at one point of 7.6% (Evaluation, 1990) Dengue rates over the last several years have been as follows:

CLINICALLY DIAGNOSED DENGUE CASES 1985 - 1989 &
PERCENTAGE OF TOTAL IN REGION III (MANAGUA)

1985	1986	1987	1988	1989
17,483	484	64	203	659
27%	39%	77%	89%	72%

As can be seen from the above there was a major dengue epidemic in 1985. That epidemic was predominately dengue serotype I. An extensive epidemiological surveillance system was set up to try to identify and rapidly treat any cases of dengue hemorrhagic fever and some twenty cases were identified and documented.

b. Dengue Program and Problems

The current program depends upon 45 underpaid and poorly motivated women who inspect houses for the presence of aedes aegypti larva or adults and educate residents on how to eliminate breeding places. MINSA has seven LECO ultra low volume (ULV) sprayers, of which only three actually work.

The MINSA identifies the following as being the principal dengue program problems:

- *deficient quality and quantity of supervision
- *constant turnover of field personnel because of low salaries
- *lack of transportation and essential equipment
- *poor quality of abate which is rejected by the population and insufficient education. (Evaluation, 1990)

3. Analysis

The malaria program is relatively well endowed with resources from the foreign aid being received from the Scandinavian countries for control on the borders and from an on-going regional PAHO project. The dengue situation, however, is more critical.

Dengue hemorrhagic fever is an often fatal expression of dengue infection which involves generalized external and internal hemorrhaging. Although known for many years in South East Asia it was almost unknown in the Americas until the Caribbean Pandemic of 1978 when the first few cases were reported. An epidemic in Cuba in the early 1980's had a relatively large number of hemorrhagic cases. Hemorrhagic Fever is thought to be caused when someone who has been exposed to one of the four dengue serotypes is exposed to a second serotype initiating within the body a autoimmune type of

reaction resulting in profuse, generalized bleeding. Given the large pool of persons who have been exposed to the Type I virus, and given the circulation within Nicaragua and in Central America of other dengue serotypes, the distinct possibility exists that a new significant outbreak would be accompanied by a large number of cases of dengue hemorrhagic fever.

G. Family Planning/Birth Spacing

1. Contraceptive prevalence

UNFPA demographers estimate MINSA contraceptive coverage at 4.3% of the population of women in fertile age in terms of couple years of protection (Corona, 1988). They arrive at this estimate by calculating 34,426 women years of protection using MINSA service statistics and adjusting for the type of method employed and dividing by a population of 805,300 women in fertile age. They exclude PROFAMILIA coverage which, according to that organization, is 38,000 women years of protection. Combining the two there is a total of approximately 70,000 women years of protection in a population of 805,000 women in fertile age or 8.9% coverage. Lic. Sergio Maltez, Executive Director of PROFAMILIA, the Nicaraguan affiliate of the International Planned Parenthood Federation (IPPF), believes that by adding in private sector contraceptive users that the total might be as high as 15% to 20% coverage. MINSA officials state that they need 30% coverage to have an impact. In general, a country's population begins to stabilize once contraceptive prevalence reaches about 60%.

2. MINSA Program and Problems

As mentioned above under the section on neonatal mortality, one of the primary programs at all levels of the health care system is that of maternal health. One of the sub-components of that program is family planning. Family planning is mentioned as one part of the *Campana por la Defensa de la Vida del Nino* and family planning norms exist. Those norms call for the distribution of oral contraceptives and condoms by auxiliary nurses at the health post level. UNFPA donates 10% of MINSA's contraceptive needs. The rest of contraceptives are purchased with national funds. MINSA sells at cost the products that it purchases. The only types of contraceptives that MINSA provides are IUD's, oral contraceptives and condoms. They provide no type of vaginal contraception. Surgical sterilization is by law not dependent upon the approval of the husband, but is based around reproductive risk. Authorities at the Berta Calderon Hospital, the women's hospital, told the author that the criteria for performing sterilization in the hospital is that the woman be at least 25 years of age and have had at least six children. There is a marked preference for oral contraceptives among those women knowledgeable about contraceptive methods (UNFPA, 1989). All of the health centers and posts visited by the author had oral contraceptives, all personnel interviewed stated that

there was considerable demand and that there was no institutional opposition to family planning. The MINSA Triennial plan recognizes lack of sex education and birth control in high risk women as being two unresolved problems (Plan de Salud 1988-1990).

3. PROFAMILIA PROGRAM

PROFAMILIA has approximately 40,000 users and provides 38,000 couple years of protection (CYP's). Of its users 35,000 are participants in the Community Based Distribution program. The program only operates in Regions II, III, and IV.

In addition to the CBD program, they are attempting to promote family planning through several community service programs. These are the following:

- a. The first is entitled EMIPLAFA, *Educacion Maternal Infantil/Planificacion Familiar*.
- b. Another is CODEMO, *Colaboracion para Desarrollo de la Mujer*. This includes, among other things, the cultivation of family gardens.
- c. Sex and family education for adolescents.
- d. Maternal Education.

In addition to the above PROFAMILIA provides clinical/surgical services. Services include general gynecological exam and treatment, pap smears, insertion of IUD's and voluntary surgical sterilization. They do about 4000 surgical sterilizations per year and use the minilaporotmy procedure.

PROFAMILIA also provides training in family planning to physicians, nurses and social workers in its two clinics. They provide training to their own distributors and to teachers, community leaders, students and parents. The PROFAMILIA headquarters has its own training center.

PROFAMILIA has a program designed at informing and educating opinion leaders. They see the current government as being right wing and conservative and Cardinal Obando as having considerable influence.

MINSA refers patients to them for sterilization. PROFAMILIA does not perform abortions.

4. Analysis

There are some very perplexing aspects to the family planning situation in Nicaragua. On one hand Nicaragua is widely recognized as having a more vigorous feminist movement than any other Central

American country. Lic. Maltez mentioned recently that Mexico and Nicaragua were the only two countries from the region invited to a recent conference on women's issues in Canada precisely because its feminist movement was more developed. A vigorous feminist movement is generally associated with greater awareness about and use of contraception. Also favoring greater use of family planning is a history of little church opposition. Neither UNFPA, PROFAMILIA nor MINSA personnel admitted to any significant church opposition, a common factor in other Central American countries. Moreover, one of the health center physicians visited in Region V stated that the priest in their area encourages family planning because it reduces the incidence of abortion and is, therefore, in harmony with church policy. Furthermore, there is official government sanction of family planning, norms exist, contraceptives are available and personnel seem to support the program.

Why then, one might ask, does Nicaragua have one of the lowest levels of contraceptive use in Latin America? Having posed this question to a number of concerned and involved people, several factors seem to have been at work. One is that no surveys have been carried out to determine real levels of use, therefore, one can't be sure that the problem is really as bad as it seems. Another is that even though official policy supported family planning, there was considerable opposition to it on the part of certain influential Sandinista leaders. Ex-President Daniel Ortega is reported to have said that every Nicaraguan not born is one less revolutionary. Ortega was seen by UNFPA personnel as being negative towards woman's issues. PROFAMILIA faced rejection by the Sandinista government, and had to fight off governmental efforts to take over its facilities. In a 1987 meeting on reproductive risk sponsored by PROFAMILIA, the MINSA Vice Minister of Supply quoted United States' ex-Secretary of Defense Robert McNamara as having stated that one dollar spent on family planning was better than a dollar spent on arms thereby implying that supporting family planning was the same as supporting United States military policy. Whatever the real feelings of the government, it would appear that family planning was of lower priority than many other things on the past government's agenda and never received the support that written policies suggest that it should have.

The rise in the rate of induced abortions may be another reason why contraceptive use is lower. For unknown reasons it appears that some women are opting for abortion to control fertility rather than contraception.

Three other factors may also be contributing to the high rate of fertility. One is the early age at which Nicaraguan women begin to have children. According to Medina 21% of live births occur in woman between 15 and 19 years of age. A second factor is that the feminist movement, while more advanced than in other Central American countries, may not have moved beyond the confines of the urban, educated middle class. A third factor may simply be the

frequency of intercourse, the highest in Latin America according to a PAHO study.

Another factor to consider is the changing political environment. The local press has stated that a number of leading officials of the new government are from very conservative catholic tradition. During the month of July the author saw a television program featuring catholic priests from outside Nicaragua who had linked up with some local health professionals and through very skillful presentation of information and innuendo managed to suggest that contraception is abortion and that PROFAMILIA encourages and carries out abortions. Thus, it would appear that the church may believe that the environment is now healthy enough to begin a program of vigorous opposition to family planning.

III. Health System Response

A. History of Health System Development

1. Pre-revolutionary system

In 1925 the General Health Administration was created. In 1929 this became a state secretariat with the name of the Ministry of Public Health and Welfare, in 1946 the name was changed to the Ministry of Public Health and, after the revolution became known simply as the Ministry of Health or MINSA.

Health programs date from 1915 when the Rockefeller Foundation assisted in programs aimed at controlling parasites, especially hookworm. The program against malaria began in 1922 and resulted in the formation of the National Malaria Eradication Program in 1958.

The 1972 earthquake had a devastating effect on Managua Hospitals. The Social Security Hospital, one of the best in Managua at that time was totally destroyed as were all of the city's other major hospitals. After the quake four additional hospitals were constructed - La Mascota, Berta Calderon, Manolo Morales and Lenin Fonseca.

At the time of the 1979 revolution there were 23 different institutions providing health care to different segments of the Nicaraguan population. These were the Ministry of Health, the Nicaraguan Social Security Institute, the National Board for Social Welfare (JNAPS) and 19 local Boards for Social Assistance.

MINSA was involved in activities such as sanitation, malaria control, maternal and child health programs, nutritional programs, family planning and medical attention through a limited network of health centers and health posts. Only one-third of the less than 200 health units were in rural areas and overall 90% of the medical

services were directed at 10% of the population (Medina, 1988).

INSS provided medical services to 8.4% of the population, and mostly in Managua. Garfield, speaking of the INSS states:

"Health expenditure per person was more than ten times greater for the insured than the uninsured. In 1977, insured patients had more than eight times as many outpatient visits and prescriptions dispensed as the rest of the population".

The National and Local Social welfare boards coordinated and provided technical supervision to the general hospitals.

Significantly, there was no formal coordination between these institutions. In the 1977 budget INSS received 37% of health sector funds, MINSA 25%, JLAS 26% and JNAPS 10% (Medina, 1988).

2. Post Revolutionary Developments

a. Development of SNUS

In order to deal with the fragmented health system, the revolutionary government created the *Sistema Nacional Unico de Salud* (Unified National Health System - SNUS) by decree on August 8, 1980. This brought all of the governmental and a number of private health systems and establishments under the management of the newly constituted Ministry of Health - MINSA.

The system was governed by the following principals (Roemer, 1986):

- Health is a right of every person and a responsibility of the government
- Health services should be accessible to the total population geographically and legally, as well as economically and culturally
- Health services should be integrated
- Health activities should be planned, with the understanding that planning is the most sensible strategy for rationalizing resources
- The community should participate in all activities of the health system

Within the first year MINSA was established, had defined goals, objectives, functions, programs and norms, had developed a health law and internal operating regulations, had begun a rapid development of infrastructure drawing largely upon Inter-American Development Bank (IDB) funds negotiated with the previous

government and upon community effort, had reportedly increased coverage from 30% to 70%, increased the numbers of medical visits by 200%, begun intensive primary care and preventive outreach and had begun to address the human resource scarcity problem.

Problems identified at the time of the development of the first annual plan were an infrastructure which was deficient in quantity and quality in the face of a greatly increased demand and limited financial and human (both professional and technical) resources. By the time of development of the 1983 work plan the following problems were identified: disorganization with regard to medications, irrational approach to work, a lack of interdisciplinary and collective spirit, corruption among certain officials, grave problems with respect to productivity and organization of work to be done, the continued existence of competition in certain areas, serious maintenance problems, administrative bottlenecks, budgetary tensions and the international political situation.

b. Regionalization

The next major development in the health system was that of regionalization. MINSA was one of the first two Nicaraguan ministries to regionalize its administrative structure. The regional structure called for grouping the sixteen different departments into the six regions and three special zones which constitute the political/administrative structure of the country to this day. Each of the regions was, in turn, broken into areas each providing for a population of 15 to 80 thousand persons and with a health center at its nucleus supporting a series of health posts and community workers called *brigadistas* providing outreach services. The central level was responsible for the development of norms and overall program development and evaluation, while the regions, with the hospitals and health areas under them, became responsible for program implementation.

c. Community Participation

The following excerpts are from Garfield and sketch out in broad strokes the development of community participation in health, a widely recognized success of the Sandinista government.

"The first organized activities involved food distribution and the most successful vaccination campaign in the nation's history, achieving 70% coverage against polio in some areas. Adapting the 1980 National Literacy Crusade model, MINSA trained 100 health educators, then 1,000 multipliers, and finally 30,000 health volunteers, called *brigadistas*. The *brigadistas* made house-to-house visits and gave small-group talks to educate and motivate their neighbors in health matters. In a little over a year, thousands of health volunteers were active in

neighborhoods throughout the country.

"In July 1980 the Government established People's Health Councils in order to 'mould the aspirations of the people into concrete programs' and 'channel the activities and concerns of the people in a coordinated manner'.

"The first health councils consisted only of representatives of community organizations. The most important of these were neighborhood associations known as Sandinista Defense Committees (CDS). Also active were the national women's organization (AMNLAE), the farm laborers' union (ATC), the workers' union (CST), the teachers' union (ASN) and the health workers' union (FETSALUD).

"Councils were established at local, regional and national levels to parallel official MINSA structures. The councils took responsibility for organizing campaigns known as 'People's Health Days' to combat particular health problems. In 1980, for example, an estimated 30,000 volunteers took part in a series of Health Days focusing on polio, measles, dengue and environmental sanitation.

"In 1981, the councils mounted four major campaigns: a campaign against polio and measles, and environmental sanitation campaign, an anti-dengue campaign, and - most ambitious of all - an anti-malaria campaign involving about 200,000 voluntary workers."

d. Campaign for the Defense of the Life of the Child

The next major step was in 1988 with the launching of the campaign for the defense of the life of the child. Behind the birth of this campaign was the realization that the war and the country's economic situation was going to gradually erase the significant gains of the post-revolutionary years unless strenuous efforts were made to prevent that from happening. The campaign focuses on children under the age of five and pregnant and lactating women. The strategy prioritizes services to the maternal child group, emphasizes preventive actions, increases social mobilization and community participation, involves diverse sectors of the society and uses rigorous epidemiologic methods to "microlocalize" health problems.

e. Resolution 75 and "Municipalization"

The last major structural or programmatic adjustment was that brought about through the adjustment of the regional structure mentioned above. A governmental decision had been made to make the

municipality the basic unit of government. Ministerial Resolution 75, published in 1989 broke the area administrative units into municipal sub-units with the structure as discussed below. Of importance was the understanding that these municipal units would coordinate activities with and, in a sense, become part of the municipal government and its activities.

B. Organization of the Health System

1. Management

a. Central Level

The Central level consists of support and administration offices and technical offices. The former includes the General Directorate of Planning; the General Directorate of Economics; the General Secretariat and Auditing. The first of these is responsible for planning and institutional development of the Ministry. The General Directorate for Economics is responsible for investment planning, accounting, budgeting and personnel planning. There are four technical offices: The General Directorate of Medical Care, the General Directorate of Hygiene and Epidemiology, the General Directorate of Training and Research and the General Directorate of Technical and Material Supplies.

The MINSA General Directorates are responsible for the planning, guidance and supervision of activities under their jurisdiction at the national level.

b. Regional

At the regional level the country has been divided into nine administrative units - six regions and three special zones. The regions are in the western part of the country and the zones in the east. Under the Sandinista government the highest authority at the regional level was the Delegation of the Presidency, presided over by the Delegate of the Presidency who was directly responsible to the President of the Republic. The Delegation coordinated development plans and investments at the regional level. It is not yet clear if this same structure will be maintained by the current government.

The ministries, including MINSA, have regional offices at the regional level, and they are directly controlled by the ministries, being a parallel organization to the Regional Delegation of the Presidency.

MINSA regional offices have fairly similar departments as MINSA national level. The directors of these departments have official and unofficial coordination and planning meetings with the directors of national and operational levels. Furthermore, the MINSA Regional Director works in close liaison with the regional

delegate of the Presidency to ensure overall coordination and integration of health activities with other sector activities. The regional Delegate of the Presidency has great impact upon the regional activities of MINSA in issues of policy and prioritization, whereas MINSA headquarters controls programming, organization and financial issues.

To ensure regional coordination the Delegate of the Presidency presides over regional commissions which normally include a social commission, an industrial and an agricultural commission. The MINSA regional director is a member of the social commission, the other members being the social welfare (INSSBI), education and labor directors. The role of the social commission is to define regional social policy, integrate the activities of different sectors, define priorities and to formulate strategies for unexpected and special problems.

The government started a thorough-going decentralization process in 1982. As a result of this process, the regional and municipal levels have been strengthened with an overall aim of delegating sectorial activities to the jurisdiction of regional and municipal administration.

c. Area

Each region is broken into a number of areas - an average of ten to fifteen per region. The areas are, in turn, broken into one or more municipalities, each of which has a health center in the municipal capital and a number of satellite dependencies including health posts, medical posts, base houses and *brigadistas*. (These are discussed below). The purpose of the health area, according to Resolution 75 is to direct and coordinate the actions of the municipal health services in its area. The area director administers the financial, material and human resources assigned to the area by the regional level, supervises and supports the municipal health programs, assures the distribution of resources to the municipal level and is responsible to the regional level. The area director is supposed to be supported by a technical team which includes an epidemiologist, a nurse supervisor, a administrator, a statistician and an educator.

d. Municipality

The last major adjustment to the structure of the health services management system was Resolution 75 titled "Organization of the Primary Health Care" dated June, 1989. The essence of the resolution was the creation of the municipality as the principal and basic unit of health care management in the country. This was, apparently, part of an overall governmental effort to decentralize governmental operations, putting decisions into the hands of local authorities. In general there is a health center in each municipal capital, and with the publication of Resolution 75 that health

center took on management responsibilities which it did not previously have. These activities not only include MINSA specific financial, personnel, supply and supervision activities, but also include coordinating actions with the municipal authorities and local community, labor union and grass roots organizations. An effort was made in some regions to have the municipal government involved in or responsible for the naming of the municipal health director. There is some uncertainty as to the degree with which the new government will support, continue and/or extend this process.

2. Operational Level

a. *Brigadista/Partera*

In every community there are *brigadistas* and traditional birth attendants (TBA's). The *brigadista* is a volunteer chosen by the community to serve as the MINSA's extension agent in that community. The *brigadista* goes through a series of training programs and is supervised by auxiliary nurses. The *brigadista* manages oral rehydration salts, cooperates in the vaccination campaigns, helps identify newborn children and pregnant women for health unit personnel and serves as a health education agent in his/her community.

b. *Casa de base*

The *Casa de Base* is a home volunteered by one of the *brigadistas* in the community to serve as a health unit at the community level. The *casa de base* is provided by MINSA with certain basic equipment and should be visited at least once per month by a MINSA physician who sees patients and carries out health education. The development of *casas de base* is not complete.

c. *Puesto de salud*

The health post is the lowest level operated by MINSA. It is staffed by one or more auxiliary nurses and operates each of the programs discussed above. Each post has a defined geographical area and is responsible to the municipal health director. Most health posts have refrigerators for maintaining vaccines. In the absence of a refrigerator, personnel bring vaccines from a nearby health center on a regular basis. The health post supervises the community agents in its assigned territory. Physicians visit certain of the health posts (*Puesto de salud A*) on a regular and periodic basis. All personnel program regular, weekly visits to the community. When treatment of a patient surpasses the skills or resources available at the health post, the patient is referred to the health center or hospital. In general each health center has an ambulance assigned for this responsibility. The auxiliary nurses handle basic medications such as antiparasitics, several classes of oral antibiotics and procaine penicillin (parenteral),

aspirin and ibuprofen and antispasmodics.

d. *Puesto Medico*

The medical post operates the same programs as those of the Health Post, but has full time medical personnel.

e. *Centro de Salud*

Health centers are defined as units with permanent medical and nursing staff, dental services, pharmacies, a laboratory and, occasionally, radiological services. They are reference centers for health posts and medical posts and are generally located in municipal capitals. Health Centers are classified as type "A" if they have a complement of pediatric, ob/gyn and internal medicine specialists and as type "B" if they are staffed only by generalists.

f. *Primary Hospital*

A primary hospital, formally known as a health center with beds, is a health unit with 10 to 80 beds without regular surgical services, but with basic laboratory, radiological, dental and pharmaceutical services. A type "A" primary hospital has medical specialists and a type "B" is staffed exclusively by generalists.

g. *District Hospital*

District hospitals are general hospitals with basic medical and surgical services. They serve as reference points for health centers and are generally located in departmental capitals and larger cities.

h. *Regional Hospital*

Within each region one of the secondary level hospitals is assigned as the regional hospital. They have access to a broad range of sub-sub-sub-specialists.

i. *National Hospitals*

Several hospitals on Managua are national level hospitals with specialty services. These include Berta Calderon - maternal, ophthalmological and oncological services, La Mascota - children's hospital, Lenin Fonseca and Vellez Paiz - general medical-surgical services among others.

3. Infrastructure

	1977 (1)	1980 (1)	1981 (1)	1986 (2)	1988 (4)	1989 (3)
Hospitals			31	31	28	30
Health Center c beds			13	19	21	24
Health Center s beds		99	89	89	87	78
Medical Posts						102
Health Posts		267	368	379	468	541
Base Houses						163
Total Primary Care	172	366	460	487	576	908

(1) Orellana

(2) Roemer

(3) Tables, Dr. Valdez

(4) Plan de Salud 1988-1990

4. Grass roots organizations

There are some grass roots organizations which have impact particularly at MINSA regional and operational levels. The most important traditionally has been the Sandinista Defense Committees also known as the Community Movement. Although the CDS is identified with a number of controversial activities unrelated to MINSA, it has been instrumental in the vaccine campaigns. The committee members are elected in open elections and represent the village before the authorities. Participation of women in the village committees is relatively high. In some regions the committees cover 70% of the population. The CDS in each community named a person responsible for health activities who interacted with *brigadistas* and *parteras* and assured community mobilization.

The women's organization AMNLAE (*Asociacion de Mujeres Nicaraguenses Luisa Amanda Espinoza*) has offices in most regions. The women do not affiliate, but participate voluntary in the activities arranged by the promoters. The main activities are organizing mothers of soldiers and working women in the urban areas.

C. Finances

The following chart shows investment in the health sector by the central government in constant 1980 dollars, as percentage of the national budget and in per capita terms:

	80	81	82	83	84	85	86	87	88	89
MINSA Budget in 1980 US\$ millions	70	123	143	117	116	130	150	162	147	91
% of Nat. Budget		13% (1)	11% (1)	8% (1)	7% (1)	8% (1)	11% (1)	9% (1)	11% (2)	14% (2)
% GNP	3.2%	5.1%	6.2%	4.9%	4.9%	6.0%	7.0%	7.8%		
US\$ per capita	25.7	43.7	50.0	38.7	36.6	39.5	44.4	46.5	40.7	24.3

(1) MINSA, Plan de Salud 1988 - 1990

(2) FINNIDA

(3) Garfield

MINSA's access to foreign exchange has fluctuated between \$30 and \$60 million per year since 1980 and until 1989 when it reached a new low of around \$5 million, having steadily declined since 1985. Over the last eight years the Ministry of Health's budget has been approximately distributed in the following fashion:

Personnel.....	30%
Non-personal services.....	10%
Materials and supplies.....	40%
Investment.....	15%
Transfers.....	5%

Annex B gives the distribution of these categories since 1982.

D. Human Resources

As of January, 1990 MINSA had 22,222 persons on the payroll. Of these 2202 are direct service physicians, and 34% of those are specialists. 26.6% of the labor force are direct service nurses (Evaluation, 1990)

NUMBER OF SELECTED PERSONNEL PER 10,000 POPULATION

	1977 (3)	1982 (1)	1983 (1)	1984 (1)	1985 (1)	1986 (1)	1987 (1)	1988 (2)
Doctors	5.2	6.7	6.80	6.90	5.25	5.15	5.40	5.50
Dentists	2.4	0.65	0.76	0.70	0.76	0.84	0.79	0.75
Nurses	2.0	2.70	3.90	4.00	2.80	3.20	3.30	3.24
Aux. Nurses		14.00	14.00	13.80	12.50	11.90	11.10	11.33

(1) UNFPA, p 40

(2) FINNIDA, 8

(3) Junta del Gobierno de Reconstrucion, 1980

E. Efficiency Measures

EFFICIENCY MEASUREMENTS

	78	80	82	84	85	86	88	89
Medical vis. per capita	1.0	1.8	2.1	1.9	1.7	1.8	1.7	1.7
Prenatal coverage			89.1					
Hosp. Disch. per bed/yr.	28.9	38.1	41.3	39.7	40.7	43.8	50.3	51.6

(1) Plan de Salud, 1983

IV. Donor Response

A. PAHO

PAHO is working with MINSA to establish a Five Year Master Plan, 1991 - 1995. The Master Plan has four key areas:

1. Policy and Organizational Development. This includes management and administrative development, Management Information Systems, the Referral System and the Development of the municipal Health System.

2. Physical infrastructure, installed capacity, critical supplies (medications and disposable materials) and equipment.

3. Finances.

4. Inter-sectorial relations.

There is a wide range of activities and projects being managed by PAHO. These include:

Maternal and Child Health. This is a \$6.2 million project financed by UNFPA (see UNFPA below).

Development of the Autonomous Region of the North Atlantic. This is around \$4 million financed by Norway. The project calls for the integrated development of the health system in that region and includes the construction of a hospital, health centers and health posts, the maintenance of health facilities, training, a water system for Rositas and basic sanitation. (See Norway below.) advisor.

Rehabilitation of Handicapped. This project is financed by the government of Finland at around \$3.5 million and began this year (1990). The purpose is to develop the country's national rehabilitation system. The project is linked with the demobilization of the Nicaraguan Resistance. (See Finland below.)

Hospital Maintenance Project. This \$4 million project is also financed by Finland. The project will attempt to strengthen maintenance workshops, improve the technical capacity of technicians and purchase critical equipment and spare parts. (See Finland below.)

Human Resource Development (PASCAP). PAHO, through PASCAP in San Jose, Costa Rica finances a human resources advisor in Managua. This is part of the strategic development of health personnel program and is particularly oriented towards developing leaders and managers of human resource development programs within the Central American ministries of health.

Human Resource Development (UNAN). Dr. Fabio Salamanca heads up this program designed to develop university level health sciences professors. The *Universidad Nacional Autonoma de Nicaragua (UNAN)* received little support in the last ten years. This project will train professors in those areas where there are few or none and will strengthen the *Centro de Investigacion y Estudios de Salud (CIES)*, Nicaragua's school of public health, and also strengthen the municipal *docente/asistencial* program. In the municipal *docente/asistencial* program the university, with its teachers and students, assumes responsibility for the provision of integrated health care within a defined geographic area of one or more municipalities.

Development of Health Services. This program aims at extending coverage, developing the health system and improving the management

information system.

Expanded Program of Immunizations. The high degree of community participation has been the principal reason for the jump in immunization coverage levels over the last decade. Funds come from the sub-regional project.

Diarrhea and Acute Respiratory Infection Programs. The ARI program is financed by WHO/Geneva and provides \$1 million for improving diagnosis and training. The diarrhea program is being implemented in collaboration with UNICEF and is aimed at improving the community level oral rehydration units.

Tropical Diseases. There are two frontier malaria projects financed by Sweden and budgeted at around \$4 million. The purpose of the projects is to allow Nicaragua to program coordinated activities with Honduras, on one hand, and with Costa Rica, on the other. The activities include spraying, treatment of patients, source reduction, equipment and epidemiological activities. The project is going to expand into implementation of local health programming across the frontiers.

Essential Medicines. There are two major activities under this project. The first is the *Fondo Rotatorio de Medicamentos*, a joint essential drugs purchasing program of the central American countries. The other component is the development of the national medication production capacity. It is a dynamic project which needs additional funding. Funds currently come from PAHO/Washington.

Instituto de Nutrition de Centro America y Panama (INCAP). INCAP has five advisors in Nicaragua and all of its major activities are being conducted in Nicaragua. These include food technologies, therapeutic diets, breast feeding, weaning foods, growth and development, etc.

Women's Health and Development. Norway is also financing this project managed by Isabel Turcios.

AIDS Control. WHO/Geneva provides the funding for this project aimed at strengthening the national capacity for diagnosing for AIDS, improving blood banking security, promoting the use of condoms for prevention and community education with respect to AIDS. Dr. Norman Jiron is the PAHO project manager.

Health and the Environment. This is also a sub-regional project with Dr. Jorge Jenkins, stationed in Nicaragua, as the sub-regional project advisor. The project is oriented toward environmental actions that impact on health such as protecting drinking water basins, garbage disposal, etc.

Assistance to the Nicaraguan Resistance. This project has had

several phases. The first was that of performing medical examinations on the demobilized soldiers. In a matter of two months they examined 20,300 resistance soldiers in 9 demobilization centers. They are now examining family members who are repatriating, some 6,500 to date. Over 40 persons have been involved in this process. Now they are assisting MINSA in establishing a health system in the *Polos de Desarrollo* where resistance members are being settled. Dr. Henry, one time medical director of the Resistance, is now the PAHO advisor. One hospital has been established in Rio Blanco and a second will be established at an as yet undesignated location. There are some \$1.5 million from the OAS and the US Department of State for this project. Dr. Linger states that additional funds will be needed.

B. UNICEF

UNICEF is currently seeking financing for \$6,000,000 over four years for support of primary health care materials to cover the 3,700,000 Nicaraguans. The core of this project, which has government approval, is to reinforce the health system by selling medications. Oral Rehydration Salts and vaccines will continue to be free, but the rest will be sold. Purchases will be made through UNIVAC. UNICEF has also been assisting the local firm SOLKA in the production of ORS, which should begin in May, 1990.

UNICEF supports the immunization program through the provision of vaccines, cold-chain equipment, training of the *brigadistas populares*, training of TBA's, support of physician training, the purchase of medications and technical assistance.

Support is also provided to the Diarrheal Disease Program through assisting in the local production of ORS, considered to be the cornerstone of the program. They also provide packages of salts, train workers and provide support for health education by training and supplying "brigadistas", TBA's and health workers.

UNICEF also funds an integrated rural development program. The program has two components, the extension of basic social services such as water, education, health, etc. and increased food intake through increased food production. The methodology depends on the collection and critical analysis of community information by community organizations for the purpose of making decisions. In the area of education the project focuses on literacy and primary education. UNICEF provides TA, school furniture and training of the popular teachers, who are chosen by the community. Once they have returned to the community these teachers enter the "professionalization" program. The agricultural program tries to assure food self-sufficiency. UNICEF provides training in accounting and marketing and also provides seeds and farm implements. The program has been successful in increasing production, but has encountered some problems in marketing. The water and sanitation program tries to provide access to water

through dug or drilled wells and latrines. Hygiene is a major problem in Nicaragua.

UNICEF also works in the area of policy dialogue. They advocate economic policy with a human face and the existence of a social "safety net".

C. United Nations Fund for Population Activities

UNFPA currently has six projects in Nicaragua. They have a \$6 million Maternal and Child Health Project financed by funds from Finland and Norway and being implemented through PAHO. Dr. Ivan Tercero is the Project Director. UNFPA's actions are limited to effecting purchases of equipment and contraceptives. Some \$500,000 was expended for the project in 1989. The project is based around improving MINSA's capacities for identifying and impacting on risk factors which lead to increased maternal and infant death. Training, both in-service and longer term, overseas is a major component. Training areas include health service management, prenatal care, traditional birth attendants, information systems, health promotion, sex education and detection of cancer. Those who are trained overseas are often responsible for the in-service education of their comrades. A second component is that of procurement. Among items being procured are ambulances, boats, medicines (including oral contraceptives, IUD's and condoms), surgical equipment and anti-tetanus vaccines. A third component is personnel. Finally a number of interesting investigations are being financed. These include studies of maternal mortality, abortion, male attitudes towards family planning, epidemiology of uterine cervical cancer, knowledge, attitudes and practices of maternal and child health and family planning, and the level of efficiency in the health services.

A second project, largely completed, is the Socio-Demographic survey, carried out in 1985 by the *Instituto Nacional de Estadística y Censo* (INEC) and published in four volumes.

A third project, also being carried out in conjunction with INEC, is that of the census. The country's last census was in 1971 and, according to Lic. Lavinia Belli, UNFPA Program Officer, was almost immediately made obsolete by the 1972 earthquake. UNFPA has assisted the government in preparing a detailed budget and plan for carrying out a census. In addition UNFPA has promised one-half of the \$8 million needed to conduct it.

The UNFPA also carried out a population education project with the Ministry of Education. The project introduced basic population themes in primary and secondary level text books and had trained teachers and parents. That project was completed in December, 1989 at which time a follow-up project was designed. The follow-up project was to have amplified certain of the topics in the lower level texts and to have introduced population topics into the pre-

university level. However, with the Ministry of Education's decision to abandon the textbooks developed under the previous government, the follow-up project has been put on hold. Of the \$600,000 budgeted for the project, \$50,000 will be used to reformulate it.

Another project provides some \$600,000 for sex education. The previous government requested an inter-institutional sex education program. That project is also currently on hold until the new government signals its intention to go forward with it.

The Population and Development Project is also on hold. The \$700,000 were budgeted to assist in the formulation of population policies. Under a previous project UNFPA had financed an activity in which all sectors of the society participated in identifying problems and issues and generating solutions with regard to population and women's themes. The Population and Development Project was designed to assist the various Ministries in the formulation of policies which would permit the solutions to be implemented.

D. World Food Program

The World Food Program provides \$19 million in donated food which is being used in eleven health areas and will eventually benefit approximately 11,000 families.

E. Bilateral Assistance

A number of countries are currently assisting Nicaragua. Among them are the Government of Japan which is providing 50 four-wheel drive ambulances and milk. The powdered milk will go for children under the age of two and nursing mothers. Some 15% of the funds for the ambulances will be for spare parts for the donated ambulances and for others which are currently out of commission. The total amount donated will be \$9,000,000 for the milk and \$2,000,000 for the ambulances.

The Scandinavian countries are financing an integrated project in Special Zone 1 which includes health (rehabilitation of infrastructure, tuberculosis treatment, CDD, MCH, health education and training). There will also be a potable water component to the project. The project will last five years and begin slowly, increasing pace as the GON shows its capacity to implement. The project is complex and the area is very underdeveloped.

These same countries are assisting in a vector control project along Nicaragua's two frontiers. This project is principally financed by Sweden and Finland. Activities include spraying, larvaciding, insecticide, per diem, equipment, vehicles, motorcycles, bicycles, medication, laboratory equipment, training, etc. The Nicaragua/Costa Rica border is being financed by Sweden

(\$300,000 for 1990) and the Nicaragua/Honduras border by Finland (\$400,000 for 1990). There is no external financing for vector control in the rest of the country.

Norway has four bilateral projects which are all being technically managed by PAHO. One is Women, Health and Development, a regional project, and focused on training, women's issues policy formulation and women's legislation. Especially important in the \$385,000, three-year project which will last through 1991, is the participation of women in preventive health activities. A second project is centered on the urban areas of the North Atlantic Autonomous Region (RAAN). It is an ambitious project which emphasizes environmental sanitation. A third project, also regional in nature, is that of pharmaceutical production. Finally, there is a country-wide environmental project.

Finland is financing two bilateral projects in the health area - "Strengthening of technical, material, human and institutional Resources in hospital equipment maintenance" and "Rehabilitation of the disabled in Nicaragua". Both projects commence in 1990 and are scheduled for completion in 1993. The maintenance project is being implemented by PAHO and has a total budget of \$3,295,000 from Finnish sources. The Project is targeted at the Lenin Fonseca, Manolo Morales, Berta Calderon and Velez Paiz Hospital in Managua and the O. D. Rosales Hospital in Leon. The rehabilitation project, receiving \$2,728,000 from Finland will strengthen MINSA's rehabilitation program throughout the country.

The Dutch government is financing maintenance activities and the basic medication rotating fund. The maintenance activity which began in 1980 and has expended approximately \$7.5 million is run by two Dutch experts and three highly qualified "cooperantes". It is especially for equipment and includes the purchase of spare parts, tools, technical assistance, training and the construction of maintenance facilities in the regions. The program is scheduled to end in November, 1990. The Dutch government is currently considering continuing it within the framework of a regional PAHO hospital maintenance project. The rotating fund activity has never been reimbursed by the countries, therefore Holland continues to simply provide the basic medications. The Dutch government anticipates putting increased emphasis of primary health care in its future assistance to the GON. They are preparing a five year project proposal for Region V which, it is expected, will have three main elements - improvement of infrastructure, formal nursing education and supply of medications. There are a number of smaller efforts also being assisted by the Netherlands and include the rehabilitation of the hospital in Bluefields, support to the gynecological branch of one of the women's organizations and funds to the *Medicos sin Fronteras* who are operating in the RAAN.

The Government of Italy is providing support to health services in Granada. Their program has two aspects. One is \$3 million for the

construction of one health center and the remodeling of a health post, providing water and latrines to one barrio, the construction and initial stocking of a popular pharmacy and an effort to strengthen the knowledge base of health practitioners through the provision of technical experts in various fields including pediatrics, psychiatry, and neurology. Fifteen million dollars in funds have been approved and plans are currently being drawn up for the construction of a Hospital in Granada. In the long term the Italian government will focus its efforts on the whole of Region IV. The Italian government is also putting some \$12 million into Bluefields for the construction of a water system and has \$3 million approved for the provision of medications and consumable materials for MINSA over the period of one year. PAHO is acting as technical coordinator for their activities.

The Canadian Government is financing two major efforts in water and sanitation. One is directly with the GON and involves the rehabilitation of water systems in Leon, Chinandega, Masaya, Granada, Jinotepe and Rivas. The project will begin in February, 1991 and last for four years with a total estimated cost of \$8.6 million of which Canada is providing approximately 70%. The second project is being financed through CARE and has budgeted \$4.3 million over five years for the provision of potable water, latrines and health education to 40,000 persons in Region VI. This is the continuation of a previous project in the same area and will begin in September, 1990 with a duration of five years. CIDA is financing a number of smaller projects as well with local funds of \$20,000 - \$25,000.

The Government of Spain is providing support in the formation of human resources. A Central American sub-regional project works with local institutions to train health professionals. In Nicaragua the Spanish Government supports the Centro de Investigacion y Estudios de Salud (CIES), the Nicaraguan School of Public Health, through funding for two courses for Central American health professionals. These two courses are "Health Planning and Local Programming" and "Training of Trainers in Public Health". Local institutions in the other Central American countries host other courses. Bilateral support also goes largely to CIES for remodeling of the school's facilities, *cooperantes* in biostatistics, epidemiology, health planning and investigation methodologies, technical assistance in health economics and scholarships for long term study in Spain. The government also manages a small emergency fund.

Assistance from the socialist block has largely been in extending lines of credit for the purchase of supplies and equipment. The Government of the Democratic German Republic built and, for many years operated, the well respected Carlos Marx Hospital in Managua. It is understood that with the merger of the two Germanies, the German Government will continue financial support to the hospital.

The German Democratic Republic financed and operates the Karl Marx Hospital in Managua. It is understood that the united German government will maintain that commitment.

The Soviet Union is currently negotiating a \$20 million project for the construction of a new hospital in Chinandega.

V. Private Sector Response

A. For profit

Private sector includes 7 hospitals and a number of individual clinics, offices, dental facilities, pharmacies and laboratories. (Plan de Salud 1988-1990)

B. NGO's

There are a large number of non-governmental organizations operating in the health area in Nicaragua. Time did not permit the author to open this line of investigation. The organizations come from both the United States and European countries.

VI. Analysis, Comments and Observations

A. General Considerations

1. General Evaluation of Sandinista System

The health system which has developed over the last ten years is far superior to the health system which existed under the Somoza government. As can be noted above it has achieved one of the highest levels of community participation in the region. It has achieved a level of administrative decentralization also unparalleled in the Central American sub-region. It has extended coverage and is the only Central American country to have eliminated polio from its territory. It has prioritized its resources in order to achieve maximum impact on the primary causes of infant, child and maternal health often at the expense of its secondary and tertiary hospitals - always a politically difficult task to accomplish. Despite the partial marginalization of the hospitals, they have achieved a notable decline in neonatal mortality rates in some of the hospital neonatal units. MINSA's epidemiologic surveillance system is actually used for program decisions at the regional, area and health center level. The fact that it has accomplished all of this while at the same time fighting a civil war is even more remarkable.

Unfortunately, the lack of any recent census or health survey data make it difficult to determine real levels of infant mortality, real health system coverage, prevalence of diarrhea and respiratory

infections, prevalence and duration of breast feeding, real contraceptive prevalence, etc. or there might be even more concrete evidence of health system impact.

One of the things that becomes apparent when one reads through MINSA documents and talk to MINSA officials is a strong physician preference in the health system. This is reflected in such things as the establishment of a goal early on in the revolution to have all births occur in hospitals by 1990 and by the relatively limited role of the auxiliary nurse in the Nicaraguan health system. That the Nicaraguan system seems to be more physician oriented than other systems in the region may reflect the fact that the country is more urban and that the population is very concentrated in the Pacific coast, making access to physicians much greater.

2. Policy Considerations

a. Service Charges

Health care in Nicaragua is not totally free. The most apparent example of this is the selling of medications in urban areas. Most health centers and medical posts in urban areas do not dispense medications but, rather, write prescriptions for filling in Popular Pharmacies. Prescriptions are filled free of charge for children, pregnant women, disabled and retired persons, but others must pay the cost of the medications plus a 25% service charge. The author is not aware of other service charges, but they may exist.

b. New government policies

The new government's policies are not yet defined but apparently include a cutback on physicians going to the rural areas and the establishment of three-tiered system of health care, including the establishment of private beds in MINSA hospitals.

c. Lack of statistical planning base

As mentioned above, war and economic hardship has made impossible the conduct of either census or health survey activities on a nation-wide basis. In all regions visited, MINSA personnel complained that actual populations are different from those which are the "official" statistics. The "official" data are based on projections done by the Latin American Demography Center (CELADE) based on the 1971 census. The entire planning and evaluation apparatus in Nicaragua is limited by the lack of very basic demographic and socio-economic data.

3. Other Factors

a. Current broad-based support

One of the unique resources of the Nicaraguan system is the breadth

of international support which it receives. This support is reflected in the number of bilateral and multi-lateral organizations funding activities, not only through the government but with a host of US, European and Latin private organizations.

b. Deplorable shortages

MINSA's needs are overwhelming. There are shortages of everything, deteriorated equipment, low salaries, resulting in rapid and frequent personnel turnover, etc. For example, of the 397 products on the basic medications list they were completely out of 105 products (26%) on June 27. Most hospital, health center and health post directors interviewed are experts in "hustling" donations. The Catholic Church is a major source for donated medications. Several health unit directors mentioned that consumable supplies shortages are often more critical than medications, because medications are more often donated than consumable supplies. Shortages also include laboratory reagents and radiographic supplies.

B. Program Specific Considerations

(See comments under individual programs.)

VII. Recommendations

A. Specific Recommendations:

1. Commodity Support

I think that this is a high visibility and high impact activity. Given ten years of Sandinista criticism of the US government I believe that it is important to reestablish AID's credibility and the commodity support is one way of doing it. I think that we can consider expanding it to include not just medications and medical supplies, but also vehicles, cold chain equipment, supplies for the dengue and malaria programs and some laboratory equipment. I would consider doing this for at least the first year or two of our program and only then begin to think in terms of a broader program with technical assistance and other elements.

Mechanism: ESF, PD&S, AID/W Buy-ins and Projects.

2. Family Planning

As noted in the report, Nicaragua has one of the fastest growing populations in the hemisphere and contraceptive prevalence is relatively low. This should probably be a private sector program because MINSA has its hands so full with other problems and priorities. Nevertheless, it should start up slowly so that we can test the waters and not overwhelm PROFAMILIA. Going through IPPF

would, perhaps, divert some of the attacks which an expansion of family planning activities is sure to elicit.

Mechanism: Funds to IPPF for PROFAMILIA.

3. Water and Sanitation

There seems to have been so little done in the last ten years in this field and coverage is so low, that it seems to call for attention. It would impact on the leading cause of infant and overall mortality.

Mechanism: Fund through PVO such as CARE

4. Census and/or DHS Support

Solid data is indispensable for planning purposes. One of the difficulties at present is the lack of any reliable census or national survey data. This is understandable for a country just emerging from the throes of a civil war, but it is the author's opinion that there would be considerable benefit from collecting such data at this time. These benefits include providing the country and donor agencies with information which will allow them to make priority planning decisions and providing a reliable data base for future evaluation purposes. UNFPA has taken the leadership in this area and USAID/N could complement UNFPA's activities relatively painlessly.

5. Individual Activity Support

The following is a short and illustrative list of some small activities which could be undertaken to support discrete activities until such time as AID and the GON are prepared to undertake a comprehensive health program.

- a. Vitamin A Study
- b. Breast Feeding Prevalence and KAP
- c. Dengue Control in Region III
- d. Cold Chain
- e. Host of AID/W projects
- f. PATH Assistance to SOLKA with start up of ORS production

B. General Recommendations

1. Establish Credibility and Good working relationships

Given the years of relatively unopposed anti-American publicity it is vital that USAID attempt to establish its credibility and responsiveness early on. That is one of the principal reasons for recommending the commodity drop.

2. Try to maintain other donors active

It appears that the absence of USG support and the economic blockade resulted in a influx of bilateral support far beyond that provided to any of the other Central American countries. It is in the country's best interest to try to maintain that broad-based support. That will require considerable sensitivity on the part of AID and the Embassy to not overshadow the fine work being done by other donors and thereby discourage their long term commitment to Nicaragua.

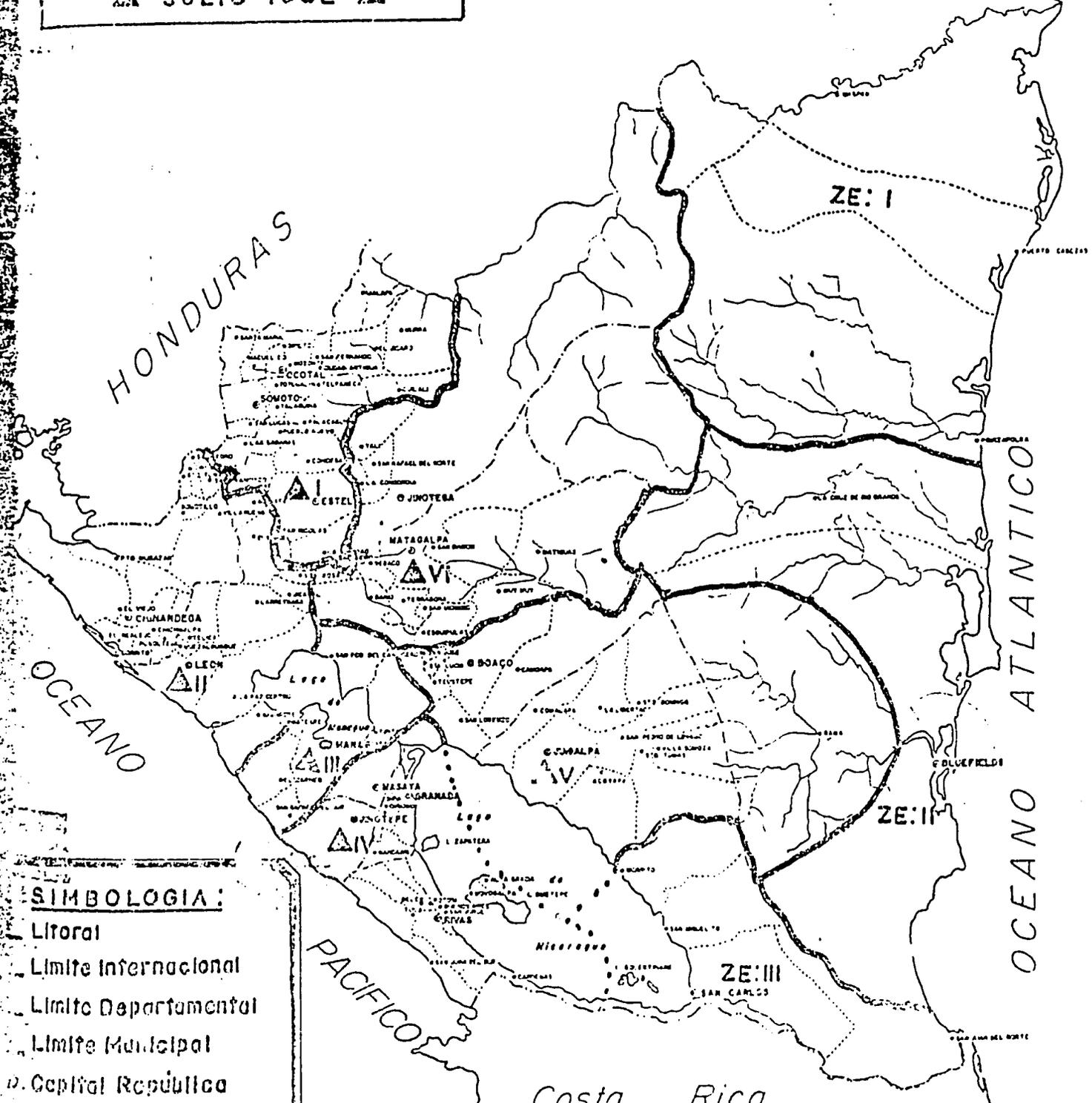
VIII. Annexes

- A. Map with Regions
- B. Dr. Milton Valdez' Tables/Graphs
- C. Resolution 75
- D. Interview Notes
- E. Bibliography
- F. Schedule
- G. MINSA Organizational Charts

ANNEX A
MAP OF REGIONS

REGIONES DE SALUD

▲ JULIO 1982 ▲



SIMBOLOGIA:

- Litoral
- - - Limite Internacional
- Limite Departamental
- _____ Limite Municipal
- Capital República
- ▲ Sede Regional
- Cabecera Departamental
- Cabecera Municipal

ANNEX B
DR. MILTON VALDEZ' TABLES/GRAPHS

ESTRUCTURA DE POBLACION POR GRUPO ETAREO POR AÑO. Cifras en miles
ESTIMACIONES DEL INEC.

AÑOS	<1 AÑO	1-4 AÑOS	5-14 AÑOS	15-34 AÑOS	35-44 AÑOS	50 Y MAS	TOTAL
1960	111.2	405.7	797.6	914.9	305.6	236.0	2776.0
1961	114.9	417.8	820.3	948.7	314.5	244.0	2860.8
1962	119.1	430.8	845.3	984.7	324.3	252.5	2956.7
1963	123.5	444.5	870.8	1022.4	335.2	261.5	3057.9
1964	127.3	458.3	898.4	1060.2	349.5	271.3	3165.1
1965	131.7	472.5	925.5	1100.3	364.5	280.6	3272.1
1966	134.7	485.3	955.1	1138.7	379.4	291.2	3384.4
1967	138.0	501.2	985.7	1179.7	395.0	301.6	3501.2
1968	140.6	516.0	1017.6	1220.7	414.0	312.7	3621.6
1969	143.2	530.5	1050.4	1262.8	433.9	324.2	3745.0

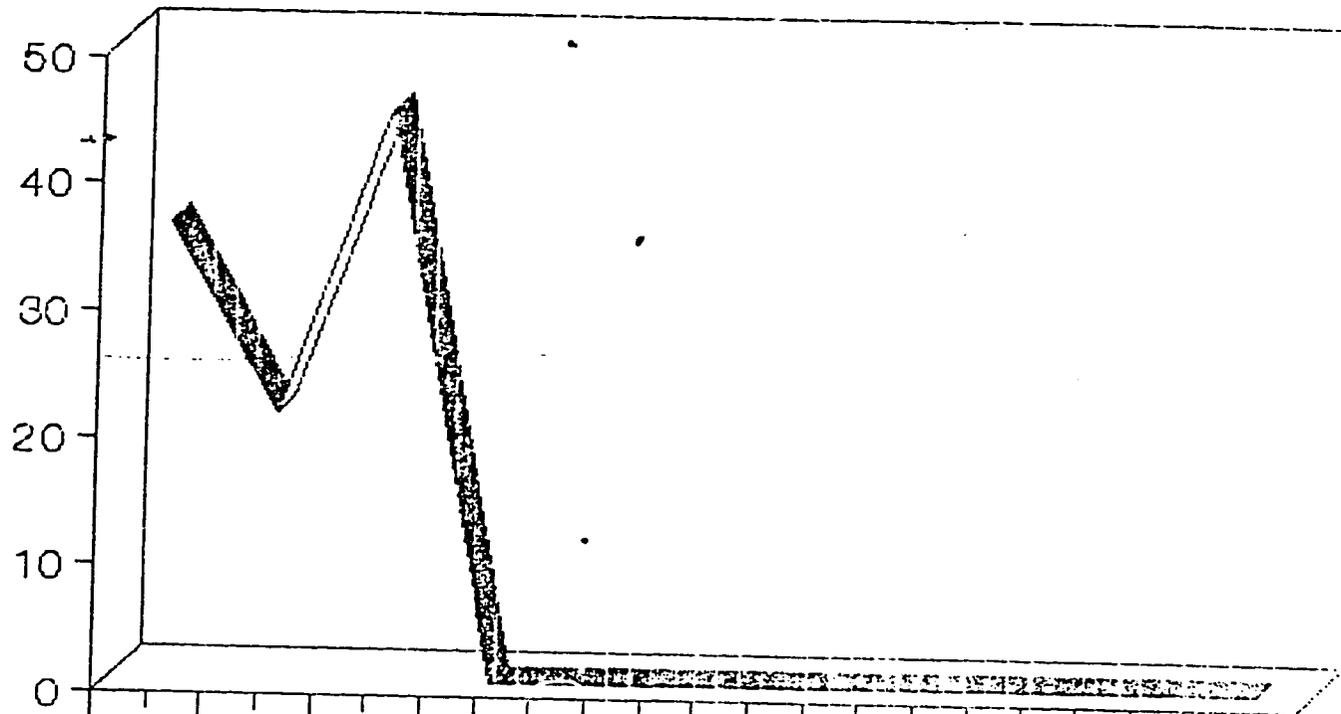
PRINCIPALES INDICADORES DEMOGRAFICOS
ESTIMACIONES DEL INEC.

AÑOS	T. MORTALIDAD GENERAL	T. MORTALIDAD INFANTIL	T. FECUNDIDAD GLOBAL	ESPERANZA DE VIDA AL NACER
1960	11.4	93.2	5.94	52.7
1961	11.1	88.2		53.7
1962	10.8	80.2		53.7
1963	9.7	75.2		53.7
1964	9.7	71.5		53.7
1965	9.7	73.4	5.50	53.7
1966	8.0	61.7		63.3
1967	8.0	61.7		63.3
1968	8.0	61.7		63.3
1969	8.0	61.7		63.3

CASOS REPORTADOS DE POLIOMIELITIS

1977-1989

CASOS REPORTADOS

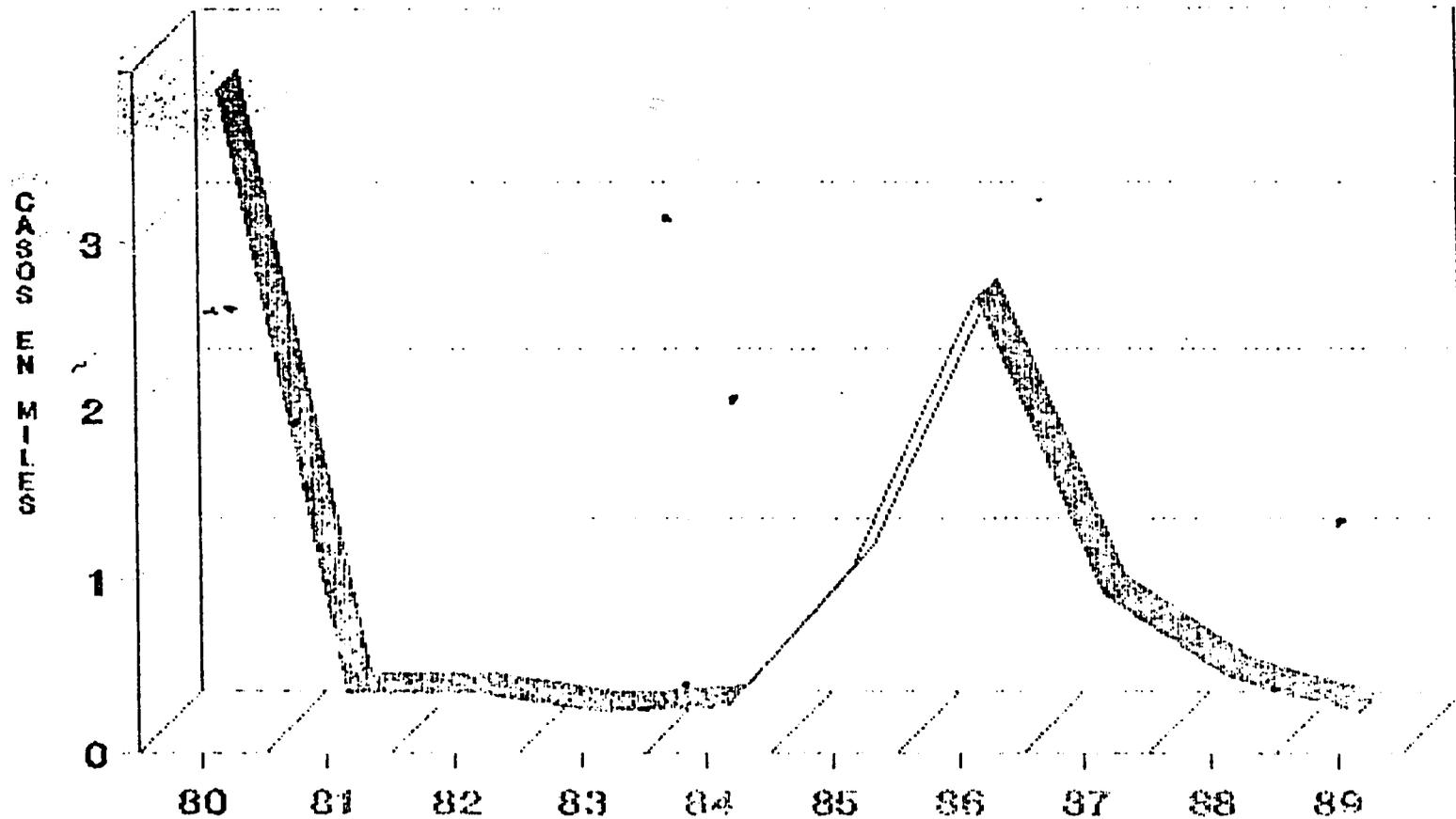


	77	80	81	82	83	84	85	86	87	88	89
POLIO	36	21	45	0	0	0	0	0	0	0	0

FUENTE: DINEI

50

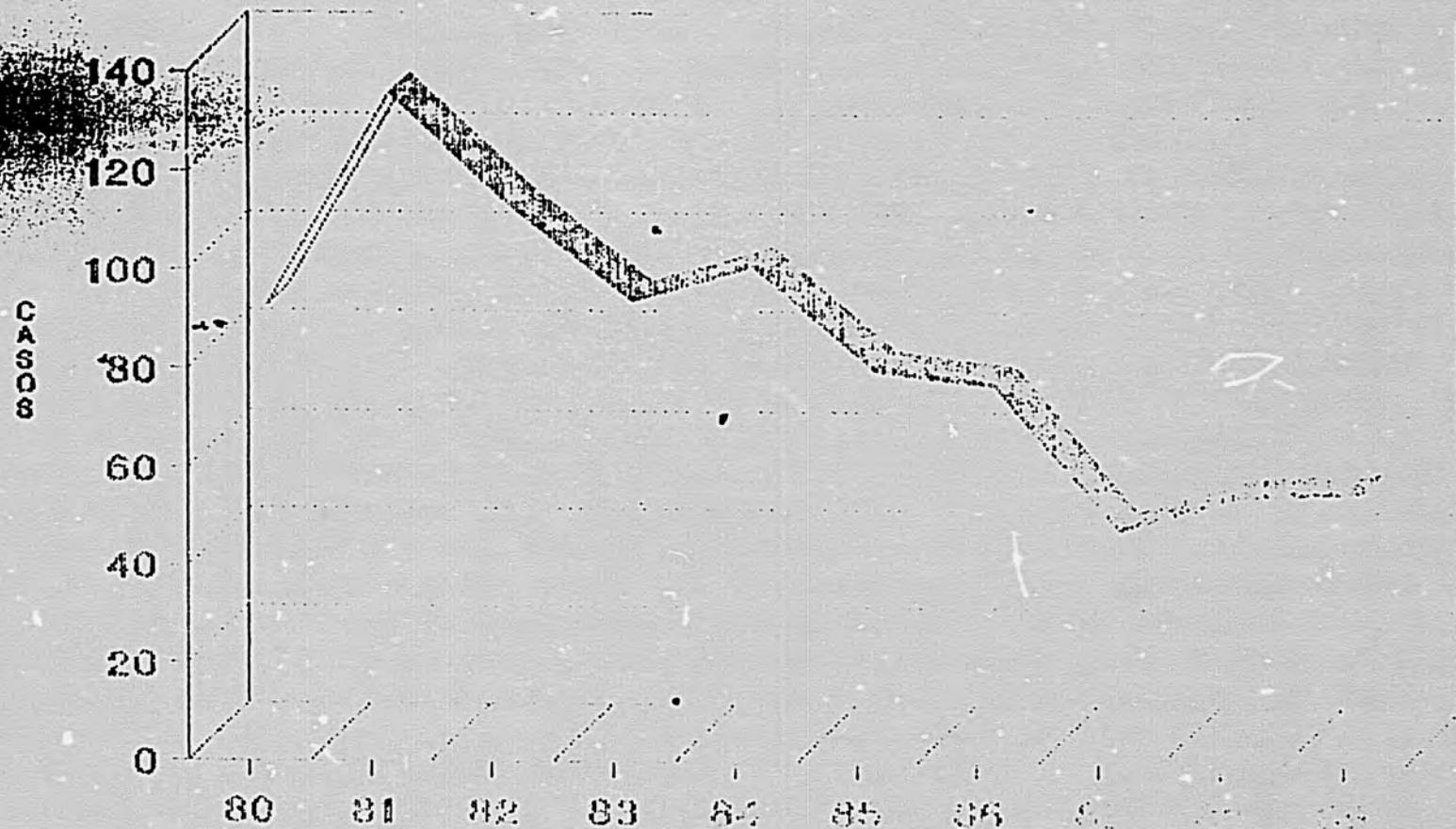
CASOS DE SARAMPION 1980-1989



CASOS

FUENTE: DINEI

CASOS DE TETANOS 1980-1989

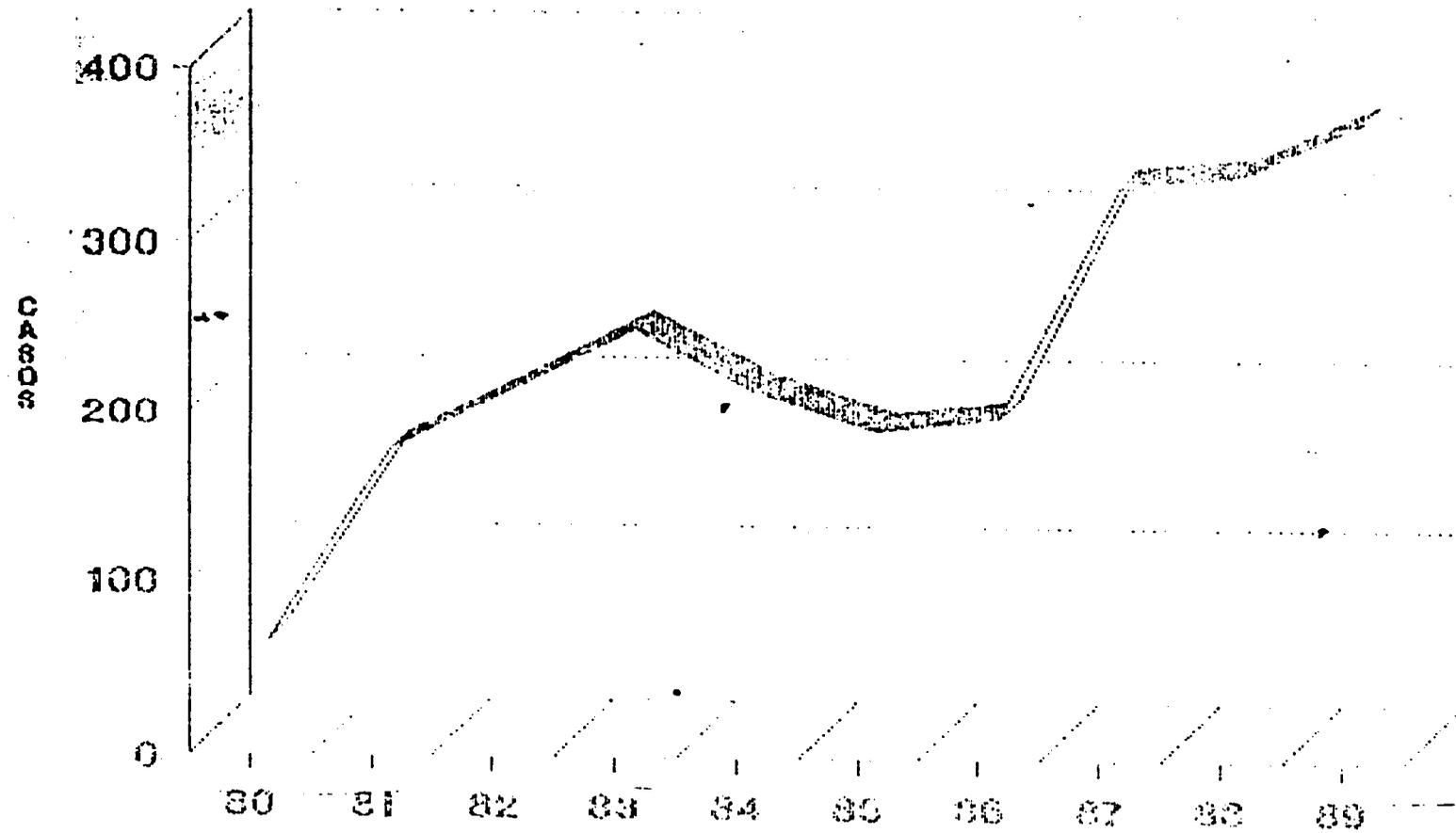


EL CASOS

FUENTE: DINEI

52

CASOS DE PAROTIDITIS 1980-1989

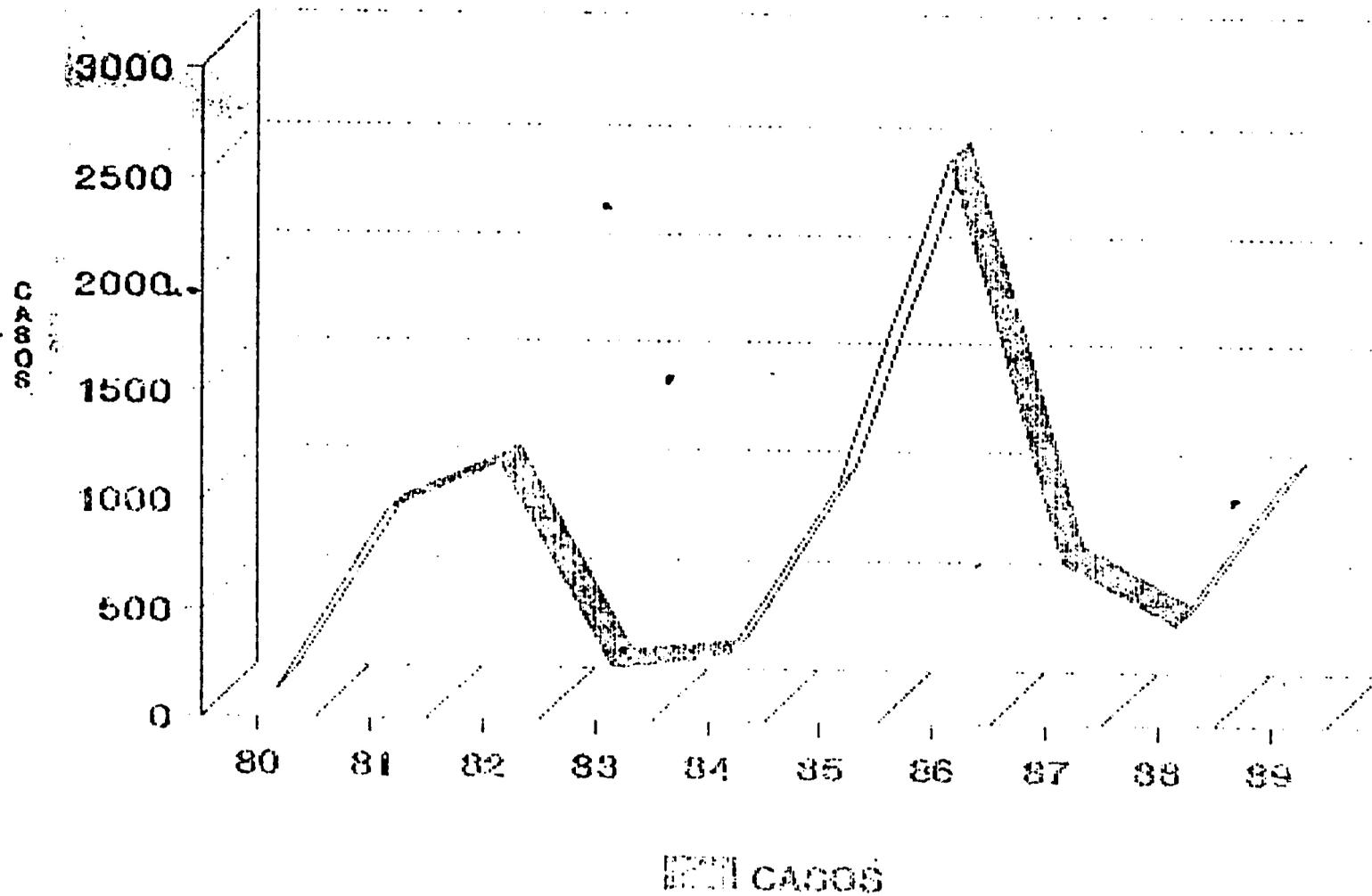


CASOS

FUENTE: (1)

63

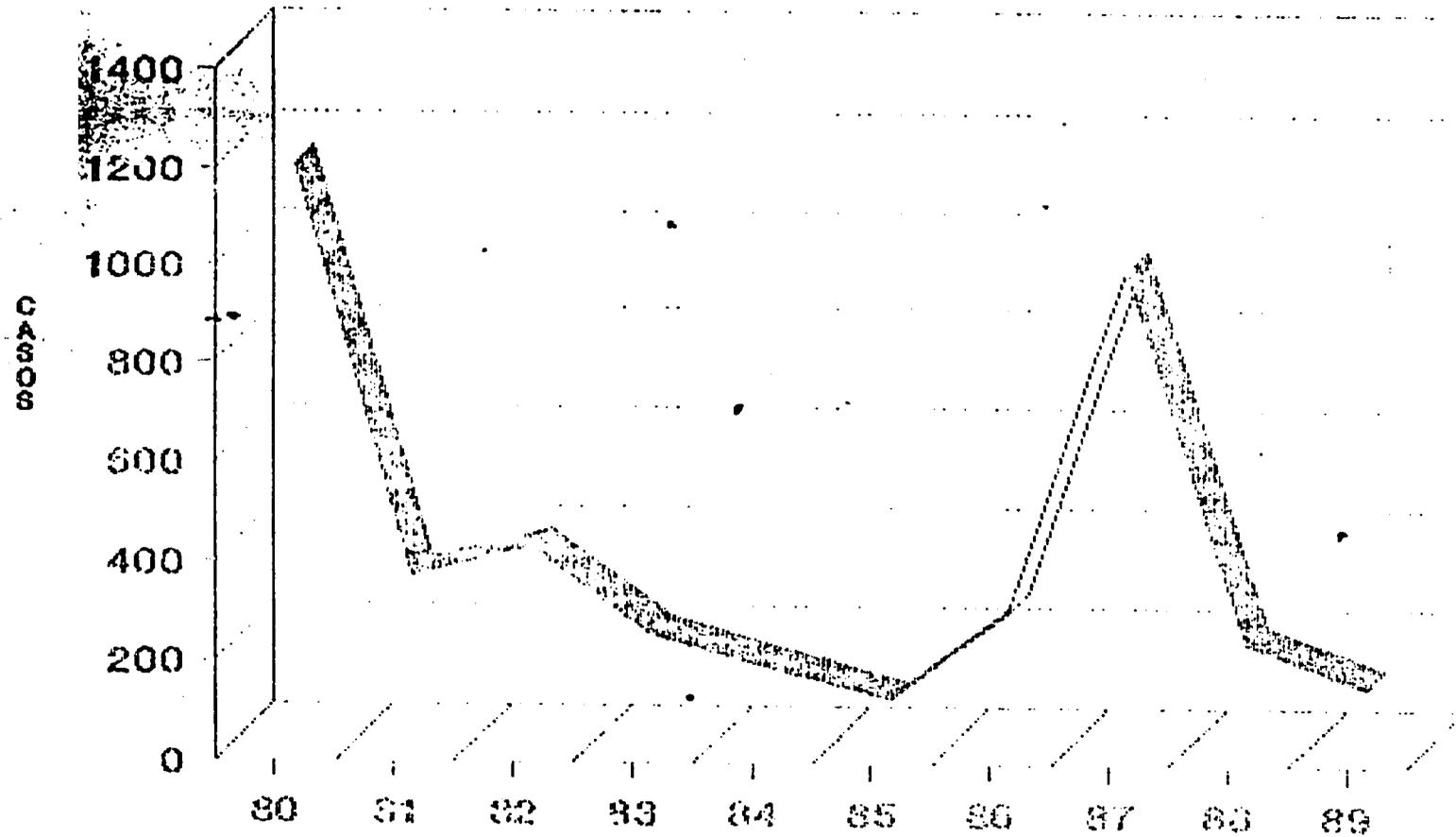
CASOS DE RUBEOLA 1980-1989



FUENTE: INCI

54

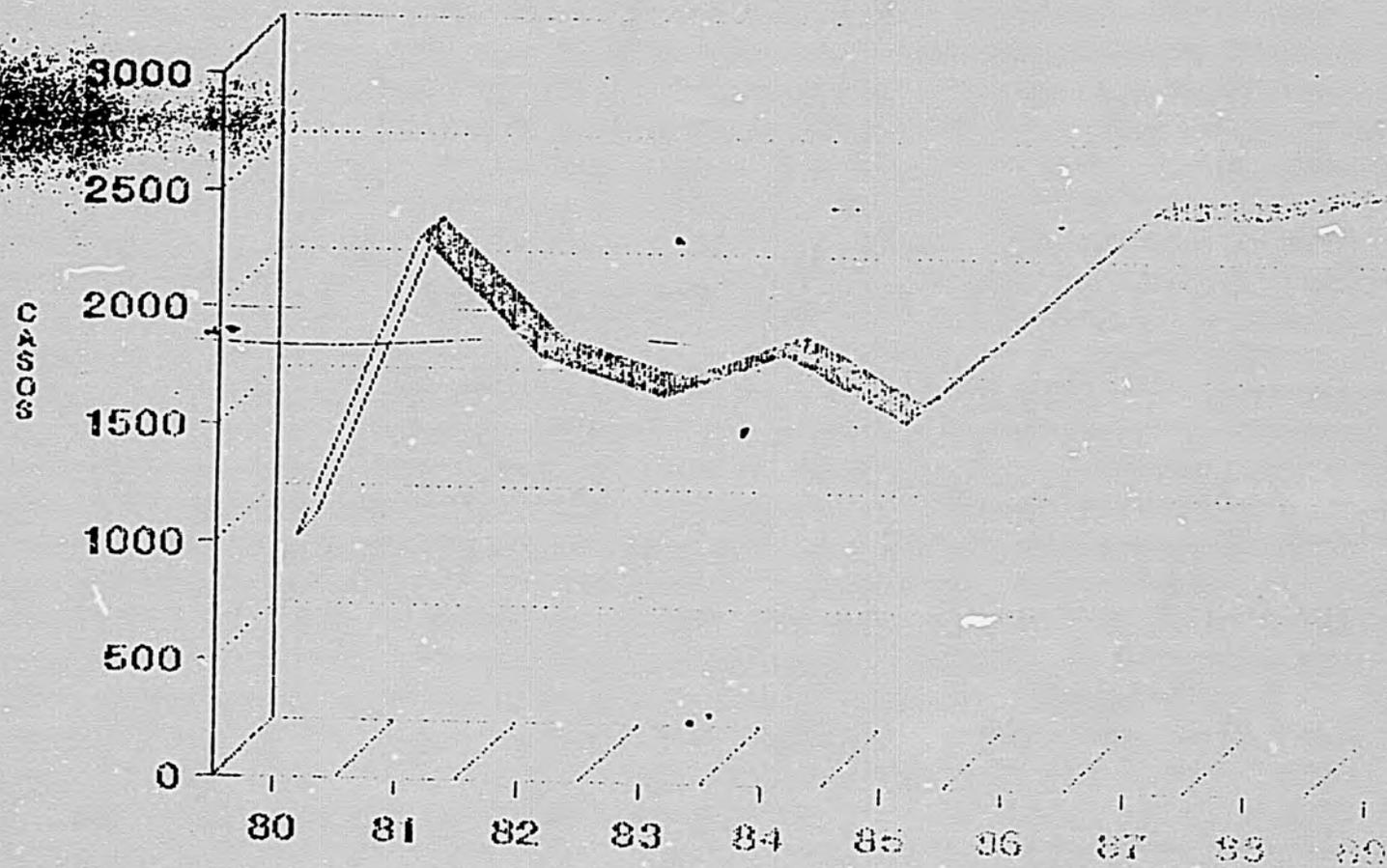
CASOS DE TIFOIDEA 1980-1989



TOTAL CASOS

FUENTE: DIME

CASOS DE TUBERCULOSIS 1980-1989

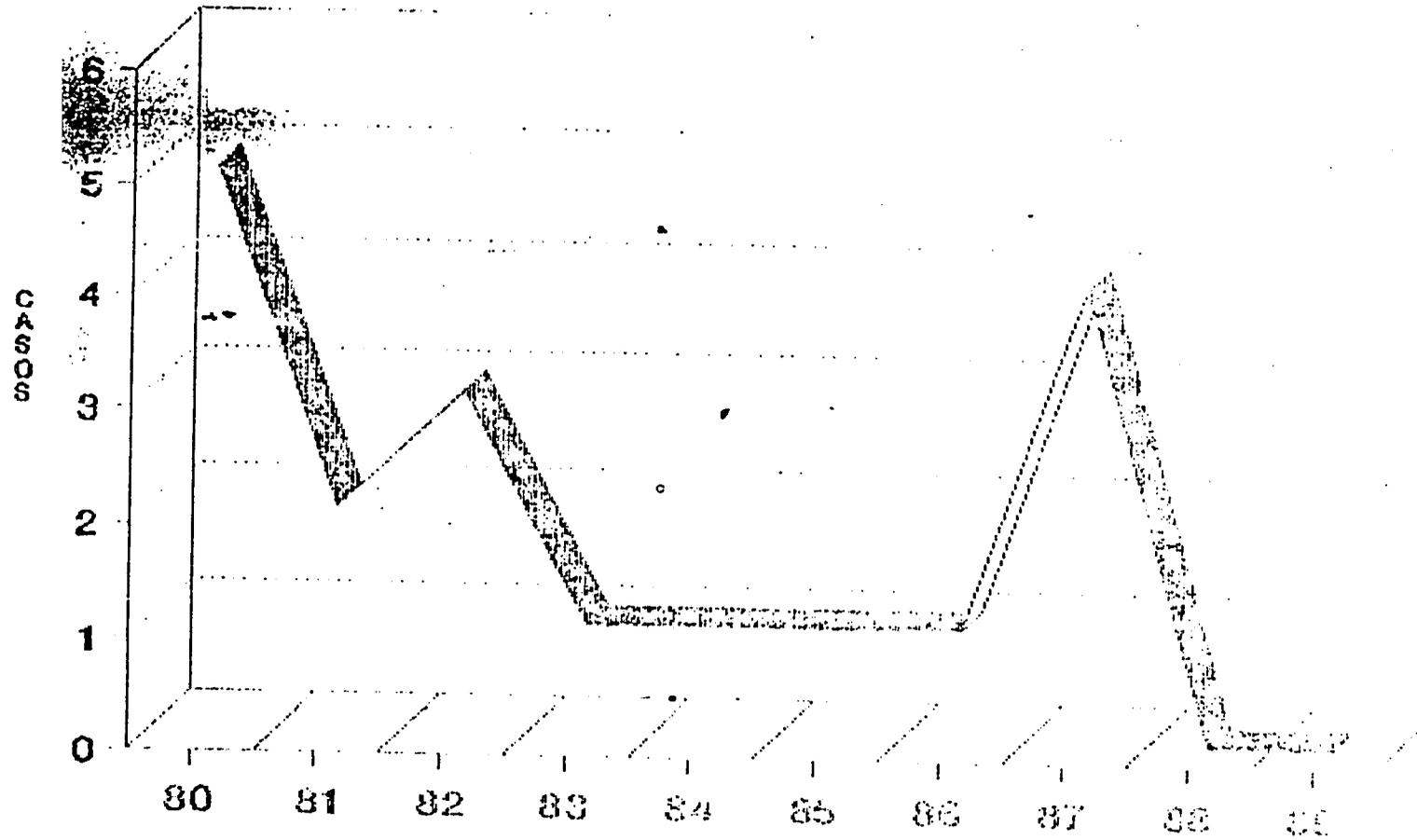


CASOS

FUENTE: DINEI

56

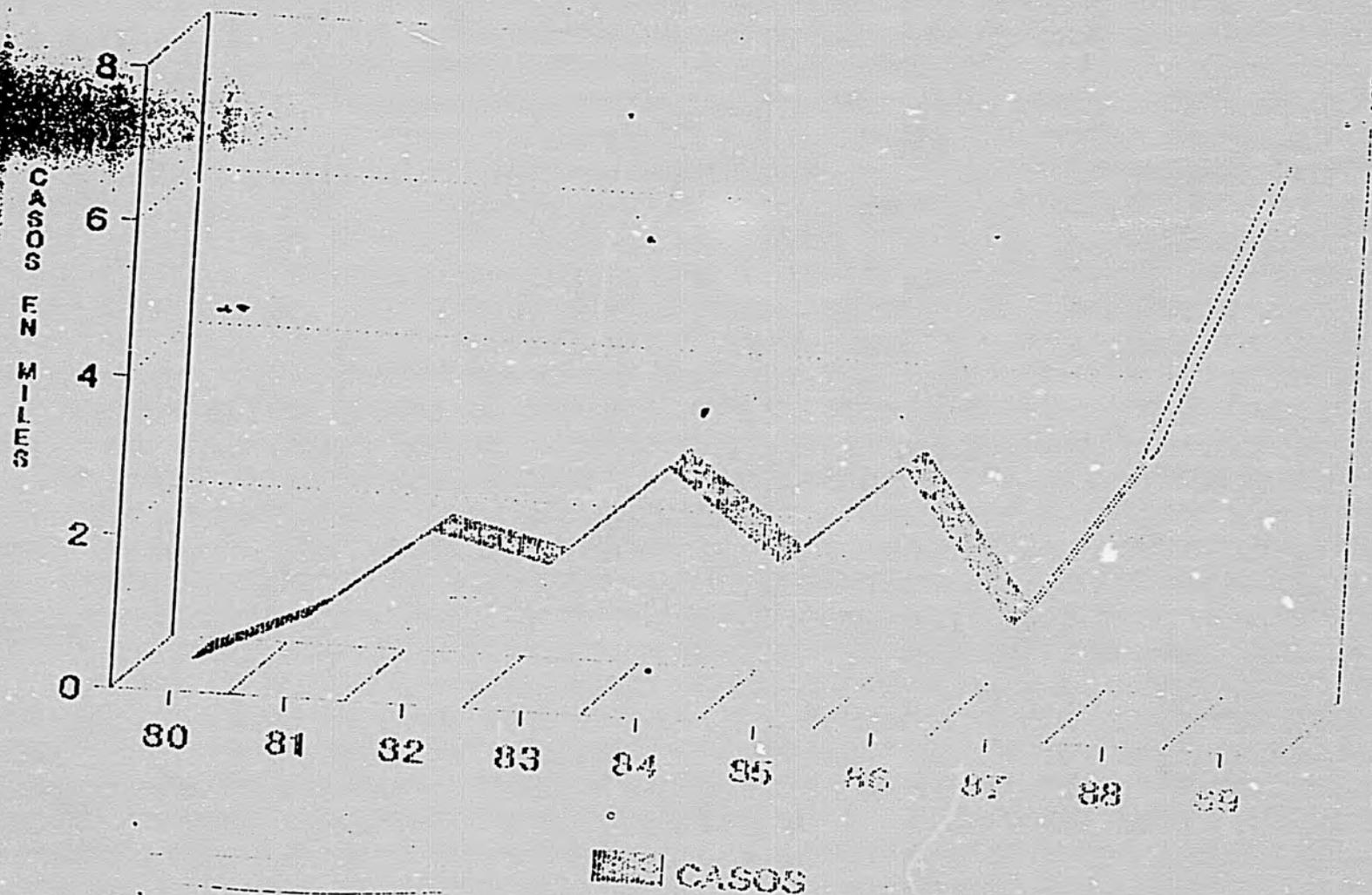
CASOS DE RABIA 1980-1989



CASOS

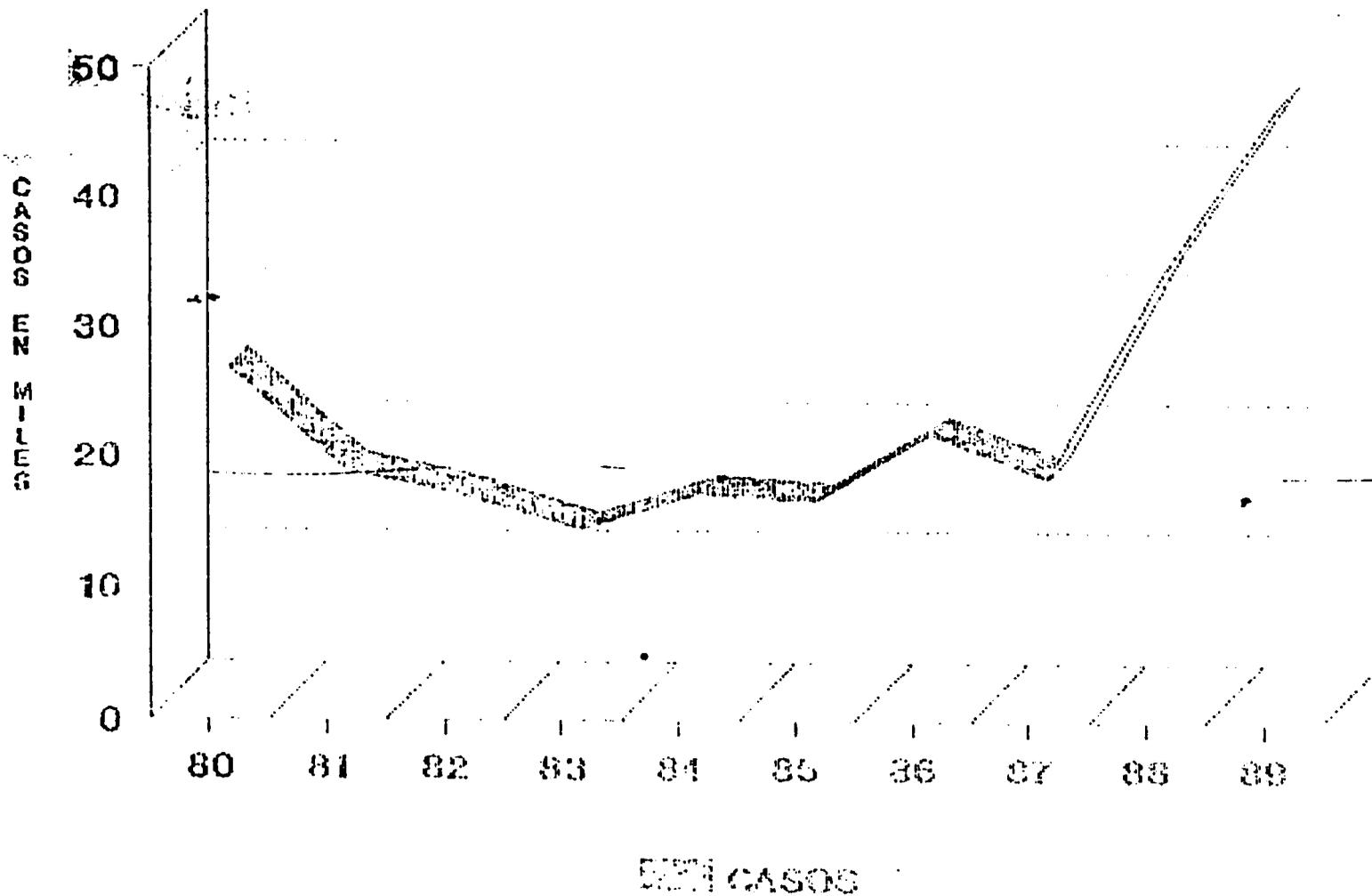
FUENTE: DINEI

CASOS DE ESCABIOSIS Y TENIAJULOSIS



FUENTE: DINEI

CASOS DE MALARIA 1980-1989

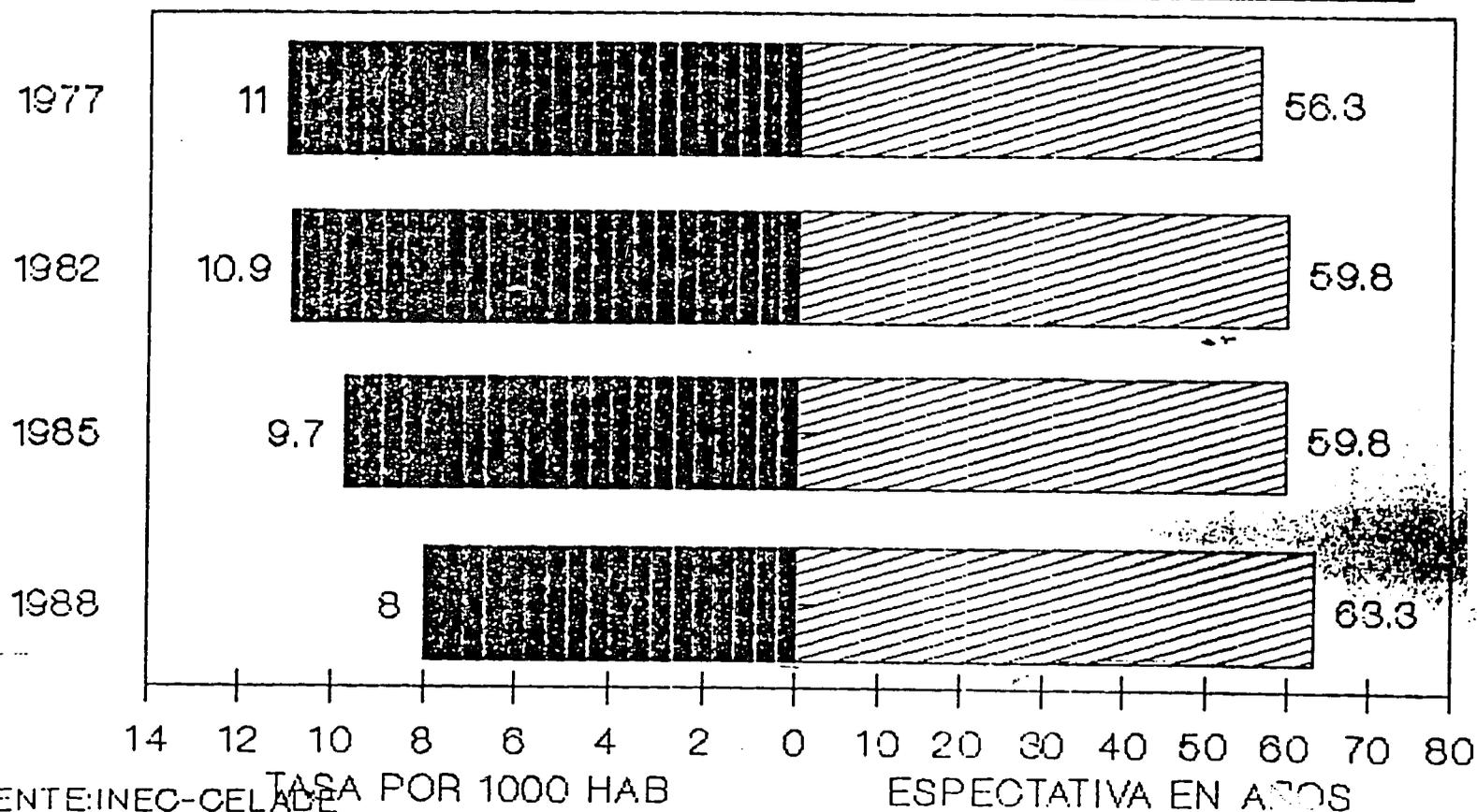
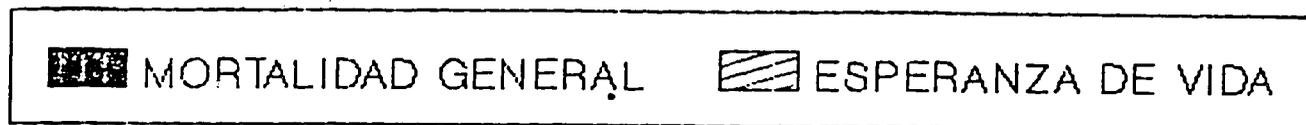


FUENTE: PROGRAMA DE MALARIA

59

MINISTERIO DE SALUD

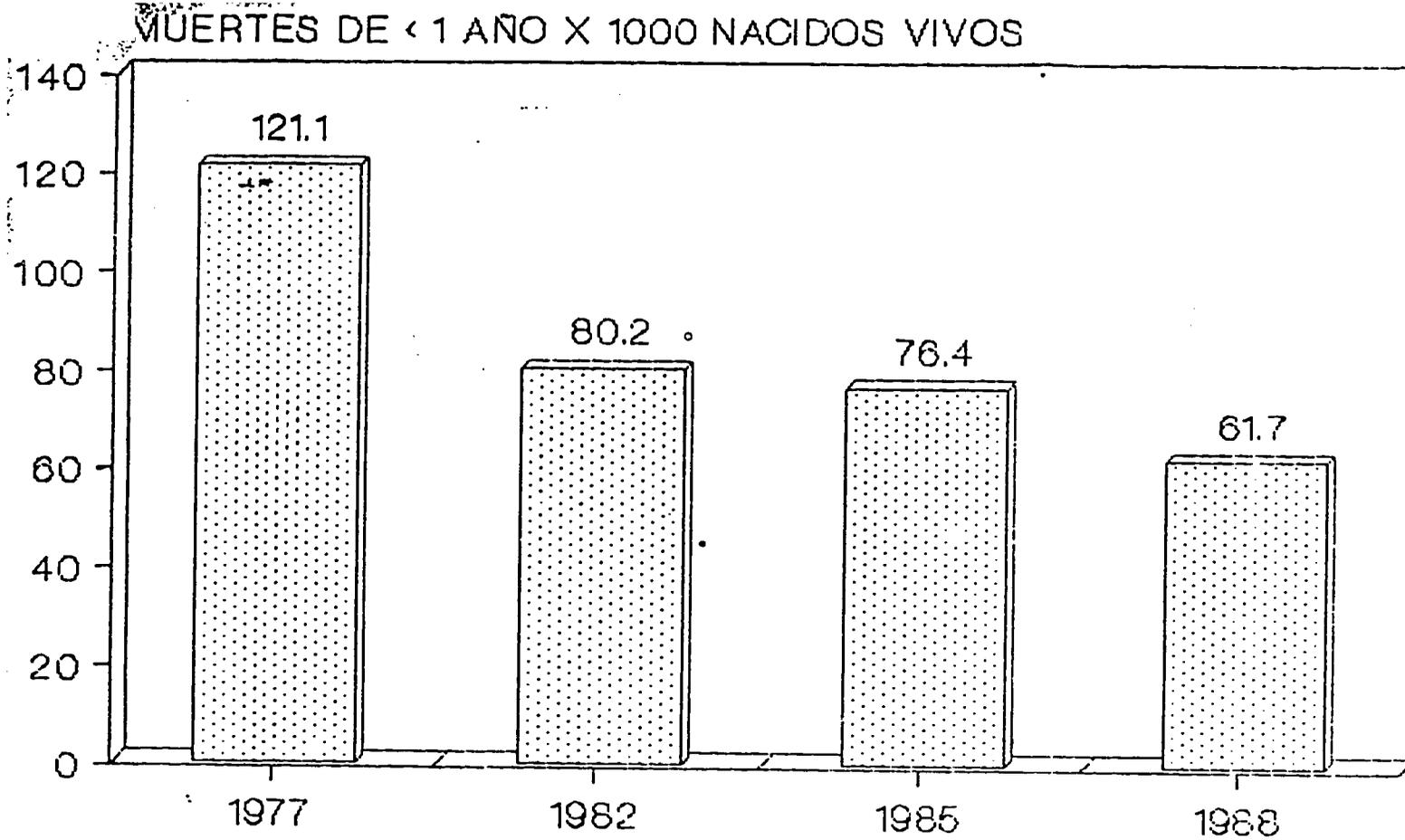
INDICADORES GENERALES DE SALUD



MINISTERIO DE SALUD

MORTALIDAD INFANTIL

1977, 82, 85, 88.

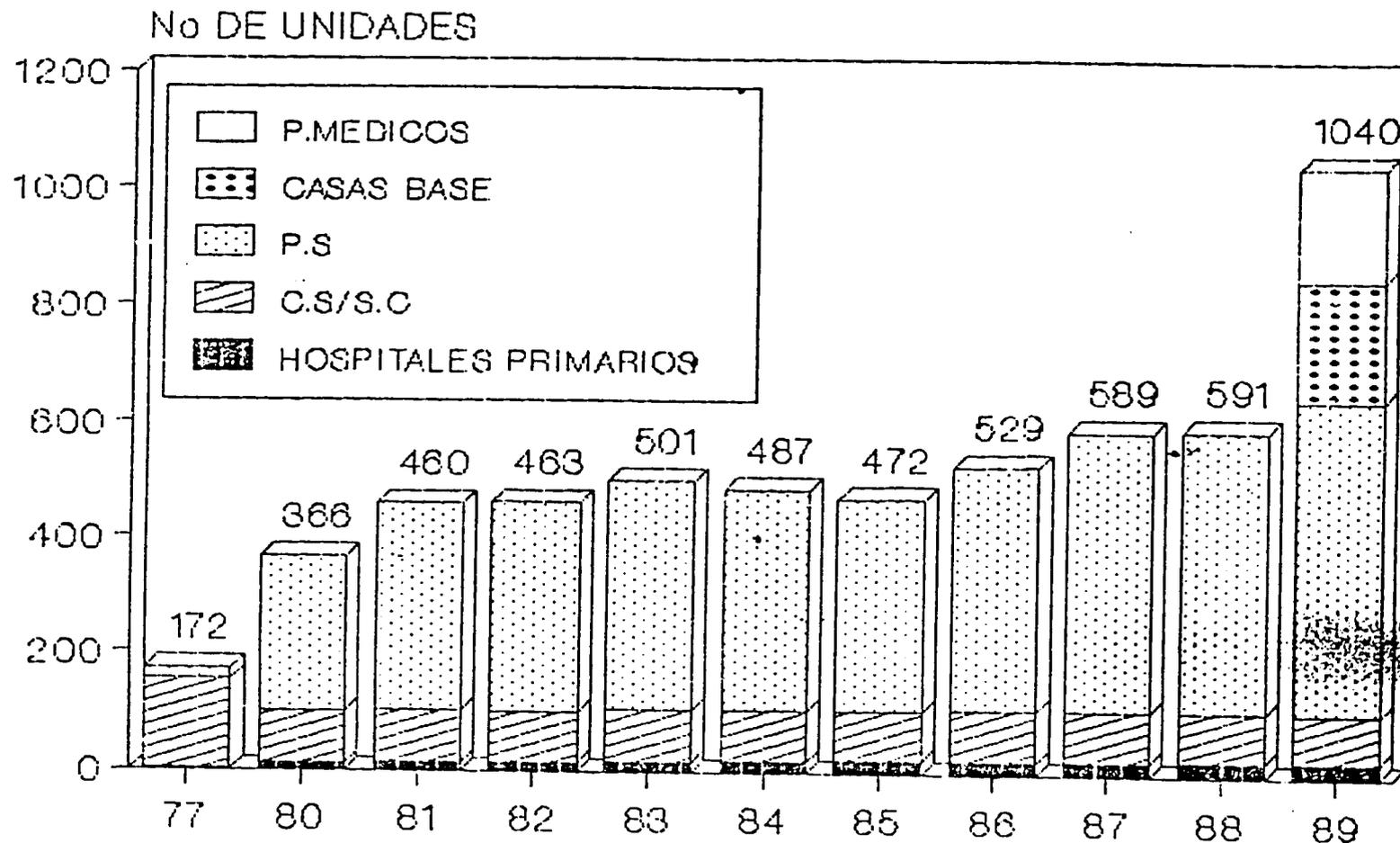


FUENTE: INEC-CELADE

MINISTERIO DE SALUD

UNIDADES DEL PRIMER NIVEL DE ATENCION

1977-1989



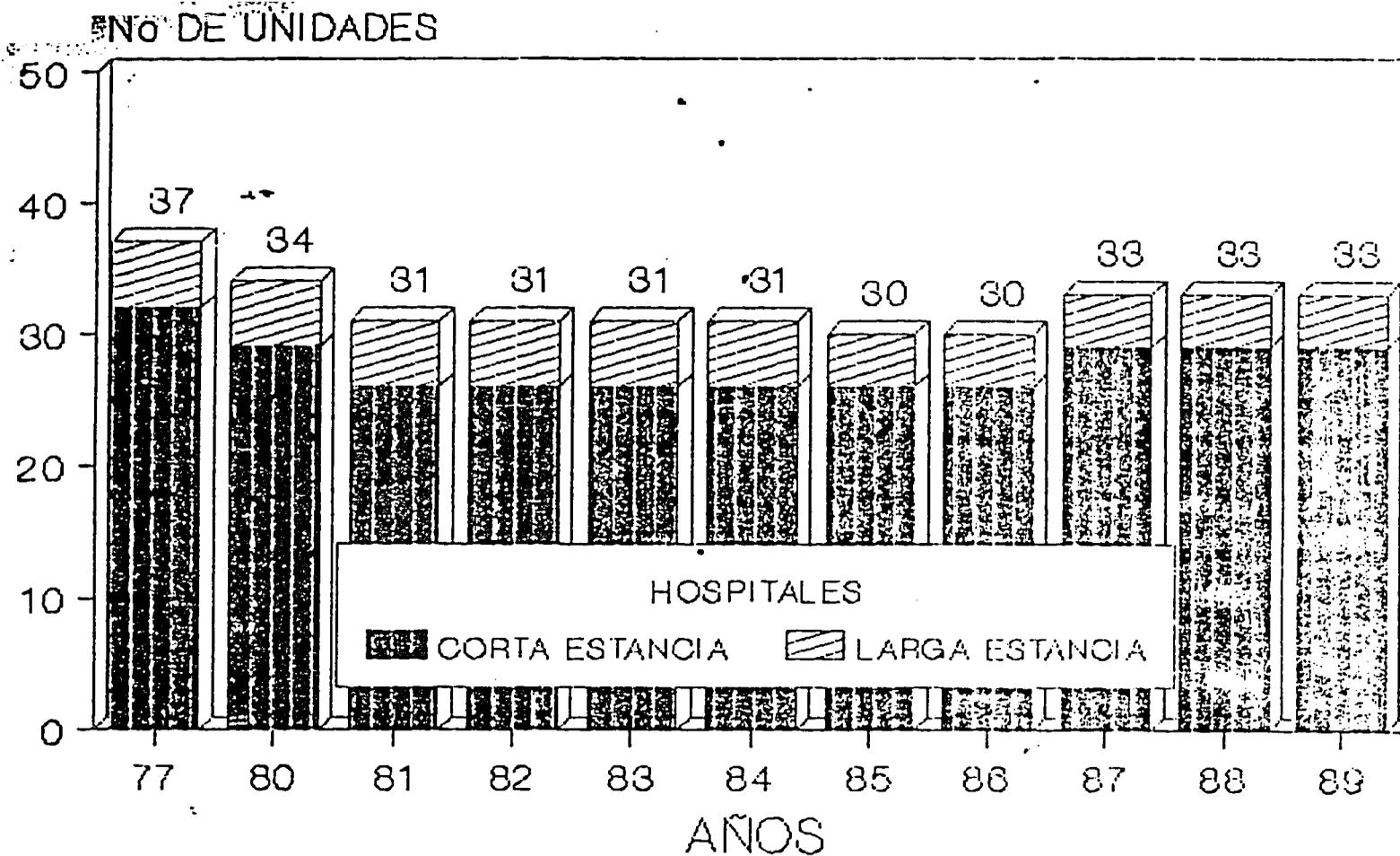
FUENTE: DINEI

127

MINISTERIO DE SALUD

UNIDADES DEL SEGUNDO NIVEL DE ATENCION

1977-1988



FUENTE: DINEI

INFRAESTRUCTURA DISPONIBLE
 MINISTERIO DE SALUD DE NICARAGUA. 1980-1989

TIPO DE UNIDADES	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
------------------	------	------	------	------	------	------	------	------	------	------

HOSPITALES AGUDOS	29	26	26	26	26	26	26	29	29	30
HOSPITALES CRONICOS	5	5	5	5	5	4	4	4	4	4
TOTAL SEGUNDO NIVEL	34	31	31	31	31	30	30	30	33	35

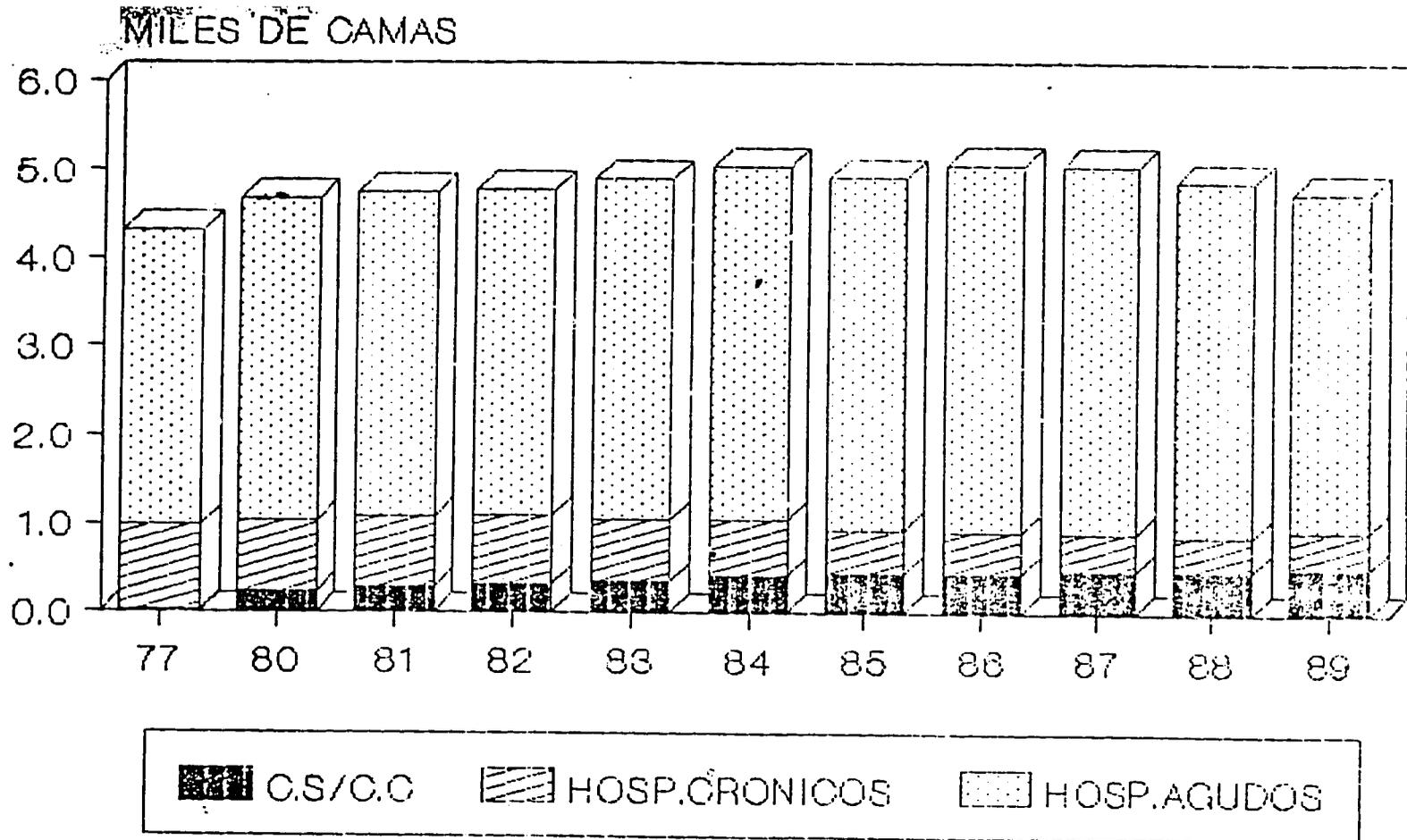
POLICLINICAS	2	2	2	2	2	2	2	2	2	2
CENTRO DE SALUD S/C	88	89	85	87	86	83	86	85	74	78
CENTRO DE SALUD C/CC	11	13	15	17	18	22	21	22	21	24
PUESTO DE SALUD	267	358	363	397	383	367	422	482	499	541
PUESTO MEDICO										102
CASAS BASE										163
TOTAL PRIMERO NIVEL	368	462	465	503	490	474	531	591	586	910

TOTAL UNIDADES	402	493	496	534	521	504	561	621	619	945
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FUENTE: DIVISION DE ATENCION MEDICA.

64

CAMAS DE HOSPITALIZACION MINISTERIO DE SALUD NICARAGUA 1977-1989

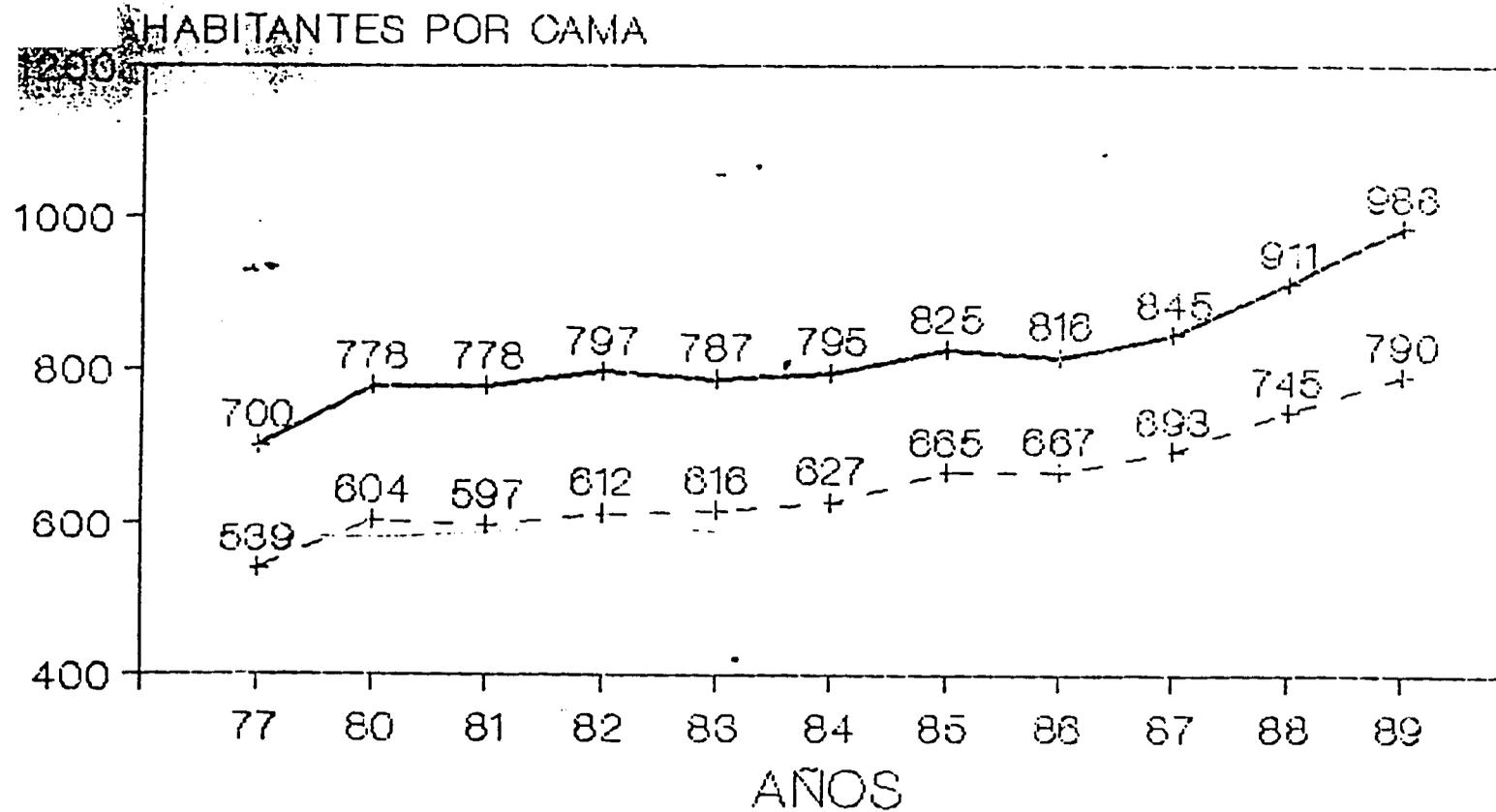


FUENTE: DINEI
RE-03

57

MINISTERIO DE SALUD

HABITANTES POR CAMA 1977-89



-+ TOTAL + H. AGUDOS

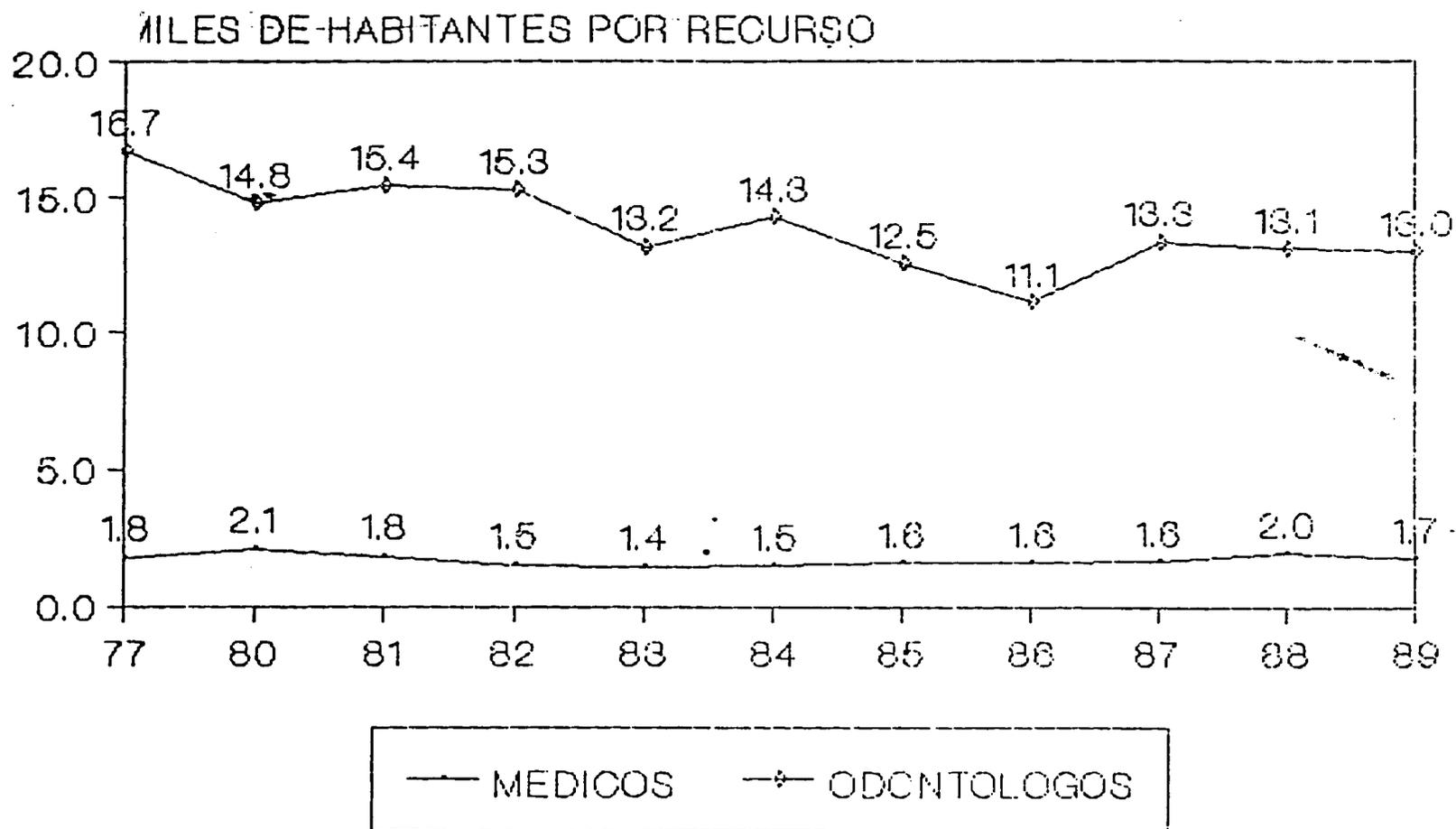
FUENTE: DINEI
RE-04

16

MINISTERIO DE SALUD

HABITANTES POR MEDICOS Y ODONTOLOGOS

1977-1989



FUENTE: DINEI
RE-06

RECURSOS HUMANOS CONTRATADOS.
MINISTERIO DE SALUD DE NICARAGUA. 1980-1989

TIPO DE RECURSOS	1977	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
MEDICOS	1319	1212	1541	1951	2061	2172	2058	2127	1855	1927	2116
ODONTOLOGOS	139	190	183	191	229	222	260	305	280	278	289
FARMACOLOGOS	32	ND	98	57	144	158	163	155	149	123	133
ENFERMERAS	566	808	900	795	1182	1271	1152	1259	1255	1126	1233
AUX. ENFERMERIA	2940	3879	3984	3995	4226	4378	4118	4827	3888	3899	4046
TEC. LABORATORIO	93	ND	275	241	282	350	363	527	609	615	534
TEC. RAYOS X.	ND	ND	134	105	108	140	148	201	193	183	125
TEC. ESTADISTICA	ND	ND	85	72	128	111	97	137	125	96	71
TECNOLOGOS MEDICO	62	ND	92	103	129	98	73	71	64	53	52
PSICOLOGOS	ND	ND	27	24	46	64	60	73	75	76	63
TRABAJ. SOCIALES	69	ND	76	67	87	76	75	105	60	69	52
AUX. DE LAB. Y RX.	62	ND	233	325	352	340	369	330	383	394	263
TRABAJ. SANITARIO	ND	ND	320	265	350	324	666	662	632	536	468
O. CARGOS PROPIOS	1654	3608	3337	4691	5433	5718	5766	5343	5924	4676	4123
TOTAL C. PROPIOS	6936	9697	11285	12882	14827	15422	15386	16122	15692	14051	13590

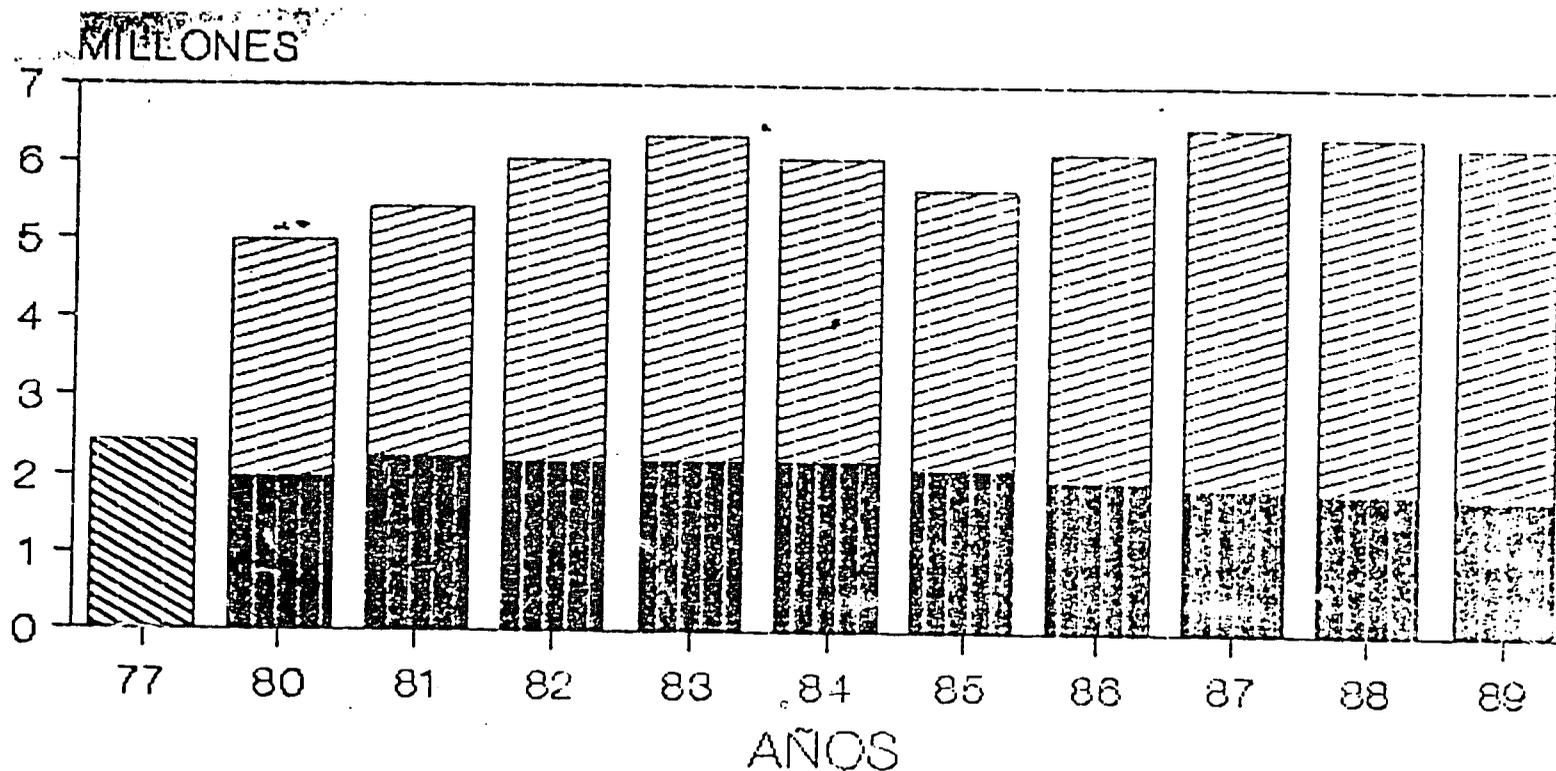
CARGOS COMUNES	ND	5814	4117	4999	5959	6140	7218	7539	5935	4232	3144
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TOTAL	6936	15511	15402	17881	20786	21562	22604	23661	21627	18283	16742
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FUENTE: DIVISION DE RECURSOS HUMANOS. MINSA.

88'

CONSULTAS MEDICAS MINISTERIO DE SALUD NICARAGUA 1977-1989



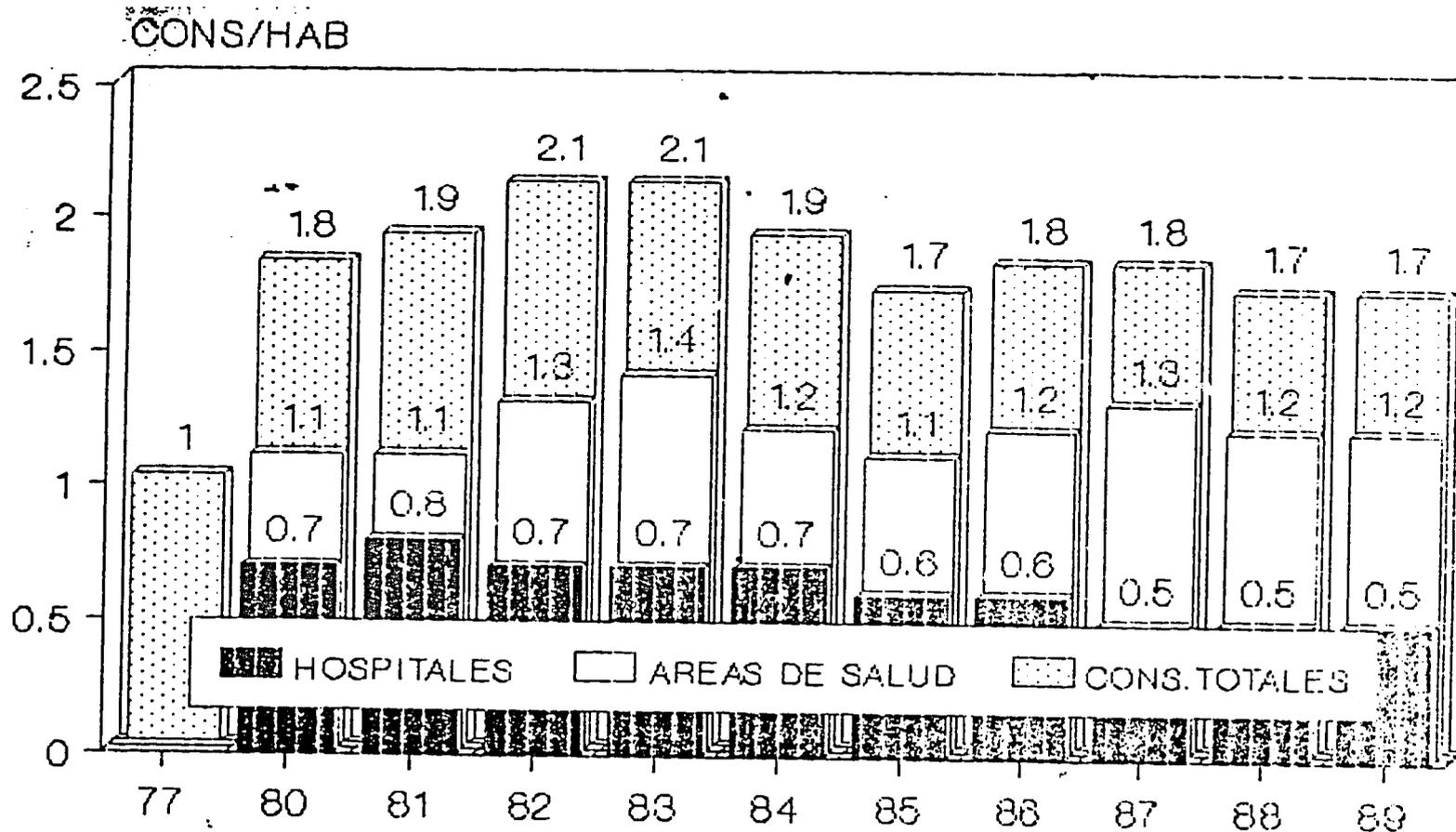
FUENTE=DINEI
SE-01

1991

MINISTERIO DE SALUD

CONSULTAS POR HABITANTE

1977-1989



FUENTE=DINEI
SE-02

70.

CONSULTAS MEDICAS BRINDADAS SEGUN NIVELES DE ATENCION
 MINISTERIO DE SALUD DE NICARAGUA, 1980 -1989

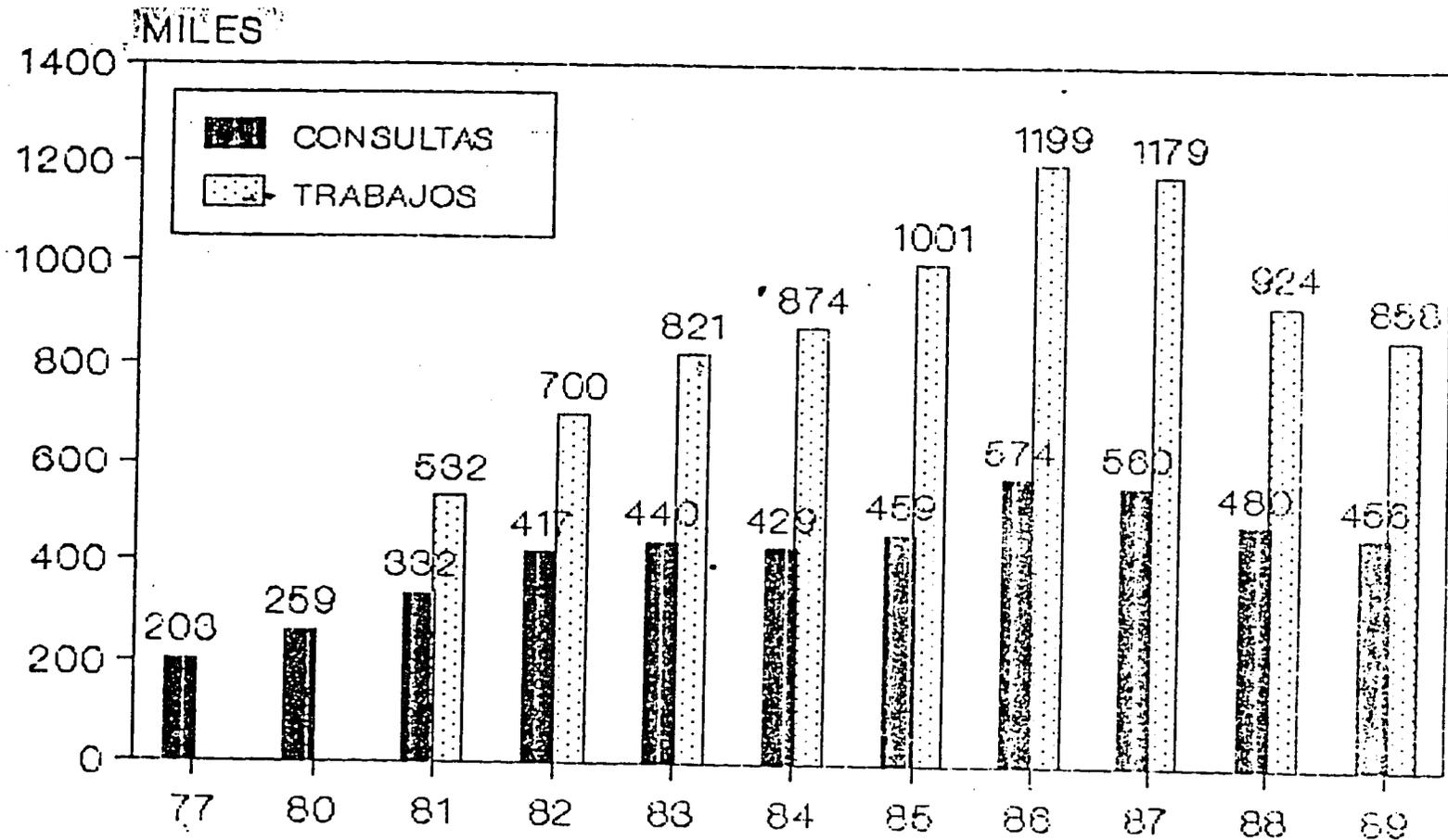
PRIMER NIVEL	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
< 1 A.	337,548	346,483	431,634	461,964	395,945	350,665	424,795	479,748	457,074	627,782
1 - 4 A.	524,406	538,285	670,574	722,210	677,716	590,093	680,277	721,878	777,737	893,244
5 - 14 A.	421,935	433,103	539,542	578,116	545,510	526,396	648,119	683,009	666,467	689,081
> 14 A.	1,729,935	1,775,724	2,212,124	2,377,718	2,225,205	2,091,189	2,426,944	2,702,927	2,623,772	2,288,565
PRIMERA VEZ	1,320,055	1,354,995	1,687,997	1,814,947	1,359,700	1,225,678	1,502,548	1,683,230	1,640,545	2,006,483
SUBSECUENTES	1,693,769	1,738,600	2,165,877	2,325,061	2,465,676	2,332,665	2,677,587	2,904,332	2,884,505	2,472,189
TOTAL	3,013,824	3,093,595	3,853,874	4,140,098	3,845,376	3,558,343	4,180,135	4,587,562	4,525,050	4,478,672

SEGUNDO NIVEL	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
< 1 A.	190,973	224,830	211,515	212,231	201,109	177,541	198,614	165,803	153,352	186,650
1 - 4 A.	259,882	305,955	287,835	290,459	313,236	259,320	241,505	230,423	232,979	237,232
5 - 14 A.	226,412	266,551	250,766	252,853	250,821	240,268	211,251	209,720	203,459	231,607
> 14 A.	1,291,532	1,520,501	1,430,455	1,439,305	1,433,999	1,418,923	1,333,293	1,266,116	1,239,871	1,112,327
PRIMERA VEZ	1,094,652	1,288,717	1,212,397	1,212,984	936,441	1,143,404	1,165,449	1,050,852	1,068,127	1,018,502
SUBSECUENTES	874,147	1,029,120	968,174	974,870	1,202,724	953,051	847,214	821,200	766,584	749,314
TOTAL	1,968,799	2,317,837	2,180,571	2,194,854	2,199,165	2,096,452	1,952,663	1,872,062	1,634,691	1,767,816

TOTAL	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
< 1 A.	528,521	571,313	643,149	674,195	595,054	528,206	591,409	645,551	615,426	814,432
1 - 4 A.	784,288	844,240	958,409	1012,669	990,952	849,913	921,782	952,301	1010,715	1130,476
5 - 14 A.	648,347	699,654	790,306	830,975	796,331	766,664	859,370	892,729	869,956	920,688
> 14 A.	3,021,467	3,296,225	3,642,579	3,817,023	3,660,204	3,510,012	3,760,237	3,969,043	3,863,643	3,380,894
PRIMERA VEZ	2,414,707	2,643,712	2,900,394	3,034,931	2,356,141	2,369,073	2,697,997	2,734,092	2,708,672	3,024,985
SUBSECUENTES	2,567,916	2,767,720	3,134,051	3,299,931	3,669,400	3,295,716	3,524,691	3,725,532	3,651,063	3,221,503
TOTAL	4,982,623	5,411,432	5,034,445	5,324,862	5,045,541	5,254,795	5,132,795	5,459,624	5,359,741	5,245,488

FUENTE: DIRECCION DE ESTADISTICAS. MINSA

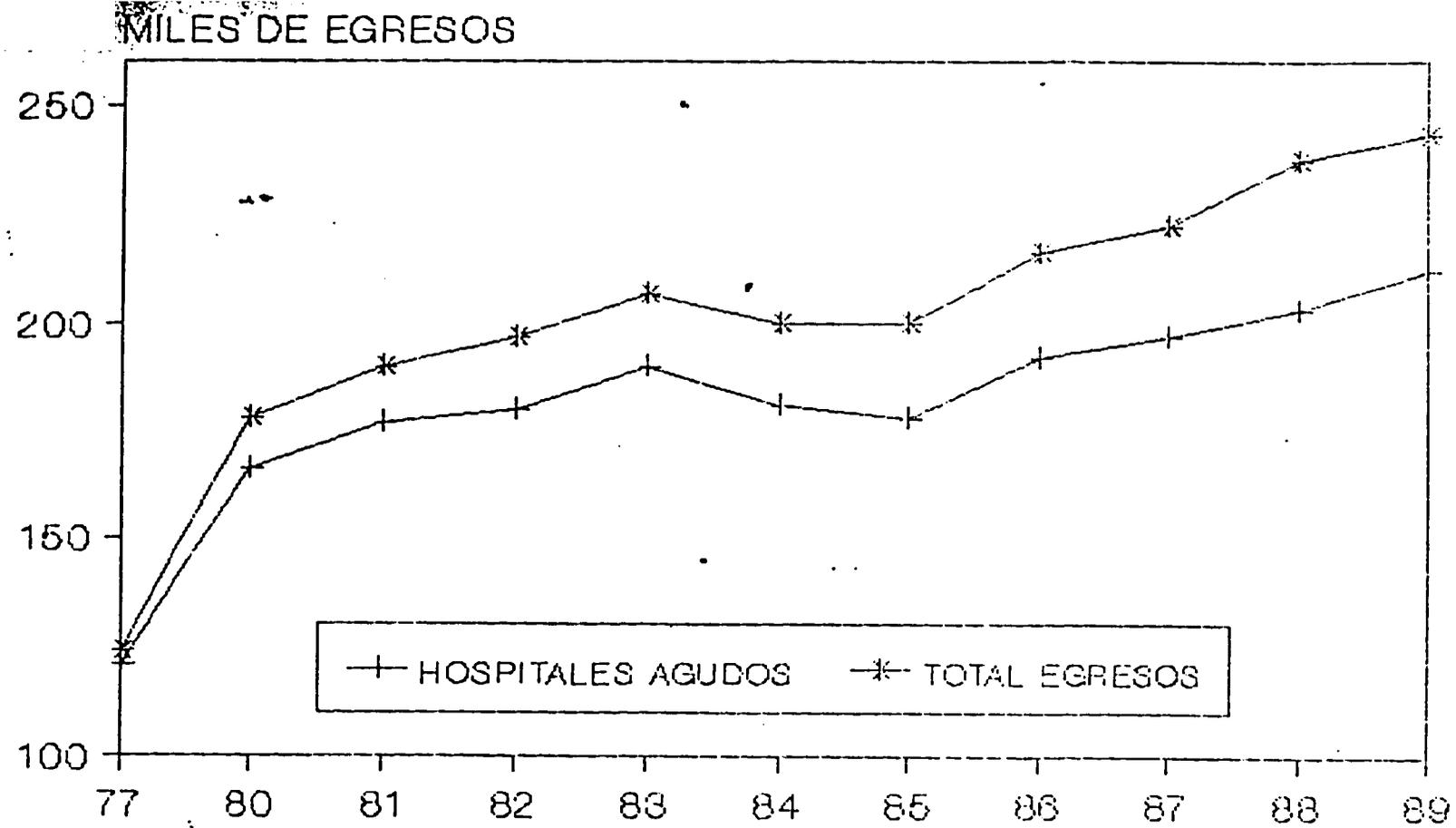
CONSULTAS Y TRABAJOS ODONTOLÓGICOS MINISTERIO DE SALUD NICARAGUA 1977-1989



FUENTE: DINEI
SE-03

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MINISTERIO DE SALUD EGRESOS HOSPITALARIOS 1977-1989



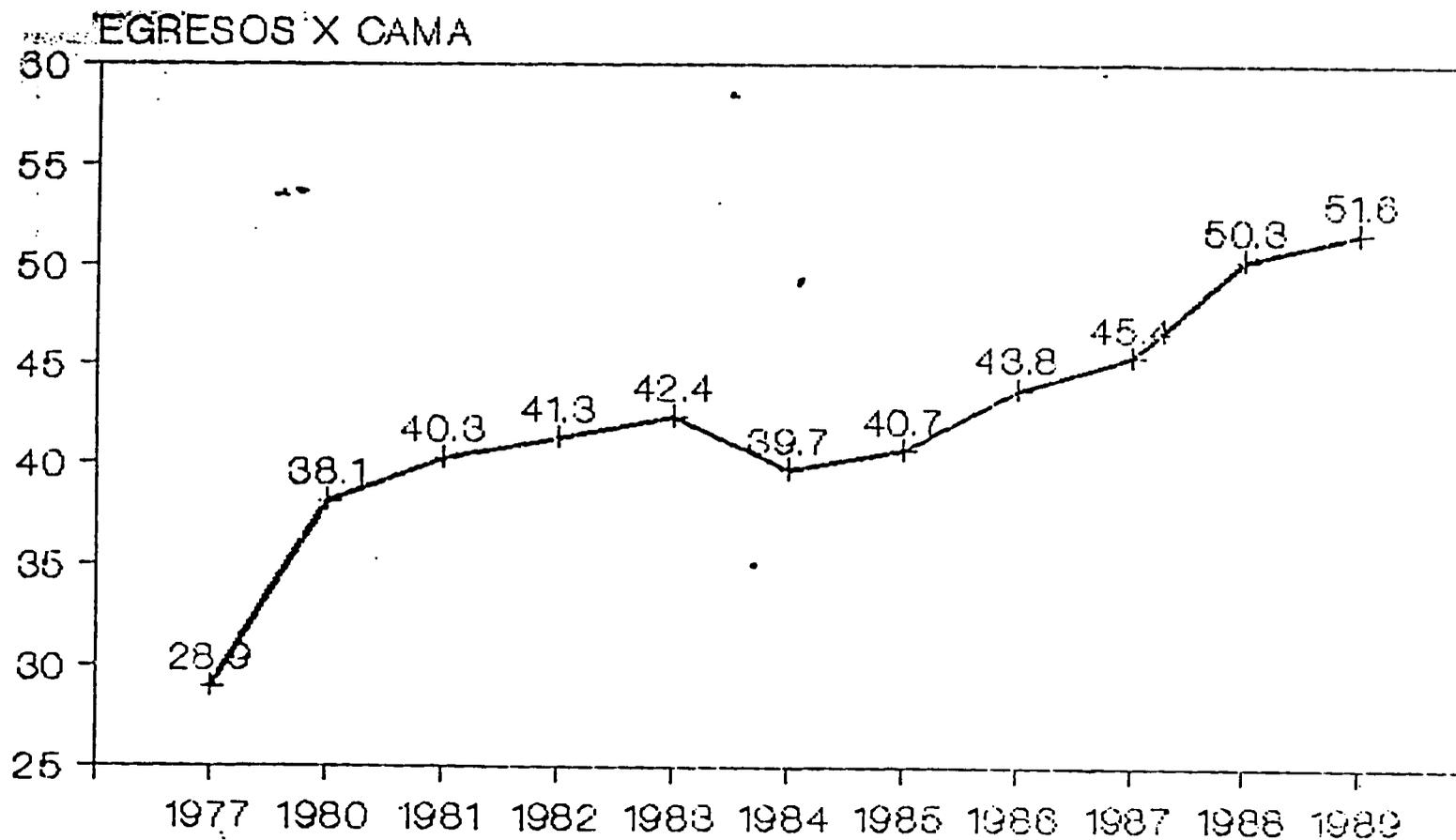
FUENTE=DINEI
SE-06

17

MINISTERIO DE SALUD

UTILIZACION DE CAMAS HOSPITALARIAS

1977-1989



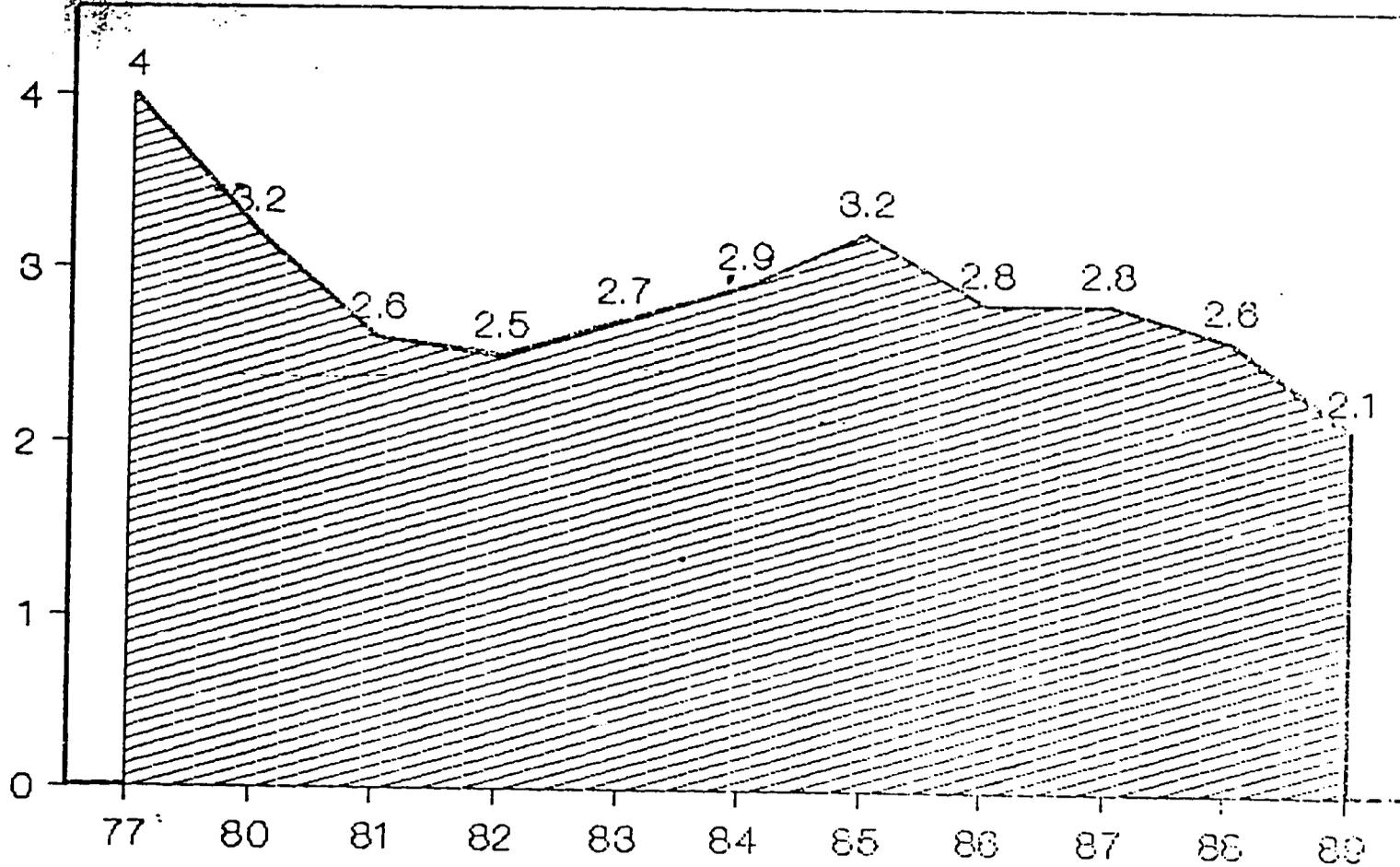
FUENTE=DINEI
SE-07

74

MINISTERIO DE SALUD

MORTALIDAD HOSPITALARIA 1977-89

FALLECIDOS X 100 EGRESOS



45

UTILIZACION DE CAMAS EN TODAS LAS UNIDADES
 MINISTERIO DE SALUD DE NICARAGUA. 1980-1989

TOTAL	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
CAMAS	4,677	4,729	4,765	4,897	5,045	5,093	4,925	4,904	4,796	4,718

EGRESOS VIVOS	172,446	185,831	191,958	201,954	194,894	193,979	210,023	216,652	227,369	238,468
EGR. MUERTOS	5,571	4,746	4,708	5,464	5,488	5,929	5,768	5,787	5,551	4,888
EGRESOS TOTALES	178,017	190,577	196,664	207,418	200,382	199,908	215,791	222,639	232,950	243,354

DIAS ESTANCIA	1,175,353	1,176,855	1,203,071	1,221,017	1,157,560	1,160,763	1,242,751	1,242,029	1,214,310	1,303,036
DIAS PACIENTE	1,268,516	1,236,136	1,130,690	1,269,414	1,202,573	1,179,415	1,215,114	1,233,024	1,229,428	1,278,807

INDICE OCUPACION	75.5	71.6	64.8	71.0	65.3	63.6	67.5	68.9	70.2	74.2
PROMEDIO ESTANCIA	6.6	6.2	6.1	5.9	5.8	5.8	5.8	5.5	5.2	5.3
GIRO CAMA	39.0	40.3	41.3	42.3	39.7	39.3	43.3	45.4	43.3	51.6
INT. SUSTITUCION	2.3	2.6	3.1	2.5	3.2	3.4	2.7	2.5	2.2	1.8

MORTALIDAD BRUTA	3.1	2.5	2.4	2.6	2.7	2.9	2.7	2.6	2.4	2.0
MORTALIDAD NETA	-	-	-	-	-	0.3	1.0	1.0	1.1	1.0

FUENTE: DIRECCION NACIONAL DE ESTADISTICAS. MINSA

UTILIZACION DE CAMAS EN CENTROS DE SALUD CON CAMAS
 MINISTERIO DE SALUD DE NICARAGUA. 1980-1989

C/S CON CAMAS	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
CAMAS	235	285	322	254	417	457	450	485	488	488
EGRESOS VIVOS	7,614	9,433	13,107	14,086	16,399	16,330	21,138	23,381	27,879	28,815
EGR. MUERTOS	234	160	219	269	234	238	293	288	266	227
TOTAL EGRESOS	7,848	9,593	13,326	14,355	16,633	15,568	21,431	23,669	28,145	29,042
DIAS ESTANCIA	39,688	42,060	54,532	56,352	55,548	62,852	81,359	86,712	94,625	102,022
DIAS PACIENTE	40,681	28,457	56,092	80,842	65,861	75,736	85,639	92,206	100,330	108,421
INDICE OCUPACION	47.1	25.4	49.3	62.5	43.3	45.4	52.0	52.1	56.3	61.6
PROMEDIO ESTANCIA	5.0	4.4	4.1	3.9	3.3	3.4	3.8	3.7	3.4	3.5
GIRO CAMA	33.4	33.5	41.4	40.5	39.3	40.6	47.6	43.8	57.7	60.2
INT. SUSTITUCION	5.7	8.1	4.5	3.4	5.2	4.9	3.7	3.6	2.6	2.3
MORTALIDAD BRUTA	3.0	1.7	1.6	1.9	1.4	1.3	1.4	1.2	1.0	0.6

FUENTE: DIRECCION NACIONAL DE ESTADISTICAS. MINSA

UTILIZACION DE CAMAS EN HOSPITALES AGUDOS.
 MINISTERIO DE SALUD DE NICARAGUA. 1980-1989

HOSP. AGUDOS	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
CAMAS	3,629	3,630	3,661	3,831	3,979	4,130	3,998	3,997	3,904	3,527

EGRESOS VIVOS	161,114	172,667	175,627	185,093	176,173	173,178	186,822	191,694	197,843	207,876
EGR. MUERTOS	5,277	4,525	4,432	5,137	5,196	5,558	5,451	5,475	5,289	4,632
EGRESOS TOTALES	166,391	177,192	180,059	190,230	181,369	178,834	192,273	197,169	203,132	212,508

DIAS ESTANCIA	943,539	949,522	953,351	997,252	969,831	949,633	1,004,568	1,029,709	1,013,006	1,042,418
DIAS PACIENTE	1,159,948	954,799	932,626	990,836	980,718	961,467	958,448	1,017,956	1,006,151	1,042,251

INDICE OCUPACION	87.6	72.1	69.6	70.9	67.5	63.8	67.5	69.8	70.6	74.6
PROMEDIO ESTANCIA	5.7	5.3	5.3	5.2	5.3	5.3	5.2	5.2	4.9	4.9
GIRO CAMA	45.8	48.8	49.2	49.8	45.6	43.3	43.0	49.3	52.0	55.5
INT. SUSTITUCION	1.0	2.1	2.2	2.1	2.6	3.0	2.5	2.2	2.1	1.7

MORTALIDAD BRUTA	3.2	2.5	2.5	2.7	2.9	3.2	2.8	2.8	2.6	2.2
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FUENTE: DIRECCION NACIONAL DE ESTADISTICAS. MINSA

UTILIZACION DE CAMAS EN HOSPITALES CRONICOS
 MINISTERIO DE SALUD DE NICARAGUA. 1980-1989

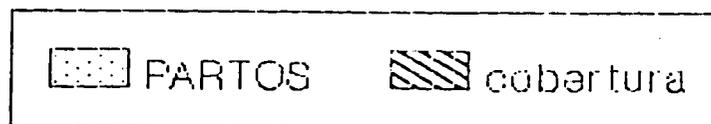
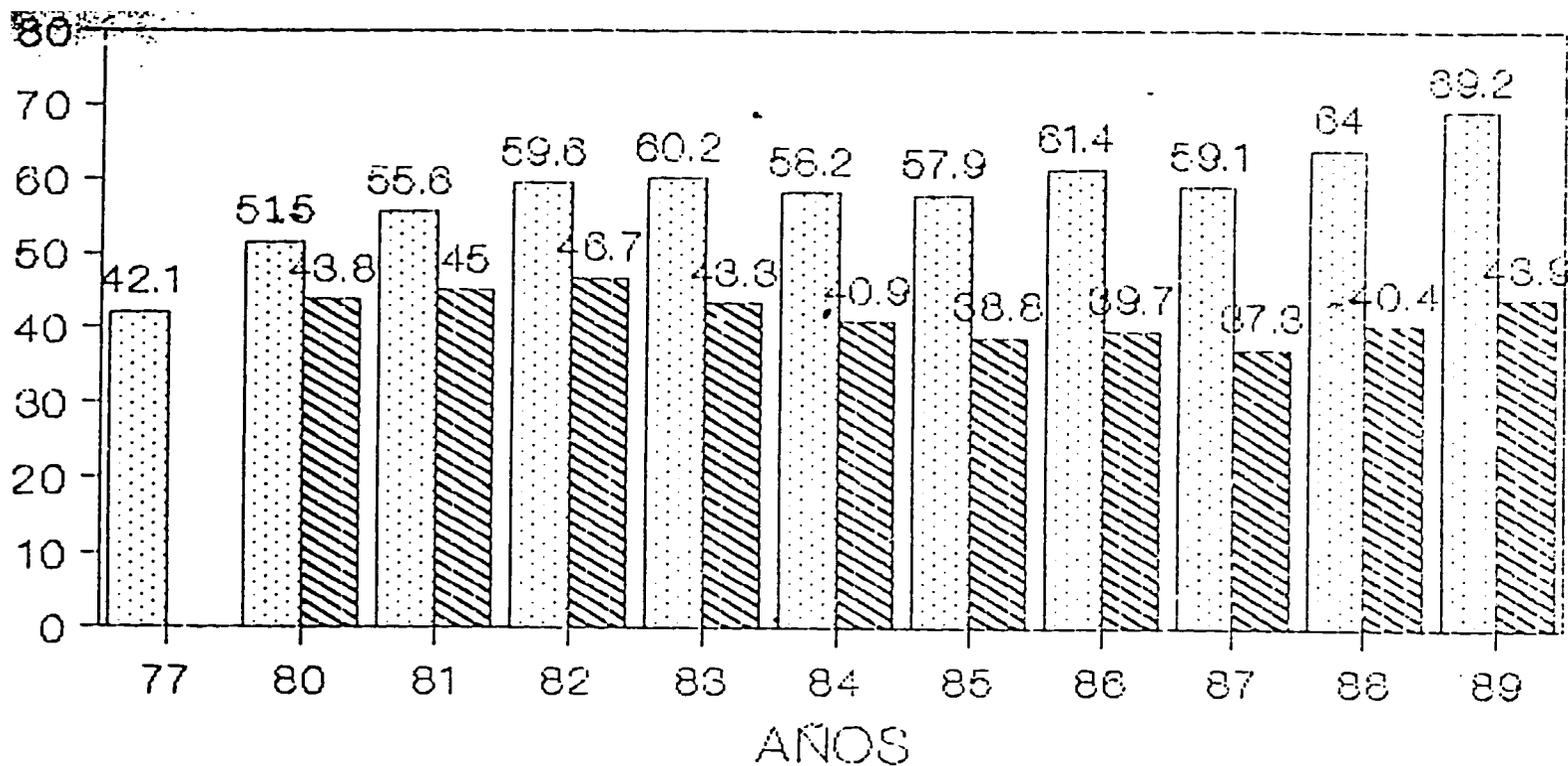
HOSP. CRONICOS	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
CAMAS	813	814	782	712	649	496	477	422	404	409
EGRESOS VIVOS	3,718	3,731	3,224	2,775	2,322	2,471	2,063	1,777	1,647	1,777
EGRESOS MUERTOS	60	61	55	58	36	35	24	24	26	27
EGRESOS TOTALES	3,778	3,792	3,279	2,833	2,358	2,506	2,087	1,801	1,673	1,804
DIAS ESTANCIA	19,212	18,527	19,518	16,738	13,218	14,328	15,780	12,560	10,669	15,859
DIAS PACIENTE	8,798	25,488	21,936	19,767	15,589	14,221	14,097	12,286	12,294	12,813
INDICE OCUPACION	90.0	101.0	77.0	76.0	65.7	78.5	67.5	73.6	83.4	85.3
PROMEDIO ESTANCIA	51.0	48.9	69.0	59.1	56.0	59.2	43.8	69.7	63.6	87.9
GIRO CAMA	4.6	4.7	4.2	4.0	3.6	5.0	2.3	4.3	4.1	4.4
INT. SUSTITUCION	55.2	11.1	20.2	21.9	34.3	15.5	16.1	17.3	14.6	11.7
MORTALIDAD BENTA	1.6	1.6	4.7	2.0	1.5	1.4	1.2	1.3	1.5	1.5

FUENTE: DIRECCION NACIONAL DE ESTADISTICAS. MINSA

ATENCION INSTITUCIONAL DEL PARTO

MINISTERIO DE SALUD

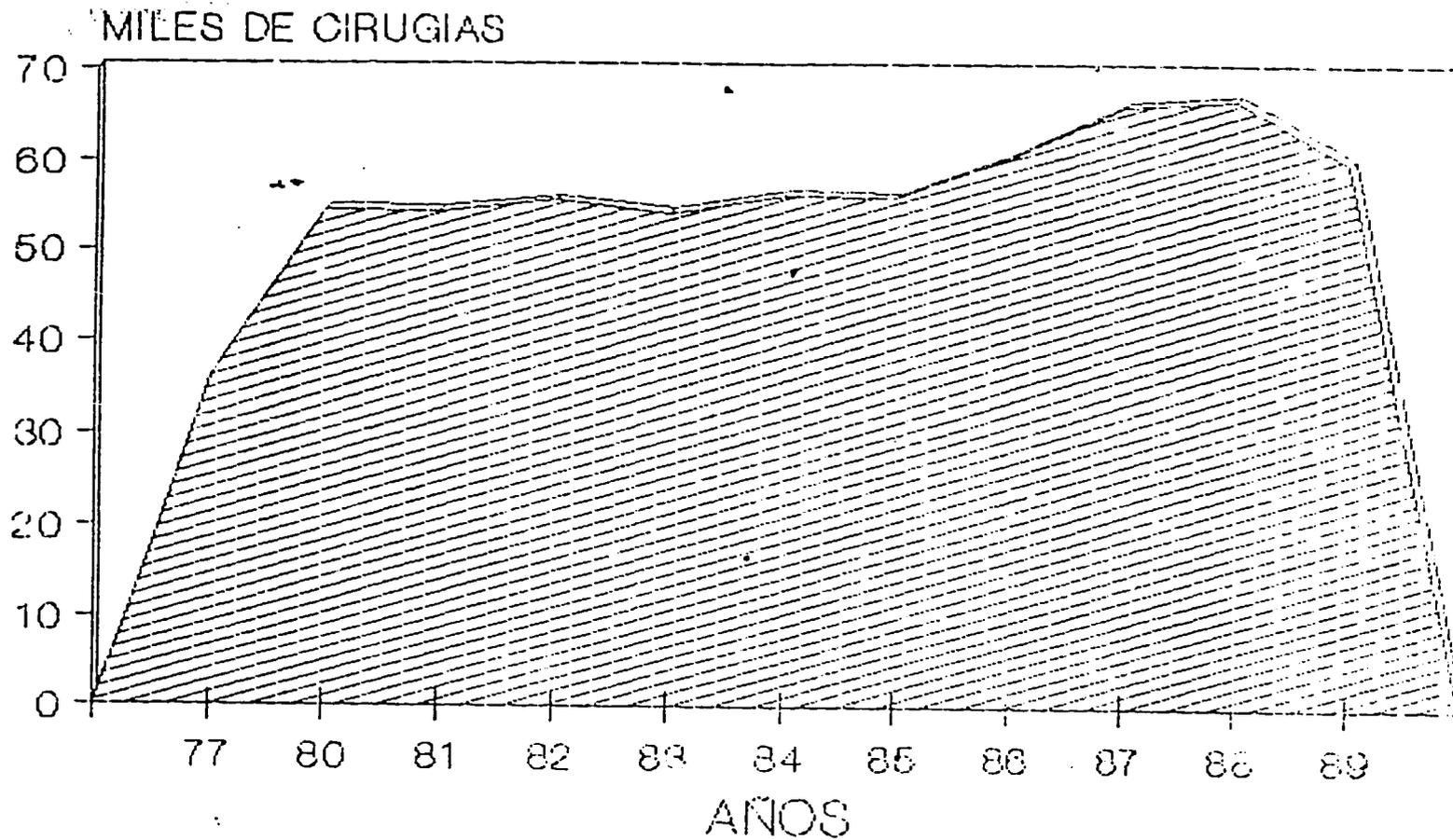
NICARAGUA 1977-1989



FUENTE: DINEI
SE-10

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ATENCIONES QUIRURGICAS MINISTERIO DE SALUD NICARAGUA 1977-1989



FUENTE=DINEI
SE-09

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PARTOS, NACIMIENTOS, ABORTOS Y CIRUGIAS.
 MINISTERIO DE SALUD DE NICARAGUA. 1980 -1989

PRIMER NIVEL	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
PARTOS	3,984	2,398	3,297	3,255	3,780	4,259	7,453	7,762	11,493	14,513
CESAREAS	156	33	45	84	55	63	33	20	32	27
NACIMIENTOS	1,916	2,338	2,821	4,734	3,809	4,224	7,480	7,798	11,626	14,595
VIVOS	1,871	2,265	2,770	4,667	3,752	4,166	7,429	7,752	11,558	14,529
MUERTOS	45	73	51	67	57	58	51	46	58	56
ABORTOS	122	243	442	535	411	380	524	538	697	727
CIRUGIAS	339	84	239	383	398	411	350	200	483	360

SEGUNDO NIVEL	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
PARTOS	47,575	53,229	56,375	57,008	54,412	53,663	53,984	51,350	52,563	54,732
CESAREAS	3,831	4,886	5,665	5,911	5,783	5,870	6,415	6,442	6,645	7,730
NACIMIENTOS	50,076	54,244	57,013	56,901	54,917	54,207	54,844	51,799	53,168	55,259
VIVOS	49,075	53,170	56,021	55,027	53,927	53,095	53,817	50,877	52,197	54,161
MUERTOS	1,001	1,074	992	974	990	1,112	1,027	922	971	1,128
ABORTOS	6,980	7,460	8,136	7,279	7,389	7,130	7,278	9,000	10,311	10,450

QUIROPANOS	-	-	-	-	-	-	-	-	-	-
CIRUGIAS	54,118	54,251	55,364	53,638	55,815	55,510	60,240	65,301	66,301	59,537

82

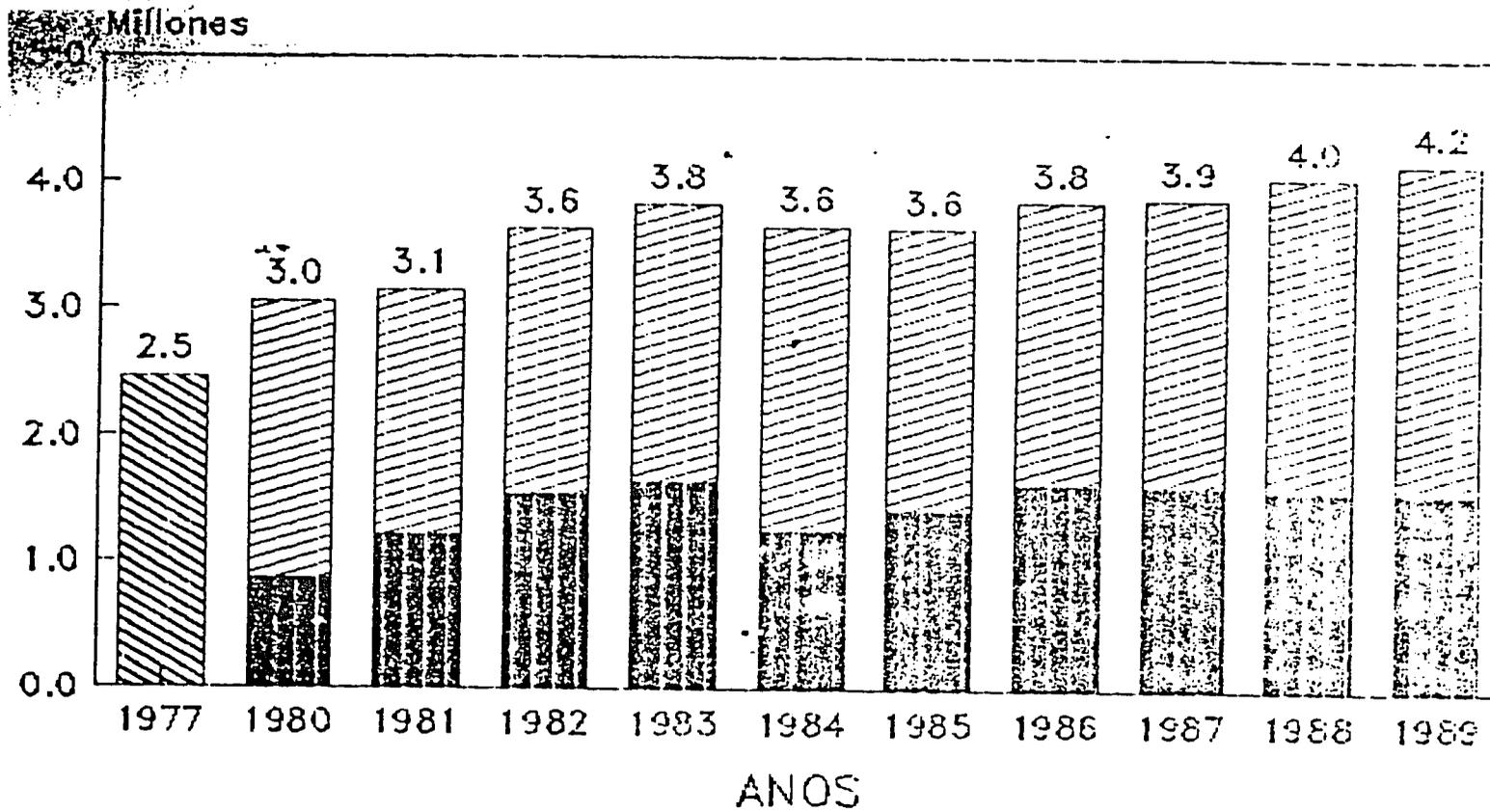
PARTOS, NACIMIENTOS, ABORTOS Y CIRUGIAS.
 MINISTERIO DE SALUD DE NICARAGUA. 1980 -1989
 (CONTINUACION)

TOTAL	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
PARTOS	51,559	55,627	59,672	60,261	58,192	57,922	61,437	59,112	54,056	69,245
CESAREAS	3,987	4,919	5,710	5,995	5,838	5,933	6,448	6,462	6,677	7,757
NACIMIENTOS	51,992	56,582	59,834	60,735	56,726	53,431	62,324	59,597	64,794	69,364
VIVOS	50,946	55,435	58,791	59,694	57,679	57,261	61,246	58,623	63,755	68,700
MUERTOS	1,046	1,147	1,043	1,041	1,047	1,170	1,078	968	1,029	1,184
ABORTOS	7,102	7,703	8,633	7,814	7,600	7,560	7,802	9,533	11,008	11,177

QUIROFANOS **	80	64	67	76	74	78	77	73	73	79
CIRUGIAS	54,457	54,335	55,603	54,021	56,213	55,921	60,530	66,101	66,784	59,957

FUENTE: DIRECCION NACIONAL DE ESTADISTICAS. MINSA

EXAMENES DE LABORATORIOS MINISTERIO DE SALUD NICARAGUA 1977-89



FUENTE: DINE-MINSA

SERVICIOS COMPLEMENTARIOS REALIZADOS.
 MINISTERIO DE SALUD DE NICARAGUA. 1980-1989

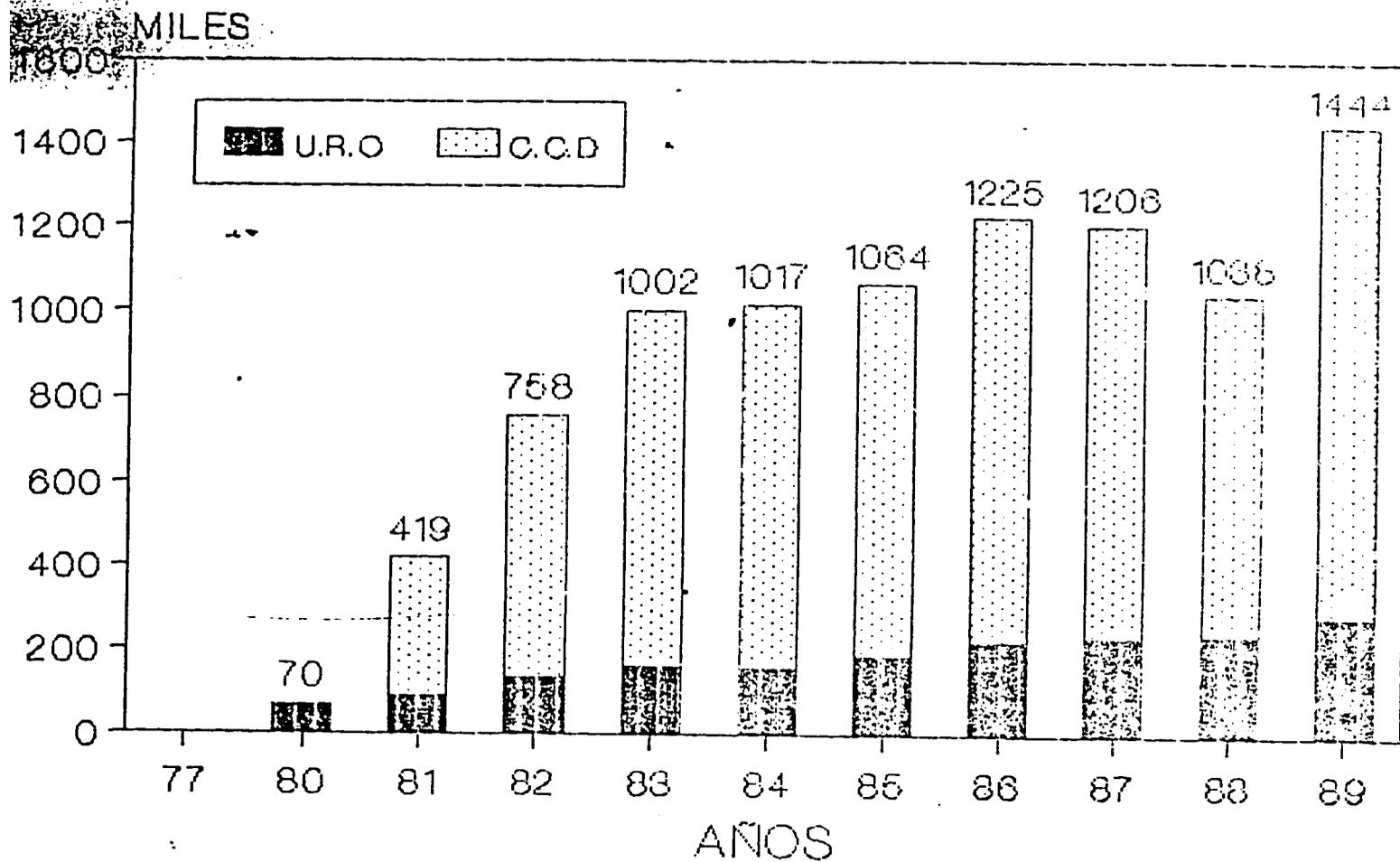
PRIMER NIVEL	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
EX. LABORATORIO	871,789	1,215,535	1,546,763	1,645,839	1,345,772	1,424,064	1,626,742	1,624,625	1,581,620	1,574,500
ESTUDIOS RADIOL.	25,169	20,801	60,072	38,688	3,657	3,487	4,868	5,360	4,923	4,371
PLACAS RADIOL.	46,621	60,000	123,473	76,897	9,915	7,006	8,976	10,529	9,999	6,184
RECETAS ATENDIDAS	3,285,350	4,725,434	6,315,377	7,267,583	8,814,701	9,408,818	8,624,254	8,278,336	6,809,872	4,886,507

SEGUNDO NIVEL	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
EX. LABORATORIO	2,174,619	1,918,035	2,077,738	2,176,363	2,395,771	2,196,656	2,219,473	2,244,028	2,465,184	2,583,835
ESTUDIOS RADIOL.	167,690	82,662	107,555	150,509	208,674	202,647	215,003	204,001	210,843	187,965
PLACAS RADIOL.	262,790	276,589	281,750	316,722	353,916	321,933	356,767	352,872	339,975	284,765
RECETAS ATENDIDAS	5,684,506	5,673,677	5,297,605	5,768,987	5,764,305	6,044,572	5,765,860	5,100,970	4,957,708	4,112,250

TOTAL	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
EX. LABORATORIO	3,046,408	3,133,570	3,624,501	3,822,202	3,741,543	3,620,720	3,846,215	3,868,653	4,046,804	4,158,335
ESTUDIOS RADIOL.	182,859	103,463	167,627	189,197	212,331	205,134	219,871	209,361	215,766	192,336
PLACAS RADIOL.	309,411	336,589	405,223	393,619	363,831	328,944	365,742	363,401	349,974	280,940
RECETAS ATEND.	8,969,656	10,399,111	11,612,982	13,036,570	14,579,006	15,453,390	14,390,114	13,379,306	11,767,576	8,998,757

FUENTE: DIRECCION NACIONAL DE ESTADISTICAS. MINSA

ATENCIONES AL NIÑO MINISTERIO DE SAUD NICARAGUA 1977-89



FUENTE: DINEI
SE-04

5/5

CONTROLES DE CRECIMIENTO Y DESARROLLO AL NIÑO
 MINISTERIO DE SALUD DE NICARAGUA 1980 - 1989

AÑOS	CONTROLES AL NIÑO											
	CRECIMIENTO Y DESARROLLO				DESNUTRIDO					PRETERMINO BAJO PESO		
	TOTAL	SUB-TOTAL	<1 AÑO	1-5 AÑOS	1ER. CONTROL-GRADOS					TOTAL	1ER. CONTROL	SUB-SE CUENTE
					SUB-TOTAL	I	II	III	SUB-SE CUENTE			
1980	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1981	328,344	176,072	95,801	80,271	72,954	48,750	19,840	4,364	55,482	23,836	14,858	8,978
1982	623,956	313,958	172,005	141,953	139,995	92,976	38,703	8,316	147,833	22,170	10,754	11,416
1983	841,196	382,768	201,473	181,295	173,776	116,976	46,523	10,277	264,641	20,011	10,845	9,166
1984	853,160	438,442	249,449	188,993	137,147	89,659	37,460	10,028	266,683	15,838	7,696	7,992
1985	873,664	433,074	255,097	177,977	142,993	92,409	39,760	10,824	286,837	15,960	7,933	8,027
1986	1,005,625	492,968	291,591	201,377	166,369	103,124	49,225	14,023	353,600	17,636	8,848	9,040
1987	975,753	518,982	290,978	228,004	160,371	102,306	44,475	13,590	281,173	15,227	7,597	7,630
1988	793,722	490,407	263,949	221,458	111,800	72,157	28,460	11,163	182,305	14,210	6,821	7,389
1989	1,162,721	691,454	377,092	314,402	161,176	77,194	68,319	15,665	224,609	15,461	7,623	7,828

FUENTE: DIRECCION NACIONAL DE ESTADISTICAS. MINSA

ATENCIONES EN UNIDADES DE REHIDRATACION ORAL
 MINISTERIO DE SALUD DE NICARAGUA. 1980-1989

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
< 1 A.	42,346	57,404	84,686	102,062	98,765	111,777	128,174	135,119	137,061	169,093
1 A.	25,052	33,486	49,400	59,538	61,136	73,114	91,853	83,687	102,273	113,182
5 Y MAS ANOS	3,578	4,784	7,058	10,739	13,180	17,052	28,086	34,377	32,500	27,559
TOTAL CONTROLES	71,576	95,674	141,144	172,339	173,081	201,943	248,113	264,183	271,834	309,834

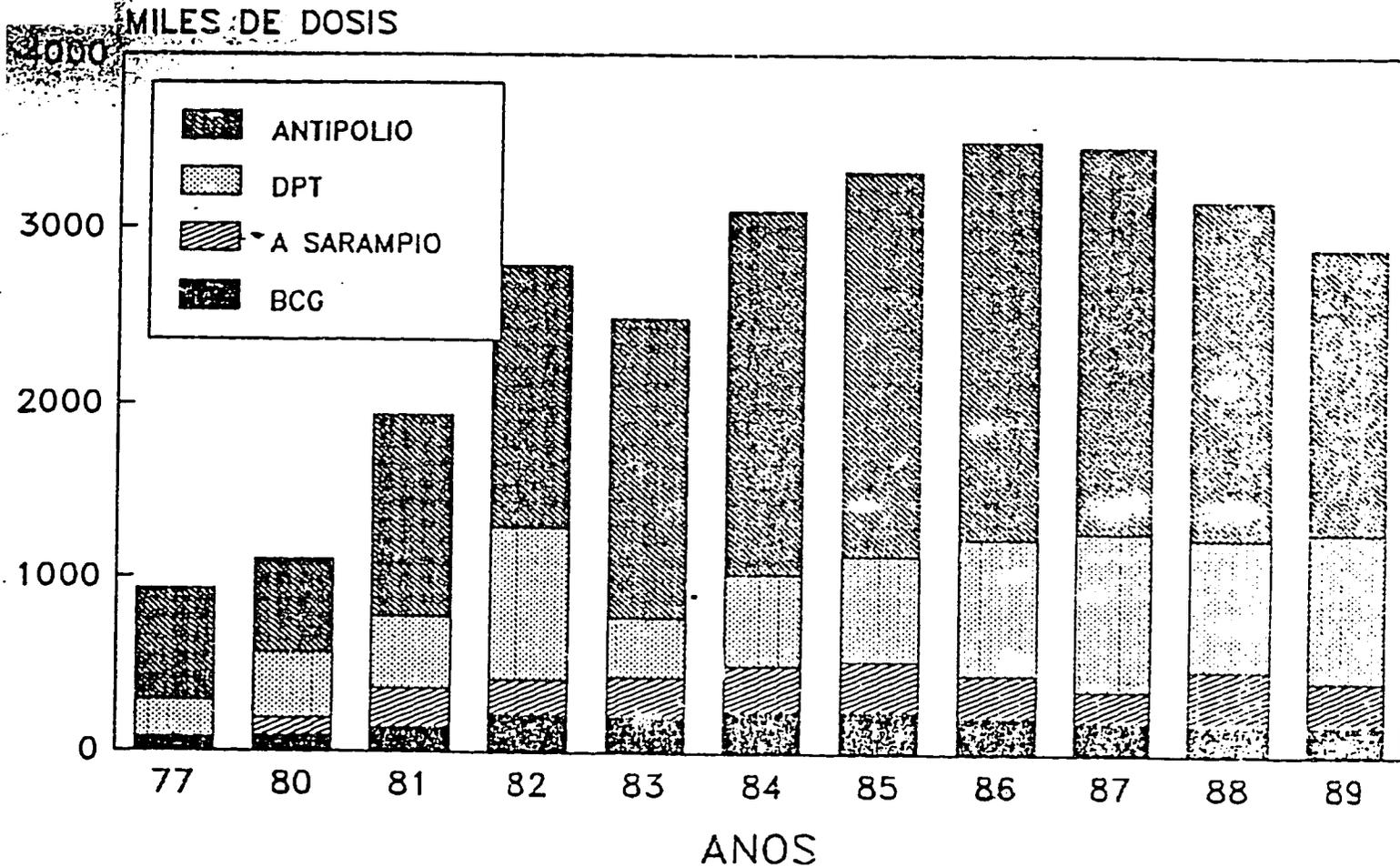
REHID. URO	40,388	51,783	77,323	78,598	71,060	95,902	143,624	159,477	184,339	242,750
REHID. DOMICILIO	29,094	41,688	60,417	90,412	99,391	102,990	101,364	101,214	83,310	60,079
REHID. I.V.	2,075	2,187	3,391	3,329	2,630	3,051	3,125	3,492	4,165	6,965

GRADO DE DESHIDRATACION

< 5 %	60,640	81,323	119,972	147,895	151,202	173,596	225,397	235,571	245,550	279,493
5 - 10 %	10,576	13,394	19,760	22,674	19,636	29,930	20,495	24,918	24,352	27,142
> 10 %	160	957	1,412	1,170	2,193	2,417	2,221	3,694	1,932	3,199

FUENTE: DIRECCION NACIONAL DE ESTADISTICAS. MINSA

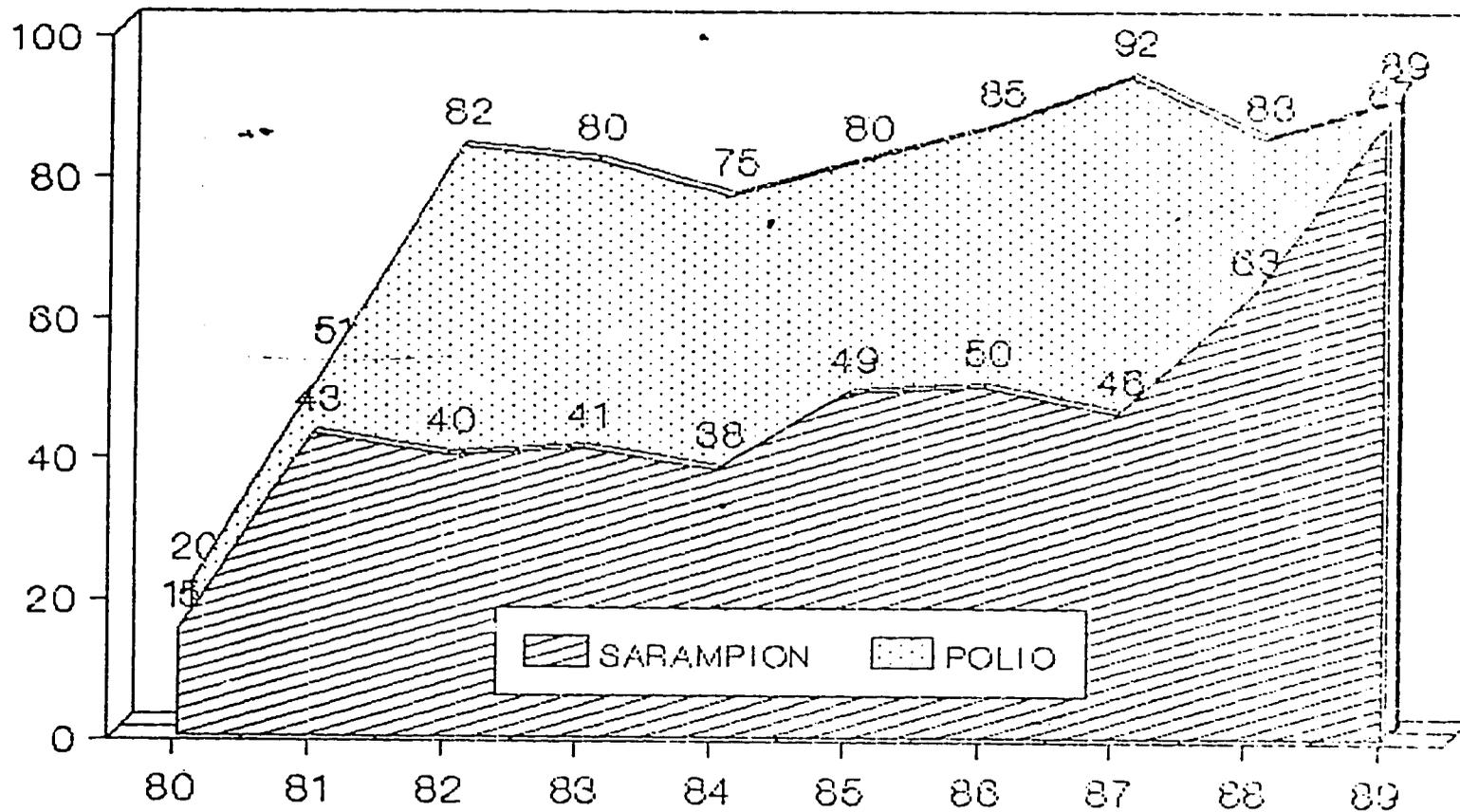
DOSIS DE BIOLÓGICOS ADMINISTRADA MINISTERIO DE SALUD NICARAGUA 1977-89



MINISTERIO DE SALUD

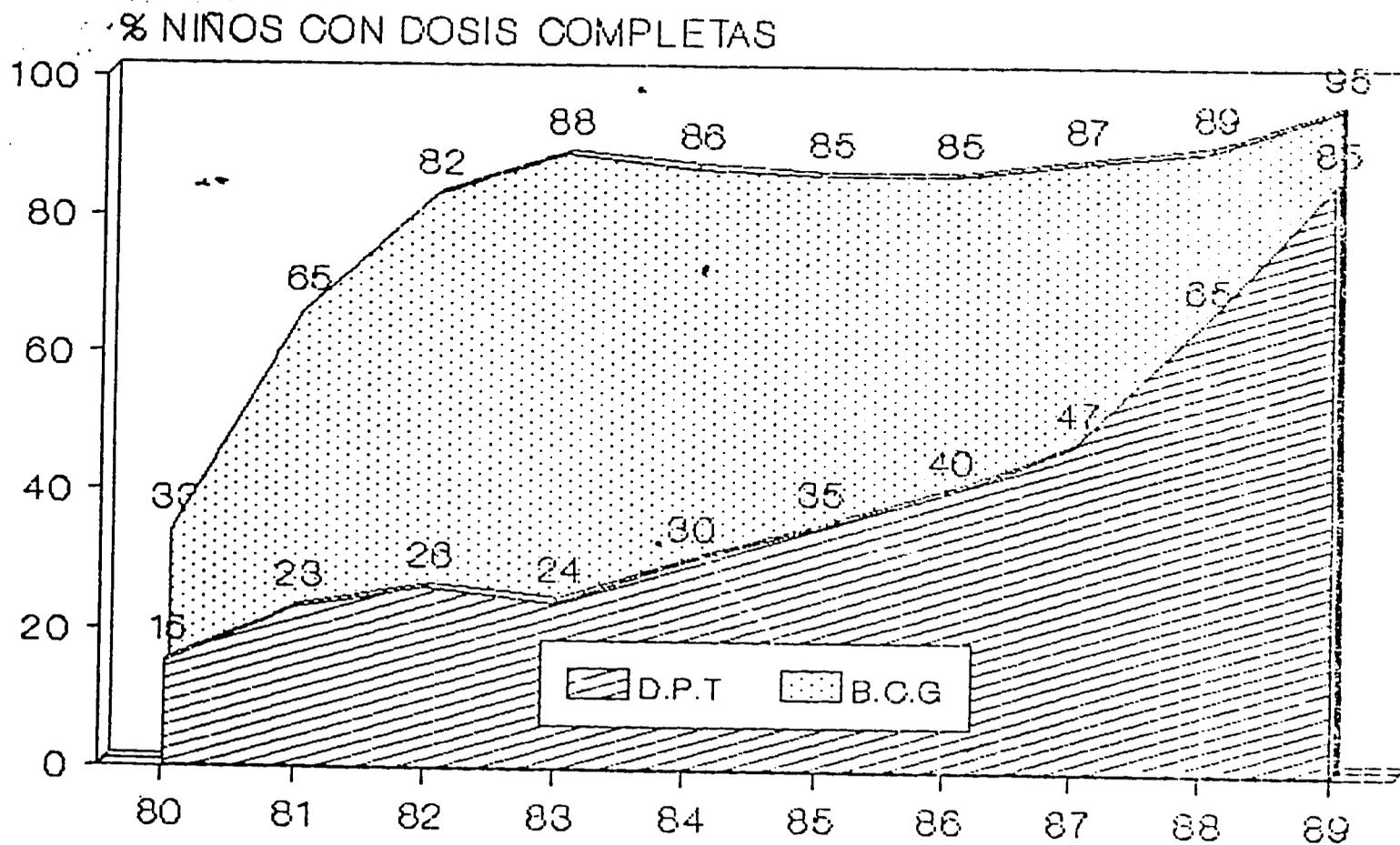
COBERTURA DE INMUNIZACION EN NIÑOS MENORES DE UN AÑO. 1980-1989

% NIÑOS CON DOSIS COMPLETAS



MINISTERIO DE SALUD

COBERTURA DE INMUNIZACION EN NIÑOS MENORES DE UN AÑO. 1980-1989



DOSIS DE VACUNAS APLICADAS Y COBERTURAS ESTIMADAS
 MINISTERIO DE SALUD DE NICARAGUA 1980-1989

DOSIS APLICADAS	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
B.C.G.	81,228	139,527	210,832	195,927	225,500	239,975	200,630	173,319	170,380	170,949
ANTIPOLIO	538,178	1,163,853	1,489,707	1,716,273	2,072,614	2,189,402	2,268,408	2,202,686	1,920,908	1,612,048
D.P.T.	384,949	409,493	880,480	342,395	529,356	641,934	791,043	911,655	758,991	856,687
ANTISARAMPION	101,829	225,932	205,323	234,085	273,045	287,775	250,195	192,551	316,566	251,920
D.T.	156,411	155,229	236,745	191,735	248,771	270,885	322,124	297,505	241,352	235,394
T.T.	527,748	449,362	836,087	815,116	1,115,745	1,028,095	1,194,364	1,071,007	977,776	754,461

COBERTURAS (%)
 ESTIMADAS
 EN < 1 A

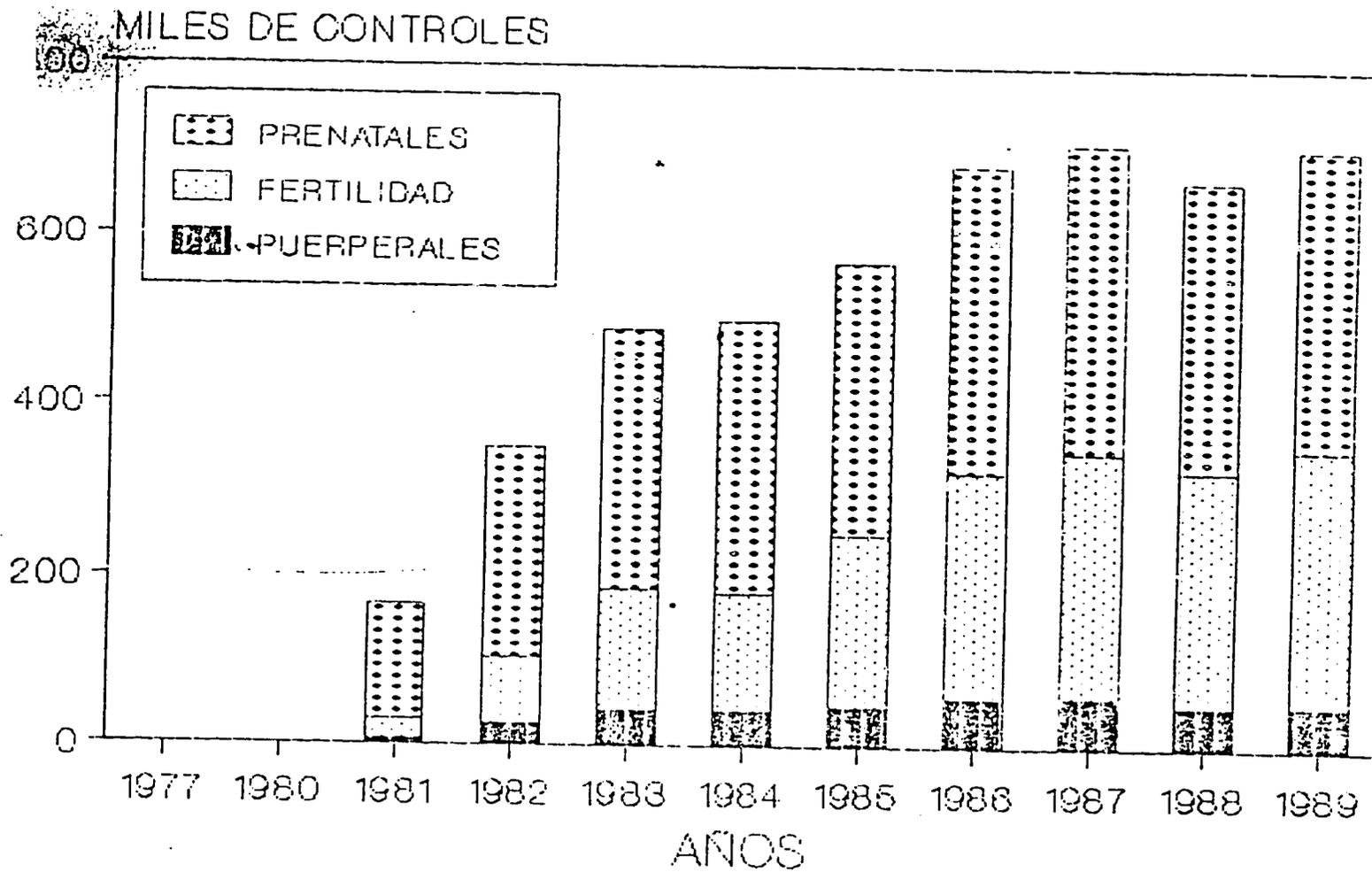
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
B.C.G.	33.53	66.20	82.83	89.24	97.85	103.37	101.22	93.80	90.70	94.08
ANTIPOLIO	20.84	24.12	70.51	82.96	80.76	88.99	93.94	98.63	91.16	86.55
D.P.T.	15.62	23.35	26.82	24.00	33.33	35.27	43.33	50.53	46.86	63.47
ANTISARAMPION	15.47	20.33	40.76	41.72	47.06	51.37	48.33	42.75	57.06	63.28

COBERTURAS (%)
 ESTIMADAS
 EN < 5 A

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
B.C.G.	8.76	12.37	21.22	15.70	17.95	16.79	9.06	5.93	6.72	6.55
ANTIPOLIO	23.24	14.25	58.49	63.11	63.78	65.98	62.99	63.67	63.28	71.94
D.P.T.	9.72	11.13	13.50	8.37	13.75	15.30	19.54	20.51	21.12	21.29
ANTISARAMPION	13.36	13.63	23.38	33.45	37.90	37.66	28.33	18.01	13.18	24.41

FUENTE: DIRECCION NACIONAL DE ESTADISTICAS, MINSA

ATENCIÓN INTEGRAL A LA MUJER MINISTERIO DE SALUD NICARAGUA 1977-89



FUENTE: DINEI
SE-C5

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CONTROLES DE ATENCION INTEGRAL A LA MUJER.
 MINISTERIO DE SALUD DE NICARAGUA 1980-1989

CONTROL PRENATAL	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
PRIMER CONTROL	ND	82,599	131,083	143,470	152,071	149,958	172,927	173,609	161,943	161,933
I TRIMESTRE	ND	22,329	38,970	45,936	52,515	54,959	65,432	66,261	63,212	64,068
II TRIMESTRE	ND	30,913	51,250	55,531	60,348	58,271	66,661	64,490	60,163	58,491
III TRIMESTRE	ND	29,357	40,863	42,003	39,208	36,728	40,834	42,858	38,568	39,374
SUBSECUENTES	ND	55,024	113,544	159,298	166,513	169,313	187,297	191,669	180,573	193,128
TOTAL CONTROLES	ND	137,623	244,627	302,768	318,584	319,271	360,224	365,278	342,516	355,061

CONTROLES A.R.O.	ND	6,973	19,452	21,949	21,012	18,732	22,328	18,896	23,955	35,056
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CONTROL PUERPERIO	ND	6,635	25,159	43,045	43,394	46,972	59,552	59,820	51,097	52,172
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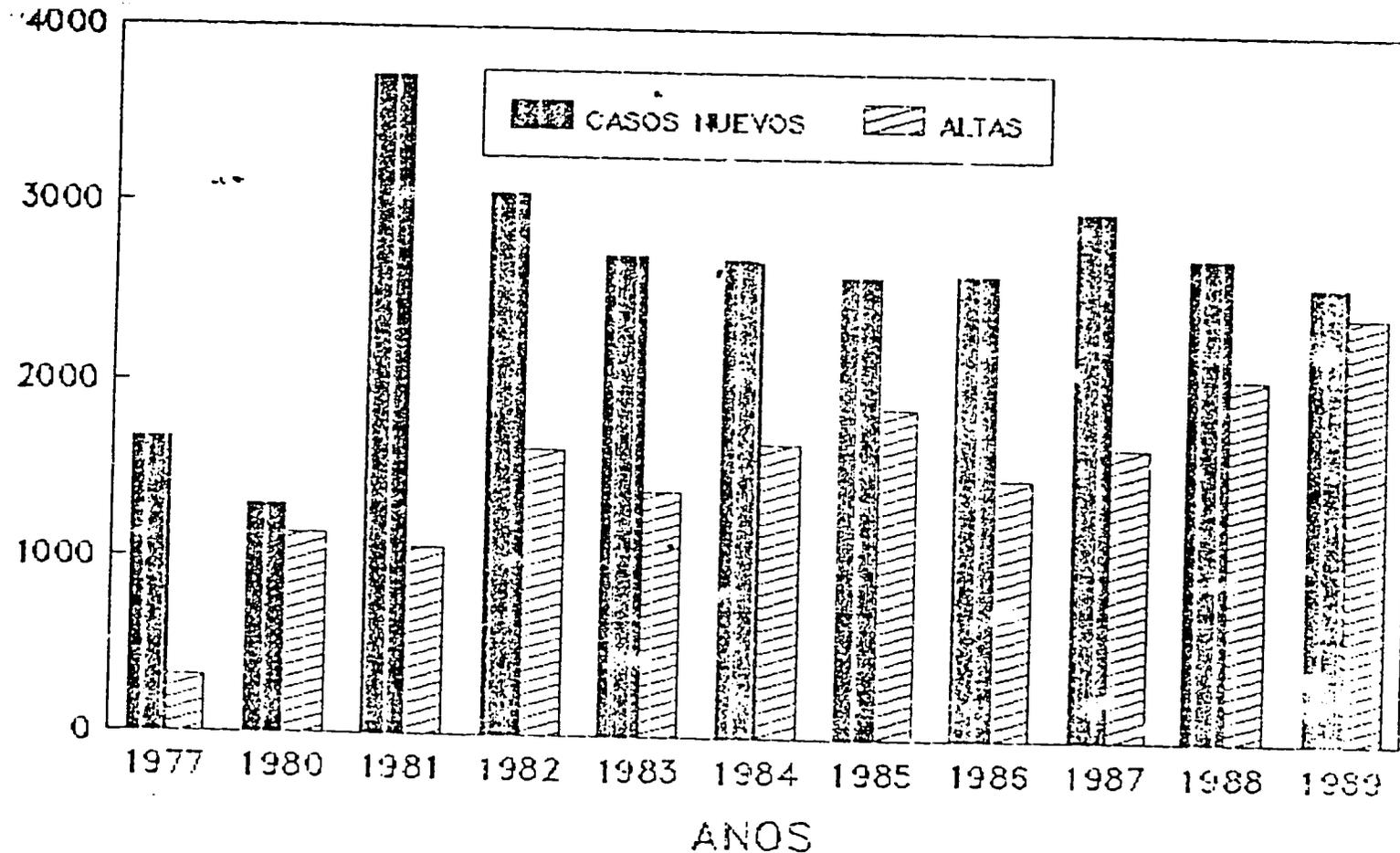
CONT. FERTILIDAD	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
GESTAGENOS ORALES	ND	15,573	60,122	106,133	104,356	160,591	221,816	233,797	219,563	225,155
D. I. U.	ND	2,243	7,740	14,564	16,879	20,928	23,510	27,063	24,949	33,276
OTROS METODOS	ND	5,790	12,663	21,637	15,619	19,666	18,737	25,411	32,939	35,603

CONTROL CaCU	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
CITOPLOG. VAGINAL	ND	6,816	22,446	22,343	25,555	41,321	54,402	58,375	56,167	61,671

FUENTE: DIRECCION NACIONAL DE ESTADISTICAS. MINISTERIO DE SALUD

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CASOS NUEVOS Y ALTAS DEL PROGRAMA DE TUBERCULOSIS, MINISTERIO DE SALUD NICARAGUA 1977-1989



FUENTE: DINE-MINSA

9

ACTIVIDADES DEL PROGRAMA DE CONTROL DE LA TUBERCULOSIS
 MINISTERIO DE SALUD DE NICARAGUA 1980-1989

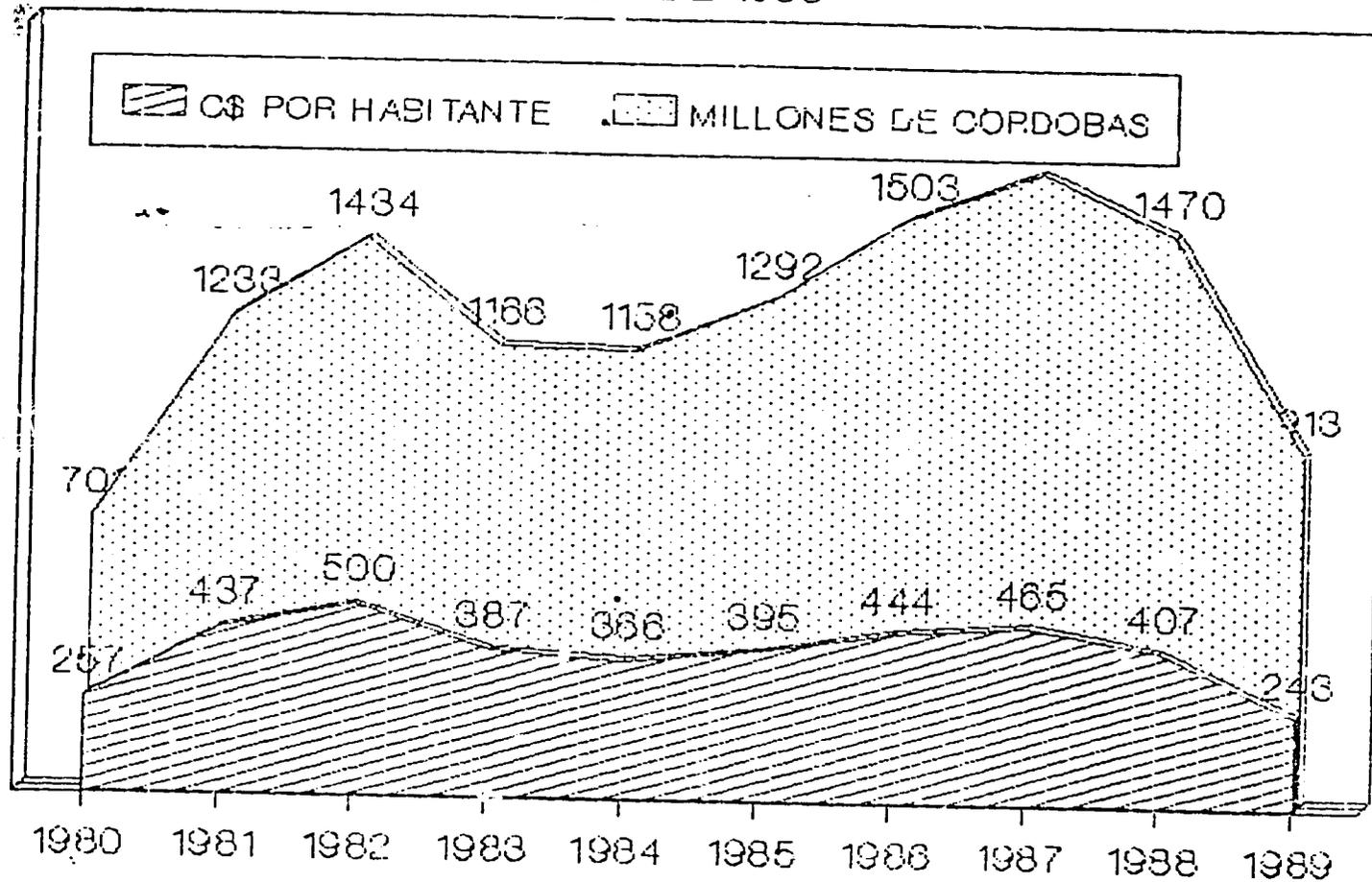
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
CASOS NUEVOS	1,300	3,723	3,053	2,723	2,703	2,609	2,632	2,983	2,737	2,582
ABANDONOS	3,233	2,633	3,401	2,708	2,616	1,713	1,260	1,201	1,109	1,171
ALTAS	1,136	1,060	1,622	1,388	1,667	1,869	1,474	1,660	2,057	2,409
BACILOSCOPIAS	18,863	26,663	30,828	35,923	36,629	42,806	55,320	48,989	105,399	82,905
CASOS EN CONTROL A FIN DE AÑO	2,309	3,555	2,472	2,931	2,805	2,606	2,932	3,212	2,993	2,765
BACILOSCOPIAS	1,936	1,890	1,555	1,486	1,593	1,564	1,742	1,822	1,449	1,332

FUENTE: DIRECCION NACIONAL DE ESTADISTICAS. MINSA

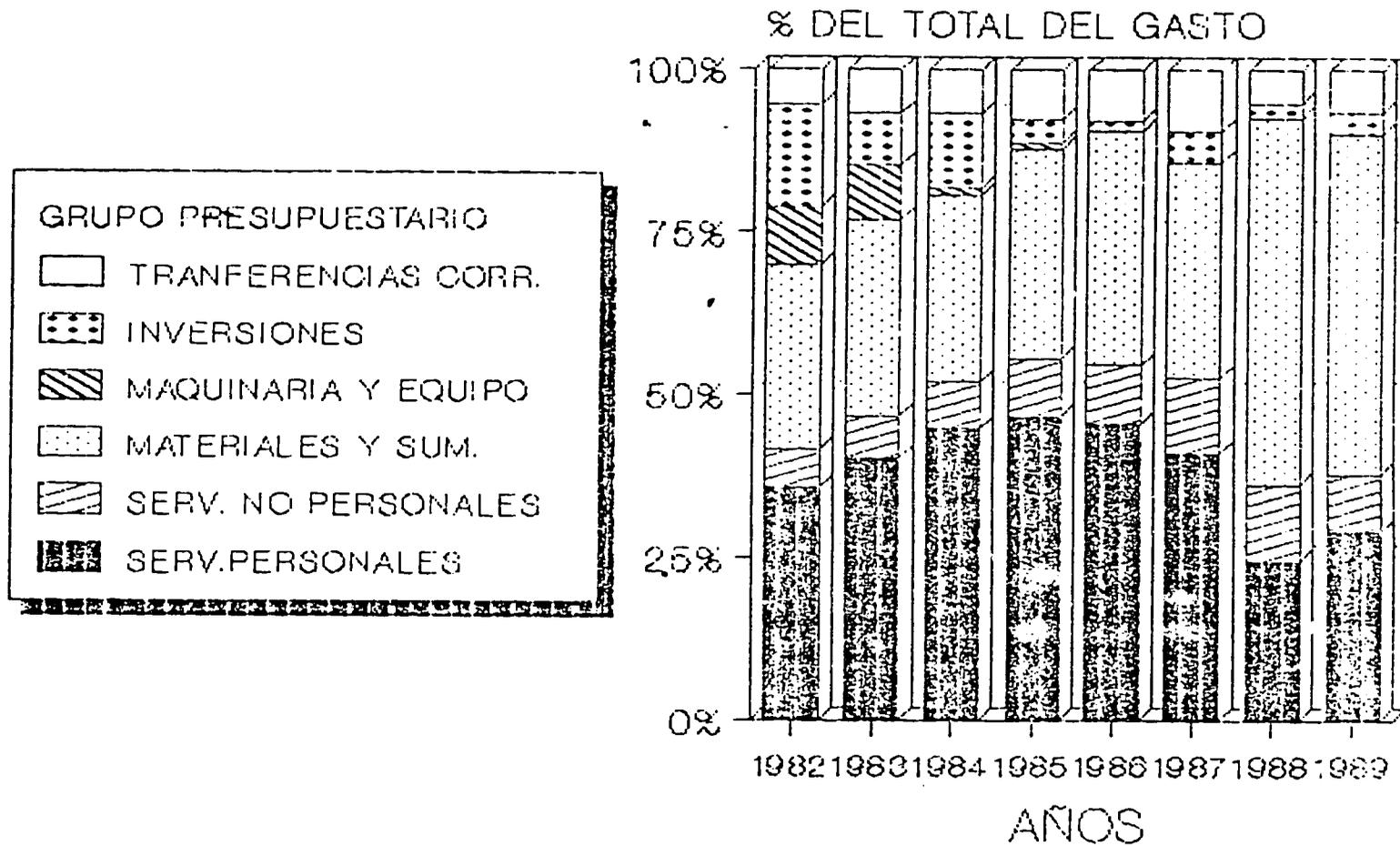
at

PRESUPUESTO DEL MINISTERIO DE SALUD 1980-89

C\$ A PRECIOS CONSTANTES DE 1980

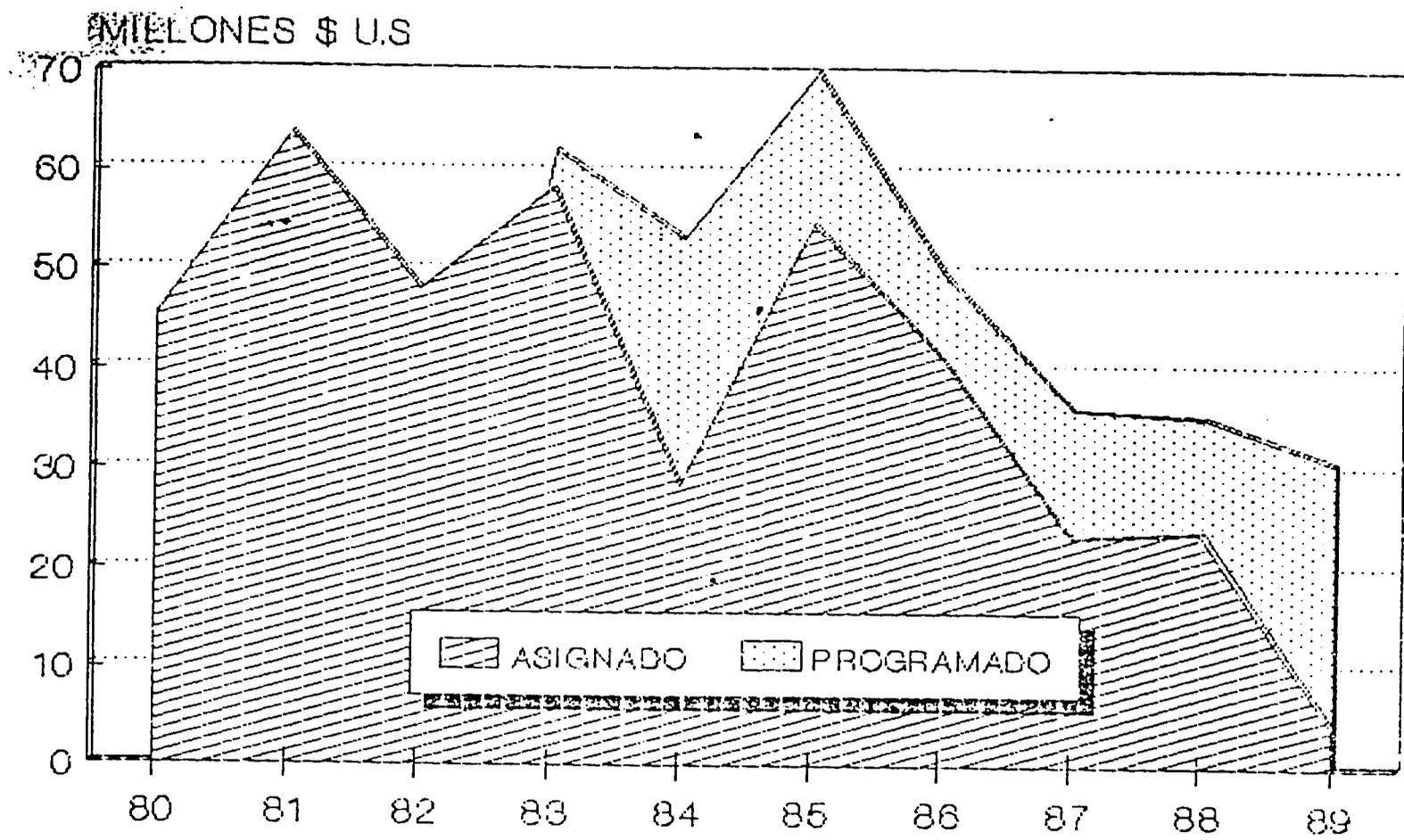


ESTRUCTURA DEL GASTO DEL MINSA 1982-1988



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MINISTERIO DE SALUD FINANCIMIENTO EN DIVISAS 80-89

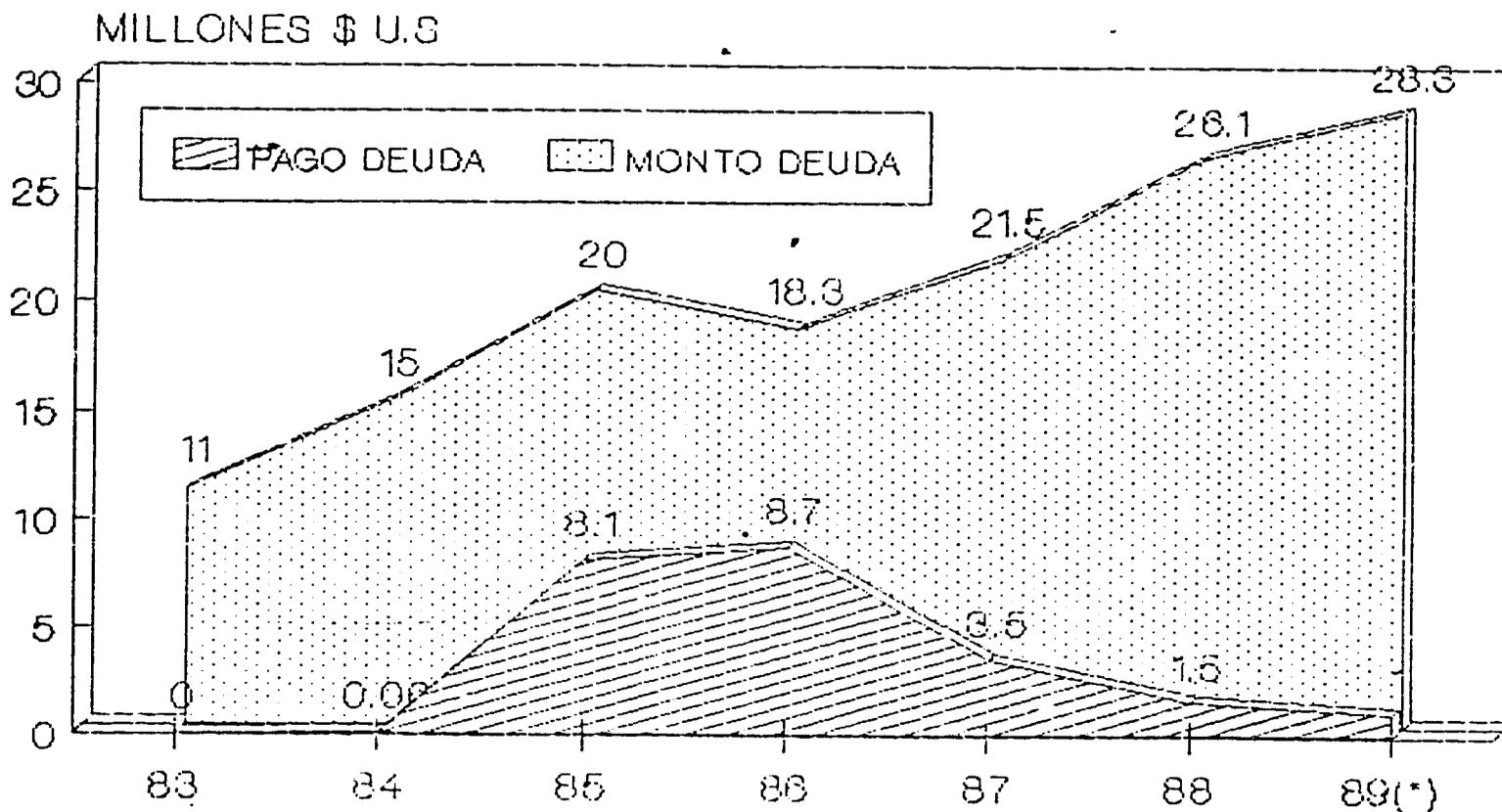


100

MINISTERIO DE SALUD

DEUDA COMERCIAL EXTERNA DEL SECTOR

1983/1989

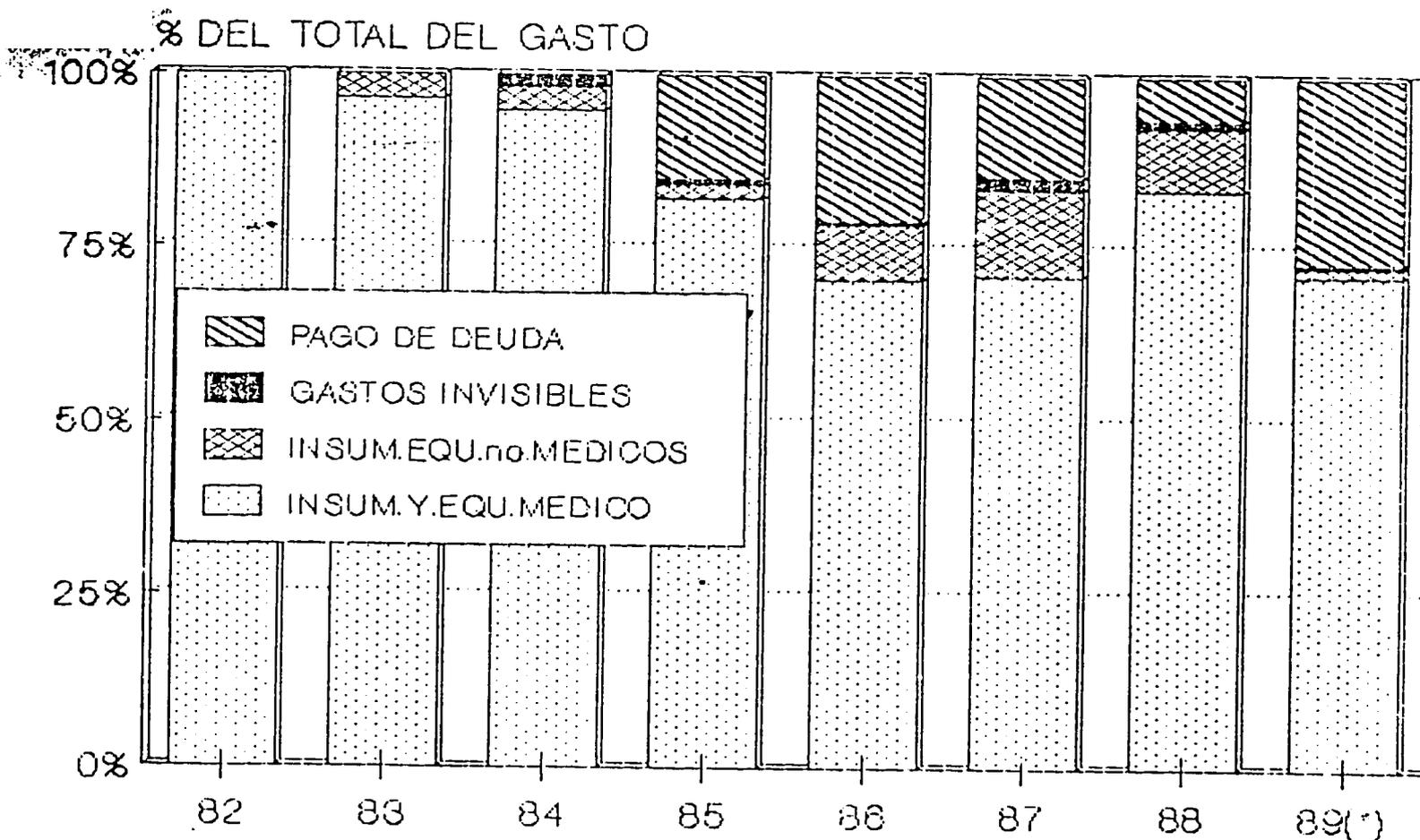


(*) Al 30 de junio.

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MINISTERIO DE SALUD

ESTRUCTURA DEL GASTO EN DIVISAS 80-89



(*) Al 20 de JULIO/89

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ANNEX C
RESOLUTION 75

1989: AÑO DEL X ANIVERSARIO.... "LA REVOLUCION SE QUEDA"

MINISTERIO DE SALUD



RESOLUCION MINISTERIAL N° 75
ORGANIZACION DEL PRIMER NIVEL DE ATENCION DE SALUD
JUNIO 1989

A DIEZ AÑOS: MAS ORGANIZACION, MAS EFICIENCIA, MAS PARTICIPACION COMUNAL
POR LA DEFENSA DE LA VIDA SEGUIMOS DE FRENTE!

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"1989: AÑO DEL X ANIVERSARIO ...LA REVOLUCION SE QUEDA"

MINISTERIO DE SALUD

**RESOLUCION MINISTERIAL N° 75
ORGANIZACION DEL PRIMER NIVEL DE ATENCION DE SALUD
JUNIO 1989**



**A 10 AÑOS: CON MAS EFICIENCIA, MAS ORGANIZACION, MAS
PARTICIPACION COMUNAL, POR LA DEFENSA DE LA VIDA...
SEGUIMOS DE FRENTE.**

10/89

RESOLUCION MINISTERIAL No. 75

DORA MARIA TELLEZ ARGUELLO, Ministro de Salud, en uso de las facultades que le confiere el arto.3 del Decreto 1030, ley Organica del Ministerio de Salud,

Considerando:

Que el nivel de desarrollo alcanzado por los servicios de salud del primer nivel de atencion en el pais demanda un mayor ordenamiento del mismo, armonia y coherencia en la organizacion de nuestros servicios, mayor racionalidad en el uso de los recursos disponibles y futuros a fin de elevar los niveles de eficiencia, eficacia y equidad para contribuir en mejor medida a la elevacion continua del estado de salud de la poblacion.

Que en correspondencia con el estado de salud de la poblacion y la situacion de los servicios, el Plan 88-90 del sector salud establece la necesidad de la reorganizacion del sistema a partir de la implantacion de los sistemas territoriales.

Que los sistemas territoriales deberan organizarse en correspondencia a la situacion de cada territorio, a la necesidad de enfrentar integralmente los problemas de salud de la poblacion y a la disponibilidad de recursos del sistema de salud.

Que de acuerdo a la legislacion vigente, el municipio se establece como territorio base de la accion del gobierno, organizaciones de masas y de la propia poblacion.

Por tanto,

Resuelve:

"PRIMER NIVEL DE ATENCION DE SALUD"

PRIMERO:

Se establece como Primer Nivel de Atencion de Salud al conjunto de acciones institucionales, de la comunidad, la familia, los individuos y los servicios basicos dirigidos a enfrentar los principales problemas de salud de la poblacion.



"PRINCIPIOS BASICOS EN LA ORGANIZACION DEL PRIMER NIVEL DE ATENCION DE SALUD"

SEGUNDO: Los principios basicos que regiran la organizacion del Primer Nivel de Atencion de Salud son los siguientes:

1. La accion de salud tiene caracter integral. La promocion, prevencion, asistencia, recuperacion y rehabilitacion son partes indispensables e indivisibles de esa accion. Se entendera como prestacion de servicios de salud a la realizacion armonica de esas acciones y no solamente las de caracter asistencial.
2. La organizacion del sistema de salud debe corresponderse a la situacion politica, economica, social y militar de cada territorio.
3. La accion de salud en cada territorio debera definirse en correspondencia con el estado de salud de la poblacion y a las variaciones que este vaya presentando.
4. La accion de salud no es exclusiva del sistema de salud. Las instituciones de gobierno a nivel municipal, regional y nacional, las organizaciones comunales, sindicales y de masas, la familia y los individuos son sujetos activos de la misma.
5. Forman parte del Primer Nivel todos los servicios de salud de un territorio, sean estos estatales, privados o mixtos. La adecuada articulacion y cooperacion entre los mismos va en el sentido de aprovechar la capacidad nacional para enfrentar de forma racional los problemas de salud de la poblacion y responder a su demanda.
6. El sistema de salud basa su accion en el abordaje epidemiologico de los problemas de salud de la poblacion y la determinacion de criterios de riesgo, lo cual lo constituye en un instrumento activo en el control de las enfermedades y en la modificacion del perfil epidemiologico de dicha poblacion. El sistema de salud no es por tanto una entidad pasiva que dedica sus recursos a la satisfaccion exclusiva de la demanda asistencial.
7. En correspondencia al abordaje epidemiologico es indispensable la microlocalizacion de los problemas de salud y la determinacion de los problemas prioritarios, a fin de dirigir y concentrar los recursos, orientar y ejecutar acciones que contribuyan eficazmente al mejoramiento del estado de salud de la poblacion.

8. El Primer Nivel de Atencion de Salud, se rige por las politicas, planes, programas y normas nacionales unicas, las que deberan adecuarse a la realidad especifica del desarrollo de cada territorio.

9. La comunidad organizada debe ser sujeto activo del conocimiento, enfrentamiento y modificacion de sus problemas de salud.

10. Cada servicio de salud debe estar referido a un territorio determinado y disponerse para abordar integralmente los problemas de salud del mismo.

11. El municipio es el territorio base para la organizacion del Primer Nivel de Atencion, para lo cual se organizaran los Servicios Municipales de Salud.

12. El trabajo de terreno es uno de los metodos de trabajo esenciales al Primer Nivel, su orientacion debe ser la busqueda de los problemas de salud y sus alternativas de solucion en el seno de la comunidad.

13. La formacion, capacitacion y educacion sanitaria, teniendo como ejes la integracion docente asistencial, el estudio-trabajo y la investigacion, es una caracteristica esencial del Primer nivel.

TERCERO: La organizacion del Primer Nivel de Atencion de Salud supone:

1. La organizacion de la red de Servicios Municipales de Salud como base para la prestacion de servicios y la interrelacion (referencia y contrarreferencia) entre los mismos, a fin de potenciar los diversos niveles de resolucion de las unidades.

2. La organizacion de las Areas de Salud como nivel de direccion, administracion y gestion de los servicios municipales de salud.

"SUS NIVELES DE RESOLUCION"

CUARTO: Se establecen los siguientes niveles de resolucion para el Primer Nivel de Atencion de Salud:

1. CASA BASE.

CONCEPTO: Es la unidad basica de salud de la comunidad y sirve como punto de referencia a la comunidad para la ejecucion de las acciones en salud propias de este nivel.

Se organiza a partir de personal voluntario, brigadistas de salud, parteras, líderes de salud o promotores que dediquen parte de su tiempo a la realización de acciones de promoción, prevención y de asistencia mínima a los problemas de salud de la comunidad en la cual residen.

Cada Casa Base deberá estar articulada con una unidad funcional del sistema de salud. El personal de la unidad de salud con la cual se articule debe visitar periódicamente las casas bases. Además esta unidad debe dar capacitación a estos compañeros y asegurar el apoyo, control y seguimiento a las acciones de salud que deben realizarse en este nivel.

2. Puesto de Salud.

CONCEPTO: Es la unidad funcional básica del sistema de salud que atiende un territorio determinado con una población definida, para responder con la participación comunitaria a los principales problemas de salud de la población.

Su actividad está orientada a la promoción y prevención de la salud, a la atención de la madre, al niño menor de seis años y a la prevención y asistencia de las principales enfermedades transmisibles y no transmisibles de importancia epidemiológica en el territorio.

Se consideraran recursos de salud del territorio asignado a esta unidad, las parteras, brigadistas, promotores de salud y otros agentes prestadores de servicios de salud que existan en la comunidad.

Cuenta con su lista básica de medicamentos e instrumental y equipos básicos necesarios para cumplir con su perfil. No dispone de farmacia y medios diagnósticos, pero podrá disponer de una provisión de medicamentos y material de reposición en los casos en que sea necesario.

Se establecen dos tipos de puestos de salud:

- * Puesto de salud A: es el que posee personal de enfermería permanente, con asignación de personal médico a tiempo parcial (visitas periódicas) y cuenta con instrumental básico e insumos necesarios para cumplir con su perfil.
- * Puesto de salud B: es el que posee únicamente personal de enfermería permanente y cuenta con instrumental básico e insumos necesarios para cumplir con su perfil.

Podrá referir pacientes al puesto médico o centro de salud y deberá asumir funciones docentes según las normas.

Deberán desarrollar la participación comunitaria en salud, el

establecimiento de Casas Bases y la orientacion del trabajo voluntario de los brigadistas, promotores, parteras y otros lideres de salud de la comunidad.

3. Puesto medico.

CONCEPTO: Es la unidad funcional que atiende un territorio determinado en la ciudad (medico de barrio) o en comunidades rurales (medico de comarca, empresa agricola, municipio, etc.) y cuenta con recurso medico y de enfermeria de tiempo permanente, los cuales trabajan con la comunidad en la busqueda de soluciones practicas a los problemas de salud.

Sus funciones se enmarcan en la promocion, prevencion, y recuperacion de la salud, priorizando la atencion a la madre y al nino menor de seis anos, enfermedades transmisibles y dispensarizadas.

De acuerdo a las condiciones de cada territorio y a sus necesidades podra asignarse periodicamente trabajadores de higiene y epidemiologia. Cuenta ademas con lista basica de medicamentos e instrumentos de acorde al perfil establecido. No dispondra de servicios de farmacia y medios de diagnostico, aunque podra disponer de una provision de medicamentos y material de reposicion cuando sea necesario.

Podra referir a sus pacientes directamente a los servicios de consulta y programas del centro de salud, a la consulta de especialista o bien para los hospitales.

En las principales ciudades del pais, debera tratar de mantenerse una relacion de 1 medico por cada 6.000 habitantes y 1 auxiliar de enfermeria por cada 6.000 habs.

Constituye una labor fundamental del personal de este nivel de resolusion la gestion permanente con la comunidad para el mejoramiento de la situacion de salud. Seran considerados como personal de salud las parteras, brigadistas y promotores de salud y otros agences de salud de la comunidad, con los que trabajara estrechamente, capacitandolos periodicamente en aquellos aspectos mas estrechamente relacionados con los principales problemas de salud de la poblacion.

4. Centro de salud.

CONCEPTO: Se definen como centros de salud aquellas unidades que cuentan con recursos medicos y paramedicos permanentes y disponen de servicios de farmacia y medios diagnosticos.

Corresponde al centro de salud la atencion a un territorio determinado, en el cual realiza acciones integrales de salud.

Los servicios que presta esta unidad de salud son los referidos a la promoción y prevención de salud, atención priorizada a la madre y a niños menores de 6 años, prevención, control y asistencia de las enfermedades transmisibles, programas de dispensarizados, y atención de morbilidad general. Podrá desarrollar otros programas en dependencia de su desarrollo.

Los centros de salud deberán constituirse en su desarrollo como centros de referencia de los puestos de salud y puestos médicos, para efecto de la atención especializada de la morbilidad y para el desarrollo de programas específicos tales como salud mental, salud bucal, inspección sanitaria. Asimismo se constituye en referencia para el apoyo diagnóstico de laboratorio y rayos X para los puestos médicos y puestos de salud.

De acuerdo a su desarrollo deberán acreditarse centros de salud como centros docentes y definir el ámbito de acciones que esto significa.

Se definen los siguientes tipos de centros de salud:

* Centros de Salud tipo A: son los que cuentan con personal médico especializado, al menos en Pediatría, Gineco-obstetricia o Medicina Integral y médicos generales graduados o en servicio social. Cuentan con odontólogos permanentes y servicios de laboratorio y farmacia. Además pueden contar con otros profesionales de salud en dependencia de los programas que desarrolle.

* Centro de Salud tipo B: cuentan con plantilla de médicos generales graduados o en servicio social y odontólogo permanente. Disponen de servicios de laboratorio y farmacia.

Los centros de salud, en dependencia de sus necesidades, podrán tener camas de observación hasta un máximo de cuatro, las cuales deberán utilizarse de acuerdo a las normas.

5. Hospitales Primarios.

CONCEPTO: Son unidades de salud que poseen de 10 a 80 camas, que cuentan con servicios de internamiento de pacientes y atienden prioritariamente a la madre y niños menores de 6 años, enfermedades transmisibles, morbilidad general, parto y cirugía menor de forma permanente y ejercen funciones docentes, investigativas y de educación sanitaria. Pueden asignarseles cirujanos por periodos cortos y cuentan con servicios de laboratorio, rayos X, farmacia y otros servicios básicos hospitalarios.

Se definen los siguientes tipos de hospitales primarios:

* Hospital Primario A : son aquellos con personal médico

especializado, al menos en pediatría, Gineco-Obstetricia, y Medicina Integral, cuenta además con el personal auxiliar, el instrumental y los insumos necesarios para su perfil.

* Hospital Primario B : cuentan únicamente con personal médico general graduado o en servicio social, personal auxiliar, instrumental e insumos necesarios para su perfil.

"ACCIONES EN SALUD CORRESPONDIENTES A CADA NIVEL DE RESOLUCION"

QUINTO: Las acciones de salud correspondientes a cada nivel son las siguientes:

1. Casa Base.

- a. Acciones de higiene y mejoramiento del medio ambiente.
- b. Educación sanitaria.
- c. Atención del parto.
- d. Acciones de búsqueda, seguimiento y control de enfermedades transmisibles.
- e. Captación y referencia de pacientes con patologías priorizadas en el territorio.
- f. Vigilancia epidemiológica.

2. Puesto de salud.

- a. Acciones de higiene y mejoramiento del medio ambiente.
- b. Educación Sanitaria.
- c. Atención integral al niño.
- d. Atención integral a la madre.
- e. Búsqueda, atención, seguimiento y control de las enfermedades transmisibles.
- f. Atención básica a la consulta por morbilidad general.
- g. Vigilancia epidemiológica.
- h. Captación y referencia de pacientes con patologías crónicas y agudas.
- i. Realización de curaciones e intervenciones de cirugía.

menor segun norma.

j. Seguimiento y control de los pacientes referidos por otras unidades del sistema con mayor nivel de resolucioⁿ.

3. Puesto medico.

- a. Higiene y mejoramiento del medio ambiente.
- b. Educacion sanitaria.
- c. Atencion integral al nino.
- d. Atencion integral a la madre.
- e. Busqueda, atencion, seguimiento y control de enfermedades transmisibles.
- f. Dispensarizacion de pacientes cronicos.
- g. Atencion a consulta por morbilidad general.
- h. Vigilancia epidemiologica.
- i. Cirugia menor y curaciones.
- j. Atencion y seguimiento de los pacientes enviados por referencia de puestos de salud.
- k. Referencia hacia especialistas en centros de salud, consulta externa e ingreso en hospitales.
- l. Atencion y seguimiento de pacientes enviados como contrarreferencia de unidades de mayor nivel de resolucioⁿ.
- m. Cuidados basicos referidos a la salud bucal.
- n. Prevencion de salud mental.
- o. Acciones de salud ocupacional.
- p. Realizacion de actividades docentes correspondientes a su nivel.

4. Centro de salud.

- a. Higiene y mejoramiento del medio ambiente.
- b. Educacion Sanitaria.
- c. Atencion Integral al nino.

- d. Atencion Integral a la madre.
 - e. Programa de control de enfermedades transmisibles.
 - f. Programa de dispensarizacion de patologias cronicas.
 - g. Vigilancia epidemiologica.
 - h. Programa de salud bucal.
 - i. Programa de salud mental.
 - j. Programa de rehabilitacion.
 - k. Programa de salud ocupacional.
 - l. Atencion a consulta por morbilidad general.
 - m. Cirugia menor y curaciones.
 - n. Referencia a unidades de mayor nivel de resolucioñ.
 - o. Atencion de las referencias de pacientes por puestos de salud y puestos medicos, bien sea para la asistencia al paciente o para los medios diagnosticos.
 - p. Centro docente para la formacion y capacitacion continua del personal de salud de su area de influencia.
5. Hospital primario.
- a. Higiene y mejoramiento del medio ambiente.
 - b. Educacion Sanitaria.
 - c. Atencion integral al nino.
 - d. Atencion integral a la madre.
 - e. Programa de control de enfermedades transmisibles.
 - f. Programa de dispensarizacion de paçientes con enfermedades cronicas.
 - g. Vigilancia epidemiologica.
 - h. Programa de salud bucal.
 - i. Programa de salud mental.
 - j. Programa de rehabilitacion.

- k. Atencion a la consulta por morbilidad general.
- l. Ingreso para internamiento de pacientes que lo requieran, priorizando a los ninos menores de 6 anos y a las madres.
- m. Atencion de emergencias.
- n. Cirugia menor y otras cirujias de acuerdo a norma.
- o. Curaciones.
- p. Referencia a unidades de mayor resolucioin.
- q. Atencion y seguimiento a los pacientes referidos por unidades de menor resolucioin.
- r. Atencion y seguimiento a los pacientes referidos por contrarreferencia de otras unidades.
- s. Centro docente para la capacitacion, y adiestramiento de personal de salud.

"REFERENCIA Y CONTRARREFERENCIA EN LA PRESTACION DE SERVICIOS"

SEXTO: Se establece la referencia y la contrarreferencia como un mecanismo del sistema de salud para asegurar la provision de los cuidados y asistencia requeridos por un paciente haciendo uso de los servicios prestados por los diversos niveles de resolucioin del sistema. Se realiza entre niveles de menor resolucioin a otros con una complejidad mayor y viceversa; pero nunca entre iguales niveles de resolucioin.

La referencia y contrarreferencia deben proveerse con agilidad y oportunidad. La valoracion del riesgo del paciente es determinante para procurar una referencia y contrarreferencia que lleve a disponer los recursos del sistema para enfrentar los problemas que el paciente tiene.

Entre los diferentes niveles de resolucioin que un territorio posee deben estar claramente identificados los mecanismos de referencia y contrarreferencia, de forma que se provea una atencion en tiempo y forma al paciente referido y que ademas asegure la continuidad en el diagnostico, tratamiento y seguimiento posterior.

"SERVICIOS MUNICIPALES DE SALUD"

SEPTIMO: Concepto, organizacion y atribuciones del responsable de los servicios municipales de salud.

CONCEPTO: Se entenderan como Servicios Municipales de Salud la organizacion y disposicion adecuada de los recursos humanos y materiales conforme la realidad dinamica de cada municipio. En cada uno de ellos se determinara el nivel de resolucion de cada unidad de su red y su referencia y contrarreferencia. El Servicio Municipal desarrollara acciones integrales de salud, de promocion, prevencion, de asistencia, recuperacion y rehabilitacion.

Se debera establecer la referencia y contrarreferencia entre unidades de diferentes Servicios Municipales de Salud de forma tal que se garantice el aprovechamiento de los recursos disponibles en todo el sistema en sus diferentes niveles de resolucion.

ORGANIZACION: La organizacion de los Servicios Municipales de Salud debera ejecutarse de acuerdo a los siguientes criterios:

1. La organizacion de los servicios municipales de salud se realizara conforme la division municipal establecida en cada region del pais, tomando en consideracion las prioridades politicas, economicas, sociales, de la defensa, el tamano de la poblacion y su distribucion y el estado de salud de la misma en cada municipio.
2. En cada municipio debera definirse la red de servicios que le corresponda de acuerdo a sus caracteristicas, estableciendo claramente la poblacion a la cual debe servir cada elemento de la red, el nivel de resolucion que debe tener cada una de las unidades de esta red, los recursos humanos y materiales disponibles para la satisfaccion de las necesidades basicas y la articulacion con el resto de la red, es decir la referencia y contrarreferencia.
3. Los niveles de resolucion se estableceran de acuerdo a la presente resolucion, que unifica la nomenclatura, alcance, funciones y recursos que corresponden a cada nivel. -
4. Las unidades de salud de acuerdo al nivel de resolucion que posean podran ser designadas como centros de referencia para la prestacion de servicios a la poblacion que atienden otros Servicios Municipales cuyo nivel de resolucion sea menor.
5. A los servicios que se defina para cada municipio le corresponde trabajar para mejorar el estado de salud de la poblacion del territorio y en el caso de los centros de

referencia, de la poblacion asignada como parte de su area de influencia.

6. A cada unidad de los Servicios Municipales de Salud le sera establecida de forma clara el ambito territorial en el que actuara y la poblacion a la cual debe dar cobertura. Asimismo a las unidades que se definan como de referencia para otras unidades se les delimitara claramente su ambito de accion y sus responsabilidades como tales. Se entendera como unidad cabecera del municipio aquella que tenga el mayor nivel de resolucion y que subordine a otras unidades de menor nivel.

7. Se organizara la participacion popular en salud del municipio de acuerdo a los mecanismos e instrumentos propios de participacion que se establezcan en cada municipio.

8. Cada Servicio Municipal de Salud debera contar con un plan que oriente las prioridades y acciones que se deben desarrollar de acuerdo al estado de salud de la poblacion con el fin de mejorarlo.

9. Seran recursos del Servicio Municipal aquellos que les sean asignados por la Direccion del Area de Salud, los cuales seran distribuidos de acuerdo a las necesidades establecidas en cada municipio. Podran constituirse en recursos del Servicio Municipal aquellos que sean proveidos por las autoridades locales, otras instituciones o la propia comunidad.

10. Los Servicios Municipales de Salud deberan establecer relaciones de cooperacion y colaboracion con las autoridades locales a fin de responder adecuadamente a las necesidades de la poblacion.

ATRIBUCIONES DEL RESPONSABLE DE CADA SERVICIO MUNICIPAL DE SALUD

En cada Servicio Municipal de Salud se nombrara un responsable del mismo cuyas atribuciones principales seran las siguientes:

1. Dirigir y coordinar las acciones de salud que se realizen en su territorio para garantizar la ejecucion del plan de salud del municipio y su control, seguimiento y evaluacion periodica.

2. Administrar los recursos humanos y materiales que le son asignados de acuerdo a sus necesidades y prioridades.

3. Promover la participacion popular en salud.

4. Coordinarse con las autoridades locales y del movimiento comunal, sindical y de masas para la realizacion de las acciones de salud.

5. Presentar informes periodicos a los Consejos y Cabildos

Municipales de la situación de salud de la población y de las acciones realizadas y que sean necesarias realizarse.

6. Se subordina al Director del Area de Salud y responde ante el por el cumplimiento de sus responsabilidades.

"AREA DE SALUD"

OCTAVO: Se entendera como Area de Salud el territorio base para la direccion, organizacion, gestion y administracion de los servicios municipales de salud. Corresponde al area de salud dirigir y coordinar las acciones en salud que se ejecuten en el territorio de su injerencia, y administrar los recursos humanos y materiales que se le asignen. Es un nivel administrativo y no constituye un servicio de salud.

Los principales criterios de delimitacion y organizacion de las areas de salud son los siguientes:

- a. La delimitacion de las areas de salud debera hacerse teniendo en consideracion factores demograficos, economicos, sociales, de comunicacion y en correspondencia al estado de salud de la poblacion del territorio.
- b. Las areas de salud podran ser iguales o mayores que los municipios. Ningun municipio debera ser dividido o podra contener dos areas de salud. Se exceptua la capital en donde la correspondencia se establece de acuerdo a la division administrativa que del municipio haga el gobierno regional.
- c. En aquellos municipios que alojan ciudades cabeceras departamentales o regionales u otros centros urbanos de importancia, se establecera un area de salud. En terminos generales, no se debera agregar a esta area de salud ningun municipio vecino.
- d. Cuando un area de salud incluye varios municipios, estos deberan estar accesibles entre si y ser afines en sus características esenciales, sociales y de salud. -

ATRIBUCIONES DEL DIRECTOR DE AREA DE SALUD

Para cada area de salud se nombrara un Director del Area de Salud cuyas atribuciones principales son las siguientes:

1. Dirigir y coordinar las acciones de salud que se realizen en su territorio para garantizar la ejecucion, control, seguimiento y evaluacion periodica del plan de salud correspondiente.
2. Administrar los recursos humanos y materiales que se le

asignen.

3. Apoyar, asesorar, supervisar y evaluar el funcionamiento de los programas y acciones de salud a nivel de cada municipio.
4. Garantizar la distribucion y abastecimiento de los materiales e insumos medicos y no medicos a la red de servicios municipales de su area.
5. Administrar, dirigir, ejecutar y controlar la ejecucion del presupuesto del area.
6. Informar periodicamente a la Direccion Regional de Salud de la situacion de salud de la poblacion de su area y de las acciones realizadas y que sean necesarias realizarse.
7. Se subordina al Director Regional de Salud y responde ante el por el cumplimiento de sus responsabilidades.

NOVENO: EQUIPO TECNICO DEL AREA DE SALUD

El Director de Area contara con un equipo tecnico constituido por:

- * Epidemiologo o inspector sanitario en su caso
- * Jefa de Enfermera
- * Administrador o Auxiliar administrativo
- * Estadistico
- * Responsable docente

De acuerdo al nivel de desarrollo de cada Area de Salud el equipo tecnico se conformara igual o mas reducido que el planteado.

Las funciones principales del equipo tecnico del area de salud seran:

1. Garantizar la ejecucion de las funciones administrativas, tecnicas y de apoyo que les corresponda.
2. Asesorar al Director del Area en las areas que les competen.

Para garantizar una integracion adecuada de las acciones del equipo del area se establece el Consejo Tecnico del Area, mecanismo colectivo de trabajo integrado por el equipo tecnico y un delegado del sindicato. Sera presidido por el Director del Area.

DECIMO: CONSEJO DE DIRECCION DEL AREA DE SALUD

Para asegurar la direccion colectiva y la coordinacion de las acciones a ejecutarse en el area de salud se establece el Consejo de Direcc'ion del Area de Salud el cual estara integrado por:

- Director del Area
- Consejo tecnico del area
- Responsables de servicios municipales.
- Representante sindical del area de salud.

DECIMO PRIMERO: Para la implementacion de la presente resolucion se APRUEBA el PROGRAMA DE TRABAJO a ejecutarse de acuerdo a las ETAPAS siguientes:

PRIMERA ETAPA: ELABORACION DE LA PROPUESTA DE ORGANIZACION DE LOS SERVICIOS MUNICIPALES

1. Recoleccion de la informacion necesaria para contar con los elementos que ayuden a una mejor definicion de los diferenstes servicios municipales. Esta informacion incluye entre otros: distribucion municipal de la region de salud, total de poblacion urbana y rural de cada municipio, densidad de poblacion, principal actividad economica de cada municipio, vias de acceso y comunicacion, recursos humanos disponibles para la prestacion de servicios de salud, infraestructura de servicios de salud, perfil epidemiologico del municipio, etc.
2. Definicion del nivel de resolucion correspondiente a cada municipio de acuerdo a su realidad poltica, economica, social, de la defensa y al estado de salud de la poblacion.
3. Definicion de las plantillas minimas
4. Reasignacion y completamiento de los recursos humanos y materiales definidos para cada territorio de acuerdo al nivel de resolucion establecido.
5. Definicion de las relaciones de referencia y contrarreferencia entre los diferentes niveles de resolucion presentes en todo el municipio y en otros municipios.
6. Redefinicion de las areas de salud de acuerdo a la division municipal planteada en cada region del pais.
7. Definicion de los niveles de administracion de los recursos financieros y materiales de los servicios de salud de acuerdo al grado de complejidad de cada area de salud.

3. Presentacion de la propuesta de organizacion de la articulacion de los servicios municipales de salud a la division municipal de cada region a las autoridades regionales de gobierno y de organismos de masas.

9. Presentacion y aprobacion de dicha propuesta a la Direccion Superior del MINSA.

10. Ajuste del sistema de informacion para responder a la nueva organizacion de los servicios municipales de salud.

11. Definicion de los mecanismos de abastecimiento medico y no medico para cada area de salud.

Definicion de los mecanismos de manejo presupuestario y financiero de las areas de salud.

11. Definicion de las listas basicas de medicamentos, instrumental y equipo medico, material y equipo de oficina, para cada nivel de resolucion.

SEGUNDA ETAPA: DESARROLLO

1. Nombramiento y seleccion de los responsables de servicios municipales.

2. Nombramiento de los Directores de Areas y conformacion de los equipos tecnicos de cada area.

3. Realizacion del analisis del estado de salud de la poblacion en los territorios definidos, ajuste de prioridades y tareas principales en conjunto con delegados del movimiento comunal.

4. Presentacion del programa de prioridades y tareas principales de los servicios municipales de salud a las autoridades municipales.

5. Definir acreditacion docente de las areas de salud.

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TERCERA ETAPA: CONSOLIDACION

1. Elaborar programa docente para cada nivel de resolucion de acuerdo a la morbilidad mas frecuente en los territorios de cada municipio y en la region.
2. Elaborar Manuales de capacitacion por niveles.
3. Elaborar y ejecutar programa de capacitacion por nivel de resolucion.
4. Elaborar y ejecutar programa de capacitacion a los equipos de direccion de cada area de salud sobre la gestion que les correspondera desarrollar.

Definicion y ejecucion de la descentralizacion administrativa a las areas de salud.

6. Elaboracion del manual de actividades, acciones, procedimientos y normas de estructura, funcionamiento y organizacion de los programas para cada nivel de resolucion.
7. Elaboracion del manual de funcionamiento de la direccion y administracion de las areas de salud.
8. Elaboracion del manual de procedimientos para el manejo del abastecimiento medico y no medico por nivel de resolucion.
9. Elaboracion del manual de procedimientos para el manejo del presupuesto y finanzas del area de salud.
10. Elaborar manual de recoleccion, procesamiento y analisis de los datos de informacion necesaria en cada nivel de resolucion.

DECIMO SEGUNDO: Para efectos de la ejecucion de la presente resolucion:

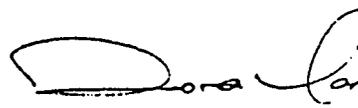
1. Los Directores Regionales tienen la responsabilidad de garantizar la ejecucion de la presente resolucion en sus respectivas regiones.
 2. Se faculta a la Direccion General de Planificacion para organizar la ejecucion de la presente resolucion.
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3. Cada Direccion General debera proceder a la elaboracion de las normas y manuales que le correspondan.

4. La presente resolucion debera ejecutarse conforme al cronograma de trabajo que se establezca.

DECIMO TERCERO: La presente Resolucion Ministerial entrara en vigencia a partir de su fecha de publicacion.

Dado en la ciudad de Managua, a los veintiocho dias del mes de junio de mil novecientos ochenta y nueve.


DORA MARIA TELLEZ ARGUELLO.
MINISTRO DE SALUD



ANNEX D.
INTERVIEW NOTES

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UNICEF, Lic. Juan Carlos Espinola, Oficial de Programas

The lack of medications has been a major problem due to the economic crisis. The GON tried to confront the problem by establishing a pharmaceutical budget based on a list of 370 basic products. Last year this was reduced to 270 products. Currently there is a tremendous shortage of medications.

COFARMA is the state institution that coordinates the production and purchase of medications. They only approve foreign exchange for products which are on the basic medications list. The distribution system is based on health posts, health centers, rural hospitals and national hospitals. There are some problems with the distribution system because of the lack of vehicles.

Another major problem is the lack of materials.

UNICEF uses the following demographic statistics:

0 - 5 Population:	810,000	22.4%
WIFA:	800,000	22.6%
Population growth rate:		3.4%

UNICEF is currently seeking financing for \$6,000,000 over four years for support of primary health care materials to cover the 3,700,000 Nicaraguans. The core of this project, which has government approval, is to reinforce the health system by selling medications. Oral Rehydration Salts and vaccines will continue to be free, but the rest will be sold. Purchases will be made through UNIVAC. UNICEF has also been assisting the local firm SOLKA in the production of ORS, which should begin at the end of this month (May, 1990).

UNICEF supports the immunization program through the provision of vaccines, cold-chain equipment, training of the "brigadistas populares", training of TBA's, support of physician training, the purchase of medications and technical assistance.

Support is also provided to the Diarrheal Disease Program through assisting in the local production of ORS, considered to be the cornerstone of the program. They also provide packages of salts, train workers and provide support for health education by training and supplying "brigidistas", TBA's and health workers.

UNICEF also funds an integrated rural development program. The program has two components, the extension of basic social services such as water, education, health, etc. and increased food intake through increased food production. The methodology depends on the collection and critical analysis of community information by community organizations for the purpose of making decisions. In the area of education the project focuses on literacy and primary education. UNICEF provides TA, school furniture and training of the popular teachers, who are chosen by the community. Once they have returned to the community these teachers enter the professionalization program. The agricultural program tries to assure food self-sufficiency. UNICEF provides training in accounting and marketing and also provides seeds and farm implements. The program has been successful in increasing production, but has encountered some problems in marketing. The water and sanitation program tries to provide access to water through dug or drilled wells and latrines. Hygiene is a major problem in Nicaragua.

UNICEF also works in the area of policy dialogue. They advocate economic policy with a human face. They advocate the existence of a social "safety net".

Pan American Health Organization (PAHO/OPS), Dr. Carlos Linger,
Country Representative

Several interviews were held with Dr. Linger and his staff. In the first interview Dr. Linger was somewhat hesitant to discuss PAHO policies and programs in depth since he had not had any official guidance from his home office in Washington or from the Ministry of Health concerning the stance he should take in regard to working with AID. At that interview it was agreed that we would attempt to get clearance for him from PAHO/Washington through Mr. Thomas Park, Chief, LAC/DR/HNP.

At a subsequent interview some two weeks later Dr. Linger stated that he had met with AID Director, Ronald Roskins and Mr. Thomas Park and that all previous misunderstandings had been cleared up. Dr. Linger made available the OPS Information Center for our use.

At a final interview on August 29, 1990, Dr. Linger shared the following information.

Now, four months into the new government, certain policy decisions are becoming clear. These are:

1. The National Health System (Sistema Nacional de Salud) will continue. What is notable is that it is no longer the "Sistema Nacional Unico de Salud", implying that space is being made for private sector involvement. Nevertheless, Dr. Linger stated that only 0.2% of expenditures in the health sector are in the private sector. The principal problem is the lack of disposable income to spend on private health services and the scarcity of those services. The current MINSA authorities are considering options such as converting certain sections of the hospitals into private rooms and charging fees for those rooms.
2. The continuance of primary health care as the base of the health system. One implication of this is the desire of the MINSA to further increase coverage.
3. To maintain the system of "municipalization" of the health system.
4. To establish financial health within the health system.

Dr. Linger also stated that PAHO is working with MINSA to establish a Five Year Master Plan. The Master Plan has four key areas:

1. Policy and Organization Development. This include Management and administrative development, Management Information Systems, the Referral System and the Development of the municipal Health System.
2. Physical infrastructure, installed capacity, critical supplies (medications and disposable materials) and equipment.
3. Finances.

4. Inter-sectorial relations.

Dr. Linger explained the wide range of activities and projects being managed by PAHO.

Maternal and Child Health. This is a \$0.2 million project financed by UNFPA and with Dr. Ivan Tercero as the principal advisor. The project includes in improvement of the quality of maternal and child health services through training at all levels (traditional birth attendant to university professor), studies (seven are in process in the areas of abortion, maternal mortality, quality of neonatal care, congenital deformations and three others unspecified), perinatology and procurement of contraceptives and materials for family planning.

Development of the Autonomous Region of the North Atlantic. This is around \$4 million financed by Norway. The project calls for the integrated development of the health system in that region and includes the construction of a hospital, health centers and health posts, the maintenance of health facilities, training, a water system for Rositas and basic sanitation. Dr. Pedro Rupillos is the principal advisor.

Rehabilitation of Handicapped. This project is financed by the government of Finland at around \$3.5 million and began this year (1990). The purpose is to develop the country's national rehabilitation system. The project is linked with the demobilization of the Nicaraguan Resistance. Dr. Enrique Coronel is the principal advisor.

Hospital Maintenance Project. Roger Hernandez is the principal advisor in this \$4 million project also financed by Finland. The project will attempt to strengthen maintenance workshops, improved the technical capacity of technicians and purchase critical equipment and spare parts.

Human Resource Development (PASCAP). PAHO, through PASCAP in San Jose, finances a human resources advisor in Managua. This is part of the strategic develop of health personnel program and is particularly oriented towards developing leaders and managers of human resource development programs within the Central American ministries of health.

Human Resource Development (UNAN). Dr. Fabio Salamanca heads up this program designed to develop university level health sciences professors. The Universidad Nacional Autonoma de Nicaragua (UNAN) received little support in the last ten years. This project will train professors in those areas where there are few or none and will strengthen the "Centro de Investigacion y Estudios de Salud (CIES), Nicaragua's school of public health, and also strengthen the municipal "docente/asistencial" program. This is a program whereby the university, with its teachers and students, assumes responsibility for the provision of integrated health care within a defined geographic area of one or more municipalities.

Development of Health Services. Dr. Antonio Pages has managed this program aimed at extending coverage, developing the health system and improving the management information system. Dr. Pages has been transferred and his replacement has not yet arrived.

Expanded Program of Immunizations. Dr. Linger told us that immunization coverage in Nicaragua has been quite acceptable, although there is a recent tendency to decline. The high levels of community participation is the principal reason for the jump in levels over the last decade. Funds come from the sub-regional project. Dr. Linger was informed by Toni Wagner Christianson that AID/W had approximately \$1 million reserved for Nicaragua to support this project. AID funds would be used for training and investigations. Advisors for this project are Dr. Ivan Tercero, Dr. Milton Valdez and Dr. Jorge Arrostequi, PAHO's epidemiologist in Nicaragua.

Diarrhea and Acute Respiratory Infection Programs. The ARI program is financed by WHO/Geneva and provides \$1 million for improving diagnosis and training. The diarrhea program, advised by Dr. Juan Arrutia, is being implemented in collaboration with UNICEF and is aimed at improving the community level oral rehydration units.

Tropical Diseases. Dr. Milton Valdez manages the two frontier malaria projects financed by Sweden and budgeted at around \$4 million. The purpose of the projects is to allow Nicaragua to program coordinated activities with Honduras, on one hand, and with Costa Rica on the other. The activities include spraying, treatment of patients, treatment of sources, equipment and epidemiological activities. The project is going to expand into implementation of local programming across the frontiers.

Essential Medicines. There are two major activities under this project which is managed by Lic. Lila Aguilar. The first is the "Fondo Rotatorio de Medicamentos", a joint basic medications purchasing program of the central American countries. The other component is the development of the national medication production capacity. It is a dynamic project which needs additional funding. Funds currently come from PAHO/Washington.

Instituto de Nutricion de Centro America y Panama (INCAP). INCAP has five advisors in Nicaragua and all of its major activities are being conducted in Nicaragua. These include food technologies, therapeutic diets, breast feeding, weaning foods, growth and development, etc.

Women's Health and Development. Norway is also financing this project managed by Isabel Turcios.

AIDS Control. WHO/Geneva provides the funding for this project aimed at strengthening the national capacity for diagnosing for AIDS, improving blood banking security, promoting the use of condoms for prevention and community education with respect to AIDS. Dr. Norman Jiron is the PAHO project manager.

Health and the Environment. This is also a sub-regional project with Dr. Jorge Jenkins, stationed in Nicaragua, as the sub-regional project advisor. The project is oriented toward environmental actions that impact on health such as protecting drinking water basins, garbage disposal, etc.

Assistance to the Nicaraguan Resistance. This project has had several phases. The first was that of performing medical examinations on the demobilized soldiers. In a matter of two months they examined 20,300 resistance soldiers in 9 demobilization centers. They are now examining family members who are repatriating, some 6,500 to date. Over 40 persons have been involved in this process. Now they are assisting MINSA in establishing a health system in the "Polos de Desarrollo" where resistance members are being settled. Dr. Henry, one time medical director of the Resistance, is now the PAHO advisor. One hospital has been established in Rio Blanco and a second will be established at an as yet undesignated location. There are some \$1.5 million from the OAS and the US Department of State for this project. Dr. Jinger states that additional funds will be needed.

PAHO, Dr. Ivan Tercero, Acting Country Representative and Maternal and Child Health Advisor

Dr. Tercero gave a brief overview of the most urgent needs of the health system: consumable supplies (gloves, suture material, syringes, etc.), laboratory equipment and reagents, repair of deteriorated infrastructure (Ocotal and Puerto Cabezas are the worst).

The health system is structured in the following fashion:

541 health posts (Aux. nurse and MD visits regularly)

102 medical posts (MD present)

163 base houses

78 health centers w/o beds (DDS, MD, RN & poss. Ped. & Ob/Gyn)

24 health centers w/ beds (Same staffing as above)

31 acute care hospitals

4 chronic care hospitals

The Armed Forces has its own health services. The Instituto Nicaraguense de Seguridad Social (INSSBI) has no health facilities.

In terms of private sector, the great bulk of private services are those offered in outpatient clinics, pharmacies, laboratories, etc. There is one major private hospital in Managua - the Baptist Hospital - and two or three clinics with in-patient capacity. CRS is the major NGO in the health field.

MINSA's number one problem is that of supply scarcity. Epidemics of diarrhea, ARI and malaria begin this month of May because of the commencement of the rainy season. There is a vector control program but it is limited by personnel turnover caused by low MINSA salaries.

The country has considerable experience in the use of ORT. There are more than 300 OR centers (THIS PRESUMABLY IS IN ADDITION TO MINSA FACILITIES). Salts have been provided by UNICEF on a regular and permanent basis. The program depends upon the family and the lowest level health worker identifying diarrhea as an emergency problem. Five years ago the country began the "Programa para la Defensa de la Vida del Niño". Among other things this means that children are treated before anyone else at the health units. Despite the difficulties with personnel and supplies, there has been a decrease in the infant mortality rate. Where there are no prepackaged salts they use home solutions made by adding 8 teaspoons of sugar and a 1/2 teaspoon of salt to a liter of water. They have begun to teach a program of rapid intravenous rehydration, a technique first brought to their attention by Martita Marx of PRITECH.

In regards to the EPI program, there is a need to strengthen the cold chain. They need to repair or replace deteriorated equipment. Current coverage rates for children under the age of one year are as follows:

Polio	86%
BCG	94%
DPT	68%
Measles	63%

They have a shortage of human anti-rabies serum. The EPI program has two strategies - systematic vaccination during the entire year and intense campaigns three times per year.

ARI is the leading cause of morbidity in the country. They are just beginning their program with assistance of PAHO. They are lacking basic medications for the program such as erythromycin, salbutamol and penicillin.

Malaria is the next major problem after those discussed above, but Dr. Tercero does not have malaria data at hand.

Water and sanitation depends on the Instituto Nicaraguense de Agua y Alcantarillado (INAA). There is a serious water problem in the country with some 30 to 40% of the population with access to water and less with latrines.

Regiones 1, 5 and 6 are the worst with regard to health. Region 6 is remote, poor and without access to health services. Region 1 has dry areas that have been the site of considerable destruction.

There are about 2150 physicians in the country and another 100 Cuban physicians. There are two medical schools and the length of study is five years, one year of internship and one year of social service.

Health centers have permanent physicians. Health posts have regular physician visits. Base houses have periodic visits. The Medico de barrio operates out of a house in the barrio and increases local access to physicians.

Pan American Health Organization, Dr. Antonio Pages, Oficial Medico

Dr. Pages states that the policies of the new government are still not clear and that the information which he provides should be seen in the light of the last four years.

The guiding policies over the last four years have been:

- Development and strengthening of local health services
- Development of hospital services
- Campaign for the defense of the life of the child
- Other priority programs

Local Services. There has been considerable advance in the last year in articulating the health system with the municipal governments. Within this was a component for strengthening the management capability at the municipal level. Management skills included vital information system, municipal management, local programming and decentralization. (The intention or lack thereof to continue decentralization will be a point of discussion with the new government.)

Dr. Pages mentioned that health areas did not work well because health areas, which were originally designed around relatively equal populations, were distorted by internal migration. In 1987 some regions began to experiment with consolidating two or three areas into zones. Others began to develop agreements with municipal governments. Resolution 75 made official the structure of the health system according to municipal governments. This was promulgated in 1987. In the case of smaller municipalities they developed consortia of several municipal governments. The policy of the previous government was complete decentralization, with the head of the health program named by and a member of the municipal government.

Dr. Pages believes that the central government should stop trying to tell the local level what to do and how to do it. They should leave this in the hands of the municipal government. OPS and the MOH have designed and tested a methodology for use by the local government for health planning, but it has still not been applied generally. The decentralization process began in 1986-1987 and currently includes the decentralization of payroll and decision-making.

Hospital Services. From 1979 - 1986 the focus and efforts of the MOH were on the development of the health areas and they permitted the hospital system to deteriorate. The idea was to solve problems with local services. The hospital was not seen as being a fundamental part of the country's health system.

Beginning in 1989 they began to see the need for improving the physical conditions, equipment, maintenance services and management capacity of the hospitals. Courses for hospital managers included maintenance, hospital administration, equipment and quality control. (There are 32 MOH hospitals.) These efforts have resulted in a partial success and should be seen as having had at least a partial political motivation in preparation for the elections. Among other things they improved the hospital in Bluefields, remodeled Manolo Morales (Managua), advanced in the construction of the Puerto Cabezas hospital, improved neonatal care and improved principal municipal hospitals.

The development of hospital services had three main strategies. The first was the training of hospital directors in hospital administration through their regular public health training program and through continuing education. A second strategy focussed on maintenance. Funds from Holland were channeled through PAHO and went for the purchase of spare parts, training of personnel in boilers and x-ray maintenance and repair and the development of an information system. The third line of action was direct investment through bilateral funds for specific hospitals such as Italy for Granada and Germany for Boaco. In addition to this was an effort to improve the articulation of the hospitals with the primary health care system.

Campaigns. Recently they have been attempting to reinvigorate the efforts to decrease infant mortality rates. They have attempted to involve and assign specific and appropriate responsibilities to all sectors of society. They have a classical MCH program - immunizations, prenatal care, feeding, women's health, family planning, ARI and DDC. The campaigns have a different purpose - more of social mobilization. They have been successful in getting institutions outside of the health system to think in health terms and see their relation to health. Dr. Pages thinks that the MCH programs principal weaknesses are in impact evaluation and programming, lack of supplies and poor coverage, especially in war zones. PAHO has a program with UNFPA.

Other Priority Programs. There are four additional programs with which PAHO is working - rehabilitation of war injured persons, malaria, AIDS and dengue.

Rehabilitation services are limited. There is one rehabilitation hospital - Hospital Aldo Chavarria. There is a prosthesis and orthopedic appliance workshop. There are 22 hospitals and health centers that provide physical therapy. The principal support for this program has come from Finland for the training of personnel in physiotherapy. Finland has provided \$3,000,000 over a period of three years for this purpose. The seriousness of the lack of services will increase with the integration of the Resistance troops. There is a "Comite Nacional para la Atencion a los Incapacitados".

The malaria program suffers from inconsistent availability of trained personnel at the field level. The root of that problem is the low salaries and high turnover rates.

The dengue problem is similar. There was an epidemic in 1985 of dengue serotype 1. There is a high level of Aedes Aegypti infestation in Managua.

AIDS is more of a potential than actual problem. Nicaragua's program is behind that of other countries in the area. They do about 20,000 screening test per year, approximately 5% of what they should be doing. The program which has been developed is expensive - some \$300,000 to \$400,000 per year.

Water and Sanitation. For 1990 the MOH presented a national program that articulates the municipal governments with environmental problems. Water and sanitation coverage in Nicaragua is very low. The same is true for the collection a garbage and solid waste disposal. The principal rural problems are in the Atlantic Coast where it is difficult to find uncontaminated water sources. Dr. Pages states that INAA, the autonomous agency in charge of water and sanitation services has management problems. The MOH and PAHO have concentrated on the problem of water quality. There is air contamination from chlorine and other gas production in some areas; the lake is contaminated; food hygiene is very poor.

Family Planning. Nicaragua has one of the highest population growth rates in the hemisphere. There is no family planning program. There is no sex education. Some politicians discourage family planning. UNFPA's programs include family planning as part of a package of integrated women's health. There are some documents on this subject.

In terms of priorities for AID Dr. Pages would suggest the following:

1. Rehabilitation of the infrastructure of hospitals and health centers.
2. Improved management capacity of health services managers.

3. Support to diarrhea, malaria, rehabilitation, AIDS and dengue programs.

PAHO, Dr. Milton Valdez, AID MINSA Counterpart

(Dr. Valdez was Vice-Minister of health during the previous government.)

The health problem in Nicaragua is complex and best understood as a "post-war" situation. They are beginning at "below zero". The epidemiologic profile reflects this post-war situation and it will get worse because of the deteriorated health system.

He states that the health infrastructure is not only obsolete, but deteriorated. 60% of ambulances are out of commission. 50% of all other MINSA vehicles are stopped. The 32 hospitals are "en el suelo". They had to close the Granada hospital and the one in Puerto Cabezas has a ceiling that will fall in at any time. They have a tremendous lack of both medications and consumable materials. He believes that the situation with consumable materials is even more sensitive than that of medications because while the latter are frequently donated the former are not.

Dr. Valdez believes that the recuperation of the health system must be done in a deliberate and orderly fashion and not "willy-nilly". Medications that are needed should be precisely defined. Actions must be ones that the population can see and feel. Actions should be focussed on maternal and child health.

He defines the immediate problems as the following:

1. Measles. There is not a secure cold chain.
2. Dengue. The upcoming rainy season brings the possibility of a dengue outbreak. This is an expensive program.
3. Malaria. Investment in both malaria and dengue is one which can make a notable impact on the population. They need insecticide, medications, laboratory equipment, transportation, etc.

4. Hospital reconstruction. The following hospitals need repair or remodeling: Vellez Paiz, Berta Calderon, Lenin Fonseca, Leon, Jinotega, Puerto Cabezas and Esteli.

Both he and Dr. Linger believe that the best way for AID to work would be through PAHO, taking advantage of PAHO's experience in the country. MINSA also needs to demonstrate its absorptive and management capacity.

A number of countries are currently assisting Nicaragua. Among them are the Government of Japan which is providing 50 four-wheel drive ambulances and milk. The powdered milk will go for children under the age of two and nursing mothers. Some 15% of the funds for the ambulances will be for spare parts for the donated ambulances and others which are currently out of commission. The total amount donated will be \$9,000,000 for the milk and \$2,000,000 for the ambulances.

The Scandinavian countries are financing an integrated project in Special Zone 1 which includes health (rehabilitation of infrastructure, tuberculosis treatment, CDD, MCH, health education and training). There will also be a potable water component to the project. The project will last five years and begin slowly, increasing pace as the GON shows its capacity to implement. The project is complex and the area is very underdeveloped.

These same countries are assisting in a vector control project along Nicaragua's two frontiers. This project is principally financed by Sweden and Finland. Activities include spraying, larvaciding, insecticide, per diem, equipment, vehicles, motorcycles, bicycles, medication, laboratory equipment, training, etc. The Nicaragua/Costa Rica border is being financed by Sweden (\$300,000 for 1990) and the Nicaragua/Honduras border by Finland (\$400,000 for 1990). There is no external financing for vector control in the rest of the country.

The Dutch government is financing maintenance activities and the basic medication rotating fund. The maintenance activity is especially for equipment and includes the purchase of spare parts, tools, technical assistance, training and the construction of maintenance facilities in the regions. The rotating fund activity has never been reimbursed by the countries, therefore Holland continues to simply provide the basic medications.

Negotiations are currently under way with the Government of Italy for \$19 million for the construction of a Hospital in Granada.

Assistance from the socialist block has largely been in extending lines of credit for the purchase of supplies and equipment. (I understand that Nicaragua has the largest per capita foreign debt in the world.)

The German Democratic Republic financed and operates the Karl Marx Hospital in Managua. It is understood that the united German government will maintain that commitment.

The Soviet Union is currently negotiating a \$20 million project for the construction of a new hospital in Chinandega.

World Food Program has a \$19 million five year project.

In response to the question of "What were the major developments of the last ten years in the field of health, Dr. Valdez responded with the following:

-the first was the formation of the *Sistema Nacional Unica de Salud (SNUS)* on August 8, 1979. Prior to this there were various institutions involved in health. These included the JNAPS (Junta Nacional de Asistencia y Prevision Social) which managed the hospitals in Managua, the 18 JLAS (Junta Local de Asistencia Social) which managed hospitals in each locality, the Social Security Institute and the Ministry of Health. They made this into a single system under the management of the Ministry of Health.

-The next step was the development of the policies to govern this system. These policies were:

- a. that services be free for all persons
- b. that services be planned
- c. that the coverage of services be extended
prioritizing mothers, children and workers
- d. priority of preventive activities

-They achieved the goal of launching this system, but it then confronted the war. The Contras killed doctors and burnt health centers.

-They then began an accelerated decentralization process whereby they delegated authority to the Regional Director. They also let go of control of financial resources, so that the regional directors also managed those. There was resistance to decentralization by central level personnel and the regional personnel did not have sufficient experience to manage the resources. This occurred in 1984. The same policies continued.

-As the war grew, so did the crisis. They passed from trying to expand health services, to a policy of containing the damage of health from the war. This generated the Campaign for the Defense of the Life of the Child. They tried to direct resources to the most defenseless. They trained many people in administration. In spite of the brutal crisis, health was not affected that much.

Their next question was regarding the principal accomplishments of the last ten years. Dr Valdez mentioned the following:

-Having been able to contain the damage of the war.

-Control of immuno-preventable diseases. This includes the elimination of polio, although there is now danger of recrudescence. They used massive vaccination campaigns bathing the population with polio vaccine. They no longer have the intensity that they had achieved in earlier years.

-Real reduction in the infant mortality rate

-To have achieved an average of two visits per capita per year.

-Providing more than 7 million doses of vaccine per year.

-Formation of more than 100 epidemiologists and health administrators in four years. These were formed by CIES, and in Cuba, the US and Brazil.

UNFPA, Lic. Lavinia Belli, Program Officer

UNFPA currently has six projects in Nicaragua. They have a \$6 million Maternal and Child Health Project financed by funds from Finland and Norway and being implemented through PAHO. Dr. Ivan Tercero is the Project Director. UNFPA's actions are limited to effecting purchases of equipment and contraceptives. Some \$500,000 was expended for the project in 1989. The project is based around improving MINSA's capacities for identifying and impacting on risk factors which lead to increased maternal and infant death. Training, both in-service and longer term, overseas is a major component. Training areas include health service management, prenatal care, traditional birth attendants, information systems, health promotion, sex education and detection of cancer. Those who are trained overseas are often responsible for the in-service education of their comrades. A second component is that of procurement. Among items being procured are ambulances, boats, medicines (including oral contraceptives, IUD's and condoms), surgical equipment and anti-tetanus vaccines. A third component is personnel. Finally a number of interesting investigations are being financed. These include studies of maternal mortality, abortion, male attitudes towards family planning, epidemiology of uterine cervical cancer, knowledge, attitudes and practices of maternal and child health and family planning, and the level of efficiency in the health services.

A second project, largely completed, is the Socio-Demographic survey, carried out in 1985 by the *Instituto Nacional de Estadística y Censo* (INEC) and published in four volumes.

A third project, also being carried out in conjunction with INEC, is that of the census. The country's last census was in 1971 and, according to Lic. Lavinia Belli, UNFPA Program Officer, was almost immediately made obsolete by the 1972 earthquake. UNFPA has assisted the government in preparing a detailed budget and plan for carrying out a census. In addition UNFPA has promised one-half of the \$8 million needed to conduct it.

The UNFPA also carried out a population education project with the Ministry of Education. The project introduced basic population themes in primary and secondary level text books and had trained

teachers and parents. That project was completed in December, 1989 at which time a follow-up project was designed. The follow-up project was to have amplified certain of the topics in the lower level texts and to have introduced population topics into the pre-university level. However, with the Ministry of Education's decision to abandon the textbooks developed under the previous government, the follow-up project has been put on hold. Of the \$600,000 budgeted for the project, \$50,000 will be used to reformulate it.

Another project provides some \$600,000 for sex education. The previous government requested an inter-institutional sex education program. That project is also currently on hold until the new government signals its intention to go forward with it.

The Population and Development Project is also on hold. The \$700,000 were budgeted to assist in the formulation of population policies. Under a previous project UNFPA had financed an activity in which all sectors of the society participated in identifying problems and issues and generating solutions with regard to population and women's themes. The Population and Development Project was designed to assist the various Ministries in the formulation of policies which would permit the solutions to be implemented.

Corporacion de Empresas de Salud, Lic. Ana Maria Medina, Presidente and Corporacion Farmaceutica (COFARMA), Lic. Jose Maria Buitrago, Gerente

The "Corporacion de Empresas de Salud" is the umbrella organization that operates five companies supporting the health infrastructure. These five companies are COFARMA, responsible for medications and medical supplies, a company responsible for purchasing office supplies, a company responsible for purchasing general support equipment, a company responsible for purchase of bio-medical equipment and a company for equipment maintenance. Lic. Medina understands that all of the companies except for COFARMA will be privatized and that COFARMA will be limited to serving as the purchasing agent for government institutions.

COFARMA is currently responsible for the purchase of all imported medications, laboratory supplies and consumable health materials. COFARMA sells its imported goods to both the Ministry of Health and to private sector hospitals and pharmacies. COFARMA estimates that it supplies 70% of the total pharmaceutical market, the remainder being supplied by indigenous pharmaceutical companies. According to COFARMA personnel the indigenous companies produce mainly tablets, suspensions, syrups and creams. Of the 90 products on their popular medication list COFARMA imports 33, national producers supply 22 and 35 are both imported by COFARMA and produced locally. In general, nationally produced products are some 40% more expensive because local manufacturers must pay import dues on raw materials and because they must purchase at the parallel market rate while COFARMA purchases at the official exchange rate.

COFARMA imports, stores, sells and distributes medications as far as the regional and/or hospital level. Delivery to more peripheral levels of the system is the responsibility of the MOH. COFARMA has a total of six warehouses providing 14,130 m² of floor space and accommodating a total volume of 70,000 m³. The warehouse system is currently about 65% full. Two warehouses are exclusively for donated medications (see below). The national vaccine bank is also at COFARMA. COFARMA's major providers are Czechoslovakia, Bulgaria, Germany, Hungary, Cuba, Poland, Spain and Panama.

There is one central warehouse called the "centro de despacho" with 3700 m² of floor space where they carry a two month supply of all COFARMA products. COFARMA has nine eight-ton trucks and one semi-van for transportation and distribution.

The MOH regions and hospitals generally make monthly purchases. COFARMA sells and delivers about \$1,000,000 per month to MOH facilities. COFARMA coordinates with and, to a certain extent, is responsible to the MOH Vice-Minister of "Abastecimiento Tecnico-Medico" (ATM). That position is currently held by Dr. Dennis Delgado.

COFARMA's information system is a combination of manual and automatic systems. Their inventory system is automatic, but very slow. They have seven IBM AT type computers and plan, as their next step, to automate their billing procedures. They are lacking the necessary physical remodeling to make this step.

COFARMA, Victor Solis, Gerente de Almacenes y Manuel Estrada,
Encargado de Bodegas de Donaciones

There are two warehouses of 708 m2 each for donated medicines. Currently they are about 30% full. Materials are brought into the warehouse where they are compared to shipping documents to assure congruence. Once all materials have been inventoried, they are sent to a separate section of the warehouse awaiting shipping instructions. Once a distribution plan is developed they are moved to the dispatch section for shipping.

For the donated supplies they rely on MINSA to supply them with shipping instructions.

The donated supplies warehouse has 23 employees and has received 12 shipments so far this year (as of mid-May, 1990). Major shipments so far this year have come from UNICEF, PAHO and the Italian government.

Upon receipt and initial inventory, a receiving report is filled out and a kardex file is opened and filed by donor. Shipments, giving dates, quantities, distribution and balance on hand are maintained at the warehouse.

Baptist Hospital, Dr. William Abdalah, Director

Prior to 1972 Nicaragua had a modern medical system. In that year the earthquake destroyed the hospitals in the city. Prior to 1972 the INSSBI (Social Security system) was the major and best provider of health care, but its hospital was destroyed in the earthquake. After that the INSSBI only provided outpatient services and contracted in-patient care to private hospitals. After the earthquake four public hospitals were constructed in the city and they were complemented by three regional hospitals (Esteli, Bluefields and Rivas). Several more were under construction. By 1979 the health system had recuperated in terms of everything except for sophisticated technology.

After the revolution primary health care improved through the extension of health units and an increase by one year in the required period of obligatory social service for health professionals. Hospital attention, however, declined because of the lack of economic support. The patient fees which had been charged by the MOH prior to 1979 were eliminated, further undermining the financial support to the hospitals. A point was arrived at where the quality of services could no longer be maintained simply because of the lack of supplies. One result of this was an increase demand on private sector providers which continued to grow until the economic blockade.

Since 1985 there has been a rise in costs and a decrease in the availability of dollars, resulting in an increase in "consultorios privados", the closure of two small hospitals in Managua, a near collapse of Managua's second largest private hospital, the "Hospital de Especialidades" and a 60% reduction of services in the Hospital Bautista. Dr. Abdalah says this has been both a reduction in demand and reduction in capacity to provide services.

The Baptist Hospital has the best reputation for quality of services of any of the Nicaraguan hospitals. Room rates go from US\$35 per day to US\$15. A nurse earns about C.25,000,000 (\$100) per month, 50% more than a MINSA nurse.

The hospital has 40 adult beds, 18 pediatric beds, 4 surgical suites, laboratory, X-ray and pharmacy. They attend some 3,000 visits per month and charge C.300,000 (\$1.20) for a general medical visit and C.1,000,000 (\$4.00) for a specialist visit.

Hospital Manolo Morales, MINSA, Dr. Luis Gutierrez, Sub-Director and Lic. Veronica Artola, Chief of Nursing

The Manolo Morales Hospital is one of the principal general, medical-surgical hospitals in Managua. Lenin Fonseca and Carlos Marx are the other two. The hospital has orthopedic, maxilo-facial and trauma surgery as well as general surgical capabilities. Several internal medical sub-specialists are available including

hematologists, neurologists and gastro-enterologists. A pathologist and radiologist also staff the hospital. The hospital has 200 beds, four surgical suites, an intensive care unit (ICU) and a coronary care unit (CCU). It serves as a training center for medical students, interns and residents and has a one year auxiliary nurse training center with 60 students.

The hospital is 16 years old (one of the four constructed after the earthquake) and was in very poor condition up until about one year ago when the Government of Denmark donated funds for its rehabilitation.

The hospital operates under two principal limitations. The first is the lack of funds for maintenance. Maintenance personnel are not really qualified. Electronic equipment is not able to be repaired by the Health Corporation and the hospital doesn't have the funds with which to pay them anyway. To further complicate matters, there is a wide variety of donated equipment with no catalogs.

The second limitation is the absence of medications. They have had no financial liquidity in the last six months. They have only received budget allotments sufficient to pay salaries and purchase half of the food they need for patients. Previously COFARMA allowed them to purchase on credit, but this is no longer permitted. COFARMA supposedly made its last purchase of medications in September, 1989. They try to cover urgent needs through grants from organizations that have received donations. One of these is called John XIII where they have recently received gauze and bandages. Some 60% of hospital wounds currently get infected in the hospital because of the lack of antibiotics and gauze.

Dr. Gutierrez says the hospital has been in a crisis for years. They are functioning at 50% of their capacity. They are currently only operating on emergency patients. They have 220 consumable items on their supply list and some 280 pharmaceutical products. They have no x-ray film and are using casting tape from the 1950's.

In regard to principal accomplishments the hospital officials responded that the expansion of primary health care and the eradication of polio were two principal accomplishments of the last

decade. They added, however, that this has been at the expense of the hospitals which have been abandoned.

They have a 60% shortage of auxiliary and professional nurses and a 30% shortage of cleaning personnel. There is a rapid turnover in personnel because of the low salaries and high rates of inflation. A nurse earns C.30,000,000 (\$120) per month and a cleaning person C.3,000,000 (\$12).

Hospital Berta Calderon, MINSA, Dr. Victor Mantillas, Sub-Director

Berta Calderon is the Women's and Eye Hospital. Although originally designed for only 150 beds, the facility actually has 330 beds and the following departments: gynecological and eye outpatient services, labor and delivery, emergency, maternity ward, gynecology ward, oncology ward and ICU. They are supported by pathology, pharmacy, radiology, laboratory and social work services. They have three surgical suites and a closed neonatal unit. The hospital also provides training to eye and ob/gyn specialists, interns and fifth year medical students.

The hospital attends some 15,000 births annually (approximately 10% of all births in the country and 35 to 40% of all hospital births). They see some 150 emergencies each day and 250 outpatients, they do some 15 uterine curettages, attend 40 births and conduct 8 surgical procedures.

They recognize the necessity of developing their family planning services. They began putting in IUD's last year. Surgical sterilization is mostly done by PROFAMILIA. The criteria for sterilization is age 25 years and six children!!!! The hospital has 720 employees including 25 ob/gynecologists, 7 ophthalmologists, 8 neonatologists, 6 oncologists, 4 anesthesiologists, 2 pathologists, 40 residents, 25 interns and 60 fifth year medical students.

Dr. Mantillas lists the following as the hospital's principal constraints:

-Lack of Medications. Currently they lack oxytoxics, magnesium sulfate and antibiotics.

-Break down in the Referral System. The Vellez Paiz Hospital is supposed to be the place for normal deliveries, but women have traditionally preferred Berta Calderon. Nevertheless, with the opening of the Carlos Marx Hospital there has been a significant decrease in the number of normal deliveries.

They claim that 60% of the births present some form of dystocia. Their Cesarian section rate is 21 - 24%. This is principally a result of previous C-section.

Dr. Mantillas believes that the principal accomplishment is in reducing the neo-natal mortality rate within the hospital from 60/1000 live births to 14/1000 live births. This was done through administrative improvements such as making available physicians 24 hours per day and assuring the proper application of treatment norms through improved supervision.

The hospital's maternal mortality rate is 90 deaths per 100,000. The principal cause of these deaths is intentional abortion. They say that since they began applying IUD's there has been a reduction in intentional abortions.

Hospital La Mascota, MINSA, Dr. Perez Fonseca, Sub-Director

La Mascota is the only children's hospital in the country. The hospital opened in 1982 with outpatient care. It currently has 210 in-patient beds.

The outpatient department has a triage function and provides primary care, even though that is not part of the hospital's mandate. The outpatient department also has a milk bank, psychology services and social workers. The emergency department has an oral rehydration and observation units. Diarrhea is the country's number one health problem. The director would like to build a diarrhea unit in the future which would include oral rehydration, nutritional recuperation, parenteral rehydration and cubicles for examination. This would all be within the context of an educational plan for mothers. The hospital has a seven bed ICU which has received \$900,000 from DISVI, an Italian NGO. There are 25 beds in the infectious disease ward, 25 beds in the open

neonatal unit, 25 beds in the infant section, 75 in the medical ward, 50 surgical beds and they are just opening 25 beds for patients with leukemia. They have three surgical suites and carry out an average of eight procedures per day. They have laboratory, radiographic and ultrasound support services.

The leukemic ward is a special project of an Italian hospital called San Gerardo de Monza. Prof. Masera helps with the purchase of medicines, training of the hematologists, nurses and other personnel.

The hospital has been involved in the program "Para la Defensa de la Vida del Nino". This program has both a preventive and curative focus and includes education, priority treatment for children, immunization and greater economic support. Nevertheless, the hospital and all of its programs are experiencing an enormous economic crisis. This economic crisis is reflected in laboratory services where there is a lack of equipment, chemicals and personnel, in radiology where films are out of date and the automatic processor does not work, in the lack of nurses, support personnel, medicines and equipment.

Dr. Perez says these problems are solved through astuteness and magic. The magic is in the establishment of personal, social, religious and public relationships to obtain assistance. The astuteness has to do with a very careful management of resources.

Both the director and the sub-director have attended the PAHO management courses, but do not believe that they have been terribly effective.

In order to improve the quality of care they have case analysis on every child death. This has resulted, among other things, in a reduction of case fatality rates for patients with diarrhea. Their neonatal mortality rate is now less than 15% for patients surviving the first 48 hours and under 30% for all patients.

PROFAMILIA, Lic. Roberto Rochez, Administrator

PROFAMILIA is Nicaragua's IPPF affiliate. Lic. Rochez reports that PROFAMILIA has approximately 40,000 users and provides 38,000 couple years of protection (CYP's). Of its users 35,000 are participants in the Community Based Distribution program. The program only operates in Regions II, III, and IV.

In addition to the CBD program, they are attempting to promote family planning through several community service programs. These are the following:

- a. The first is entitled EMIPLAFA, Educacion Maternal Infantil/Planificacion Familiar.
- b. Another is CODEMO, Colaboracion para Desarrollo de la Mujer. This includes, among other things, the cultivation of family gardens.
- c. Sex and family education for adolescents.
- d. Maternal Education.

In addition to the above PROFAMILIA provides clinical/surgical services. Services include general gynecological, pap smears, insertion of IUD's and voluntary surgical sterilization. They do about 4000 surgical sterilizations per year. They use the minilaporotmy procedure.

PROFAMILIA also provides training in family planning to physicians, nurses and social workers in its two clinics. They provide training to their own distributors and to teachers, community leaders, students and parents. The PROFAMILIA headquarters has its own training center.

PROFAMILIA has a program designed at informing and educating opinion leaders. They see the current government as being right wing and conservative and Cardinal Obando as having considerable influence.

The MOH refers patients to them for sterilization. PROFAMILIA does not perform abortions.

They are interested in a social marketing program.

CEPAD, Prof. Aguierre, Director Ejecutivo

CEPAD is composed of some 80 protestant evangelical denominations and has 52 members. The purpose of CEPAD is to avoid duplication of efforts among member groups.

Its major health effort is PROVADENIC, a project of the Baptist Foundation. 80% of PROVADENIC's efforts are preventive and the remainder curative. The project is directed by Dr. Gustavo Parajon. The project works in 24 rural communities in the Departments of Managua, Matagalpa, Chinandega, Carazo and Boaco. All of the areas in which they work are isolated and without health services.

They use community health leaders rather than doctors or nurses. These leaders are trained by the project and have their own health manual. They form a community committee and carry out activities such as weighing children and providing milk supplementation where necessary, education, immunizations in collaboration with the MOH, development of mother's clubs, etc. CEPAD provides medicines free of charge.

PROVADENIC provides supervision and funds come from Christian and evangelical organizations throughout the world, but especially Europe.

Other organizations active in the health field are Caritas, COPROSA (Cardinal Obando's organization), Save the Children. There is a NGO coordinating committee headed up by Edwin Maradiaga de la Asociacion para el Desarrollo de los Pueblos (Tel 22079).

Instituto Nicaraguense de Agua y Alcantarillado (INAA), Lic.
Guillermo Herrera, Jefe de Planificacion

The country's current urban/rural split is approximately 60/40. Estimated 1989 population was 3,800,000 and 53% are believed to have potable water. This 53% includes 78% of the urban population and 18% of the rural population.

In the urban areas 31% of the population is served by sewage disposal systems and only 14% of the rural population (1981 figure). The MOH apparently had a latrine project in the early years of the revolution, but this was abandoned. Ing. Herrera believes that some 3,500 latrines have been constructed in recent years.

Looking at advances in terms of the last decade total access to potable water in the rural areas has increased from 6% to 18% and globally from 39% to 53%. Access to sewage disposal systems has remained constant at about 32%. Despite the increased access to water there is still a problem with the quality of the water.

In the urban areas, especially those of the coast, the major source of water is drilled wells. The depth of the wells varies from 100 to 300 meters. In the north central part of the country most of the water comes from shallow subterranean sources. On the Atlantic side there is a significant problem with salinity of the subterranean water.

There are now a series of projects in various parts of the country helping to address the water and sanitation problem.

In Region I COSUDE (Swiss Development Organization) has financed a rural development project since 1982. They have completed four phases and are currently entering the fifth. The water systems are dug wells or small gravity fed systems. Only in the current phase have they added latrine construction and to date health promotion has not included health education.

Region VI has had a CARE/Canada project since 1983. They are currently negotiating a three to five year project in which they contemplate the construction of some 650 water projects and approximately 3,000 latrines.

In Special Zone 3 UNICEF is financing water projects. There is no latrine component in that project.

UNICEF is also financing a five year integrated rural development program which will include health, education, infant well being and water and sanitation in regions I, V and VI. These are the country's most economically depressed regions and, therefore, priority areas. This is to complement other activities in these zones. They anticipate reaching 220 communities with 350 drilled wells, 150 dug wells, 25 gravity fed water systems and 7,000 latrines.

PRODERE is a UN financed project for returning refugees and INAA will be incorporated into that project.

Dr. Rafael Cabrera, Obstetrician/Gynecologist, one of the founders of the Nicaraguan Demographic Association, Past Chief of Maternal and Child Health of MINSA, and ex-Presidente of the National Medical Specialists Group of MINSA

Dr. Cabreara explained the founding of the Nicaraguan Demographic Association in 1970 and AID's role in nurturing it as well as AID's financing of the MOH's vertical family planning program. The MOH had approximately 30 clinics throughout the country.

At the time of the revolution AID was marginated and MINSA took over the family planning program's office. In 1979 Dr. Cabrera was asked by the new government to take over the development of a maternal and child health program. He developed an integrated program with seven components to the maternal program - prenatal care, delivery, puerperal care, breast feeding promotion, studies in human fertility (euphemism for family planning), gynecological care and cancer detection - and four infant programs - control of growth and development, control of acute diarrhea, immunizations and childhood illness.

Although AID offers financial support to the program, that support is rejected by the government. AID did continue to supply contraceptive commodities to the Demographic Association which, in turn, donated them to the government.

Dr. Cabreara was removed from the program in 1983.

Dr. Cabreara was appointed several years later as the chief of the Medical Specialists Office of MINSA and, as such, directed much of the 1985 effort against the Dengue epidemic. He left MINSA for the last time in 1987.

MINSA, Dr. Freddy Cardenas, Chief of Maternal and Child Health

Dr. Cardenas explained the structure of the Child Survival Programs. Three are in his office - Acute Respiratory Infections, Diarrheal Disease Control and Control of Growth and Development. Three others are in the Division of Epidemiology and Hygiene. These are nutrition, breast feeding and immunizations. The family planning program is also in the MCH Division.

The community education activities are under the Division of Training and Investigation, while the Planning division is responsible for the Sentinel Sites.

He states that prenatal coverage is 80% with 45% of these being enrolled in the first trimester. 37% of those seen are vaccinated with two doses of tetanus toxoid by the time of delivery. There is an average of 2.7 visits per pregnant woman. 56% of deliveries are in health care facilities. The maternal mortality rate is 9.7/1000. (This must be 9.7/10,000). This rate is higher than the official rate because they began an intensive effort to capture information about deaths in rural areas in 1987. The highest rate is in Region VI @ 330/100,000 live births.

Dr. Cardenas states that 33% of women in fertile age receive some form of contraceptives, but only 4.4% are protected. They believe that to have an impact on growth rates they need to have at least 30% of the population protected. UNFPA donates about 10% of the contraceptives used by MINSA. The rest have to be purchased by MINSA and by the user. Women do not did their spouses approval to obtain surgical sterilization and can do it after having two to three children independent of their age. In the early years of the revolutionary government there was no restriction on family

planning, but it was not promoted. In 1986 they began promoting family planning based around the concept of reproductive risk. 70% of users use oral contraceptives, 15% IUDs and 10% condoms.

The death rate for provoked abortion rate is 3/10,000, or about one-third of all maternal deaths. Toxemia of Pregnancy is the leading cause of maternal death. In Region VI, the leading cause is placental retention.

The midwife training program was reactivated in 1982. They prepared a training manual and carried out regular supervision/retraining activities. They prepared a reporting form which did not depend on literacy. Region V has the most highly developed program with support from UNICEF and European personnel. Region I has a MINSA birthing center. They recognize the need to train and support the TBAs given the fact that MINSA hospital beds can only handle 60% of the country's deliveries. They try to use the hospital only for high risk obstetrical cases. He states that many women prefer giving birth in the home.

The breast feeding program began in 1983. At the end of 2 months 80% of mothers have weaned their children. There is a breast feeding KAP study designed, but there are no funds for financing it. There was a national breast feeding commission early in the 80's but it lost force and direction and no longer exists.

The Risk Factor study showed that low birth weight babies are about 10% of all births and that this stays more or less stable. The perinatal mortality is highest in Region II, followed by regions VI, V and IV. The principal causes of perinatal mortality are asphyxia or depression at birth, prematurity or neonatal sepsis. In order to address this problem they have tried to improve the quality of attention by reorganizing functions. These adjustments resulted in a decline in late fetal death in the Berta Calderon Hospital. The problem of prematurity is more difficult to address since it depends upon social and economic conditions.

In the diarrhea program they have developed norms. At least 80% of the health establishments have Unidades de rehidratacion oral (UROs). They have sufficient ORS for the next three months. SOLKA, a local manufacturer is supposed to start producing salts very soon. They trained 1,500 MINSA employees in skills for

supervising the acute diarrhea program in 1988. They also carried out a program for managers of diarrhea programs financed by PAHO. Through the "Campana Por la Defensa de la Vida del Nino" they attempted to carry out community environmental actions through forming inter-institutional committees at the municipal level. Only in region II were the actions comprehensive and did, indeed, result in decreasing morbidity and mortality. The campaign also resulted in an increase in the number of visits by children with diarrhea and an increase in the rapidity with which they were seen. They established a norm of the mother staying with the child in the URO for a minimum of four hours. In these four hours they provide education to the mother and observe the progress of the child. If there is no improvement, they send the child to the reference center. Each child death is discussed between the hospital, where the child usually dies, and the health center which referred him. 80% of the cases of diarrhea occur between July and September. In 1989 they developed a three phase plan. January to March was the preparatory phase during which time they assured training, materials and resource distribution. They assured that URO's were opened for 24 hours and that the best human resources were in the emergency room. The alert phase was in April when they supervised health establishments to assure preparedness. The next phase was the phase of intensificacion de actividades where everything coming out of the MINSA central office was directed towards diarrhea. The final phase was that of evaluation.

MINSA, Dr. Eric Prado, Director of Tropical Disease Division

The malaria program was a typical, vertical SNEM (Sistema Nacional de Eradicacion de Malaria) until the 1979 revolution. After the revolution, especially from 1982 to 1985 there was a tendency towards regionalization of the program. In 1981 MINSA began a collective treatment program. In 1982 they set the goal of treating patients and, thereby, eliminating the parasite. Dr. Prado coordinated the decentralization under a Vice-Minister who insisted in a rapid decentralization process.

Currently the program is in a crisis situation. It has lost resources, lost some of its most capable persons, per diem are low and only sporadically paid. As a result, malaria cases have increased.

Region III has attempted to address this problem by concentrating its resources in the four areas of the Region where 70% of the malaria occurs. This is Dr. Prado's plan for addressing the problem in epidemic areas.

Ninety percent of the Dengue cases are in Region III. The most recent infestation rates show infestation in 1% of the houses. Epidemics become more likely when the aedes aegyptii infestation rate is above 5%. Human resources include 45 women who do the household inspection, with the same problems as those mentioned above. The dengue program needs to meet the following needs:

- Education
- Larvaciding
- Destruction of breeding places
- Permanent ULV spraying

MINSA, Dr. Rene Aguilar, Departamento de Enfermedades Imunoprevenibles

Dr. Aguilar reports that MINSA has carried out two coverage surveys, one in 1987 and the other in 1989.

The EPI program began in 1980. It began with the Peoples' Vaccination Campaigns. It received initial support from UNICEF, which still contributes the majority of vaccines, excepting polio which is donated by the Rotary Club. UNFPA gives tetanus toxoid and PAHO gives technical assistance with IDB funds. IDB also provides funds for training.

The program is decentralized. Every health unit conducts vaccination activities. Each has a refrigerator and a thermos. All of the health posts have vaccination activities.

The program strategy is based around the fact that vaccination is a priority activity of primary health and that it is part of the Campaign in Defense of the Health of the Child. They have tried to decentralize the program. Each region has its Vaccine Bank, with at least a three month supply of biologicals. The regional bank sends vaccine monthly to the different areas within the region. They

have a refrigerated vaccine transportation unit. The only exception in the way the program operates is the Atlantic Coast.

There was a polio outbreak in 1979. In 1980 the People's Campaigns began. Since that year there are three campaigns per year. Initially they gave only measles and polio vaccine to children under the age of five years. In 1986 they added DPT. In addition they have the on-going vaccination program in the health units.

In 1988 they began to emphasize the concept of universal coverage. MINSA personnel go house to house in a systematic and planned fashion. The MINSA has a policy that all personnel must go into the community at least four times per month. Some visits cover integrated health activities and other are strictly oriented at vaccination. Employees are paid a salary bonus for field work so there is an economic incentive to do field work.

In order to increase BCG coverage the GON has implemented a law that requires the parent to present a certificate of BCG vaccination from the health center before the GON will issue a birth certificate.

For the Popular Campaigns the driving force has been the brigadistas. The Movimiento Popular has provided them with training. The GON, Municipal governments, INAA have all participated.

Every community has someone responsible for health named by the community movement council in their town or barrio. Cmdte. Omar Cabezas is the National Director of this autonomous organization.

An analysis of the cold chain is planned for this year. The current cold chain has a 75% coverage. One of their problems is in the transportation of propane gas. 10% of health units do not have electricity. All of the health units in the Atlantic Coast use propane gas. When there is no refrigeration they use "mini-campaigns".

In the last national survey they found that 95.9% of the 16,937 children between 12 and 23 months which were interviewed had a vaccination card.

MINSA, Lic. Tita Picado, Director of Nutrition

Lic. Picado stated that the Nutrition Division is part of the Directorate of Hygiene and Epidemiology. The Nutrition program has not had a development similar to that of other programs. It has suffered from constant turnover of personnel. Most of the development has occurred in the last two years.

In terms of resources she is a Nutritionist with an advanced degree in MCH nutrition. She has four nutritionists, one social worker, and one external nutritionist. She has a part time research nutritionist and two persons studying.

Beginning with the 1988-1990 Plan they began to focus on the MCH group. They began with training in Growth and Development. Along with the training they began the implementation of a nutritional surveillance program. This program is currently implemented in three regions I, II and VI and was extended in 1989 to Region IV. They hope to implement it in Regions V and III in 1990 and also, if possible, in the Atlantic Coast. Her chief constraints are the limited coverage of the Health system and the constant turnover of personnel.

The World Food Program is supporting the "Nutritional Support to the Program of Primary Care in Determined Regions Project". They provide basic foods. Currently the program covers 6,000 families, although 11,000 are programmed. These families are in 11 health areas.

Their efforts this year will be on assisting the local level to make better use of the information being developed by the surveillance system. INCAP is assisting them in this activity. INCAP is also assisting them in developing appropriate weaning foods. This is in response to the fact that the highest incidence of malnutrition is in the six month to two year age range.

The national breast feeding program was very effective from 1979 to 1985. Since that time it has been abandoned. With the launching of the Campaign for the Defense of the Life of the Child, breast feeding has taken on a renewed importance. Exclusive breast feeding in children under the age of four months is 10%. (This is based on a study which they did in Leon.)

They also are conducting activities in the area of endemic goiter, Vitamin A, hospital feeding and technical assistance to the Ministry of Education.

Italian Embassy, Lic. Osvaldo Gualtieri, Technical Cooperation

The Government of Italy is providing support to health services in Granada. Their program has two aspects. One is \$3 million for the construction of one health center and the remodeling of a health post, providing water and latrines to one barrio, the construction and initial stocking of a popular pharmacy and an effort to strengthen the knowledge base of health practitioners through the provision of technical experts in various fields including pediatrics, psychiatry, and neurology. Fifteen million dollars in funds have been approved and plans are currently being drawn up for the construction of a Hospital in Granada. In the long term the Italian government will focus its efforts on the whole of Region IV. The Italian government is also putting some \$12 million into Bluefields for the construction of a water system and has \$3 million approved for the provision of medications and consumable materials for MINSA over the period of one year. PAHO is acting as technical coordinator for their activities.

Norwegian Embassy, Lic. Milagros Barahona

Norway has four bilateral projects which are all being technically managed by PAHO. One is Women, Health and Development, a regional project, and focused on training, women's issues policy formulation and women's legislation. Especially important in the \$385,000, three-year project which will last through 1991, is the participation of women in preventive health activities. Sweden is also assisting in the financing.

A second project is centered on the urban areas of the North Atlantic Autonomous Region (RAAN). It is an ambitious project which emphasizes environmental sanitation. It includes the construction of wells, latrines and water systems, cleaning of river banks, training, and Norwegian technical assistance. The project began in 1989.

A third project, also regional in nature, is that of pharmaceutical production. Finally, there is a country-wide environmental project.

The projects are monitored and managed through meetings with the national directors of the project which analyze progress and plans. There is a formal coordination committee. The Swedes, Norwegians, PAHO and MINSA meet formally on an annual basis. The review, revise and prepare for the subsequent year.

Dutch Embassy, Mr. Ronald Muyzert, Ambassador

The Dutch government is financing maintenance activities and the basic medication rotating fund.

The maintenance activity which began in 1986 and has expended approximately \$7.5 million is run by two Dutch experts and three highly qualified *cooperantes*. The project runs through "Tecno-Medic" - one of the companies of the *Corporacion de Salud*. This was a country-wide project called "Plan Holanda" and offered spare parts and certain new equipment in a certain number of hospitals. Autoclaves and boilers were particularly important. The current project includes the purchase of spare parts, tools, technical assistance, training and the construction of maintenance facilities in the regions. The program is scheduled to end in November, 1990. The Dutch government is currently considering continuing it within the framework of a regional PAHO hospital maintenance project. This is because the Dutch Embassy does not have the resources to manage it by themselves and the project has become quite a burden. They prefer to implement projects through NGOs and multi-lateral organizations.

The basic medications rotating fund activity has never been reimbursed by the countries, therefore Holland continues to simply provide the basic medications.

The Dutch government anticipates putting increased emphasis of primary health care in its future assistance to the GON. They are preparing a five year project proposal for Region V which, it is expected, will have three main elements - improvement of infrastructure, formal nursing education and supply of medications. There are a number of smaller efforts also being assisted by the Netherlands and include the rehabilitation of the hospital in Bluefields, support to the gynecological branch of one of the

women's organizations and funds to the *Medicos sin Fronteras* who are operating in the RAAN.

Canadian Embassy, Mr. Felipe Rios, Country Director Canadian International Development Agency

The Canadian Government is financing two major efforts in water and sanitation. One is directly with the GON and involves the rehabilitation of water systems in Leon, Chinandega, Masaya, Granada, Jinotepe and Rivas. The project will begin in February, 1991 and last for four years with a total estimated cost of \$8.6 million of which Canada is providing approximately 70%.

The second project is being financed through CARE and has budgeted \$4.3 million over five years for the provision of potable water, latrines and health education to 40,000 persons in Region VI. This is the continuation of a previous project in the same area and will begin in September, 1990 with a duration of five years.

CIDA is financing a number of smaller projects as well with local funds of \$20,000 - \$25,000. This includes help to the nutrition department of Boaco. They are providing \$24,000 for the nutrition laboratory of MINSA. They are assisting the Polytechnical School, which originally depended upon MINSA, but now is part of UNAN. \$180,000 go to *Maison Neuf* for a nutrition project.

Spanish Technical Cooperation, Dra. Elizabeth Jane, Director of Health Programs

The Government of Spain is providing support in the formation of human resources. A Central American sub-regional project works with local institutions to train health professionals. In Nicaragua the Spanish Government supports the Centro de Investigacion y Estudios de Salud (CIES), the Nicaraguan School of Public Health, through funding for two courses for Central American health professionals. These two courses are "Health Planning and Local Programming" and "Training of Trainers in Public Health". Local institutions in the other Central American countries host other courses. Bilateral support also goes largely to CIES for remodeling of the school's facilities, *cooperantes* in

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biostatistics, epidemiology, health planning and investigation methodologies, technical assistance in health economics and scholarships for long term study in Spain. The government also manages a small emergency fund.

ANNEX E
BIBLIOGRAPHY

BIBLIOGRAPHY

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ANNEX F
SCHEDULE OF INTERVIEWS

SCHEDULE OF VISITS

Monday, May 7

- 11 am Lic Juan Carlos Espinola, Oficial de Programas,
UNICEF
- 4 pm Dr. Carlos Linger, Country Representative,
PAHO

Tuesday, May 8

- 9 am Lic. Ana Maria Medina, Presidente
Corporacion de Empresas de Salud
- Lic. Jose Maria Buitrago
COFARMA

Wednesday, May 9

- 9 am Lic. Victor Solis, Gerente de Almacenes
COFARMA
- Lic. Manuel Estrada, Encargado de Bodega de
Donaciones,
COFARMA

Thursday, May 10

- 2 pm Mr. Robert Moore, Vice-President
INMED

Friday, May 11

- 8 am Dr. Dennis Delgado, Vice-Minister of Adquisicion
Tecnico-Administrativa, MINSA
- Lic. Ana Maria Medina, Corporacion de Empresas de
Salud
- 10 am Dr. Ivan Tercero, Acting Country Representative
PAHO

Saturday, May 12

- 11 am Dr. William Abdalah, Director
Hospital Bautista, Managua

Monday, May 14

- 8 am Dr. Luis Gutierrez, Sub-Director,
Hospital Manolo Morales, MINSA, Managua
- Lic. Veronica Artola, Jefe de Enfermeria
Hospital Manolo Morales, MINSA, Managua
- 11 am Dr. Victor Mantillas, Sub-Director,
Hospital Berta Calderon, MINSA, Managua
- 4 pm Dr. Tony Pages, Medical Officer
PAHO

Tuesday, May 15

- 8 am Dr. Perez, Sub-Director,
Hospital La Mascota, MINSA, Managua
- 10 am Lic. Roberto Rochez, Jefe de Administracion,
PROFAMILIA

Wednesday, May 16

- 8 am Dr. Enrique Friccione and Others,
Hospital de Jinotepe, MINSA, Jinotepe
- 4 pm Dr. Enrique Salmeron, Minister of Health
MINSA

Friday, May 18

- 9 am Lic. Aguirre, Director Ejecutivo
CEPAD
- 10 am Lic. Guillermo Herrera, Jefe de Planificacion,
Instituto Nacional de Aguas y Alcanterillados
- 3 pm Dr. Milton Valdez
PAHO

Monday, May 28

- 10 am Dr. Milton Valdez
PAHO
- 12 pm Dr. Petronio Delgado, First Vice-Minister
MINSA

Wednesday, May 30

8 am Lic. Connie Parasevka, USAID/Honduras
Lic. Frank Valva, Task Force

Friday, June 1

4 pm Dr. Enrique Salmeron, Minister of Health

Monday, June 4

10 am Lic. Victor Solis, Gerente de Bodegas, COFARMA
Field trip to Donations Warehouse to observe
management of AID supplied medications

Tuesday, June 5

3 pm Taylor Blanton, Consul General, US Embassy

Wednesday, June 6

10 am Dr. Carlos Linger and representatives of bilateral
agencies in Nicaragua

Thursday, June 7

10 am Dr. Rafael Cabrera, Gynecologist, Founder of
Asociacion Demografica de Nicaragua and past
Director Materno-Infantil under Sandinista
Government

Friday, June 8

9 am Dr. Milton Valdez

10 am Lic Marina Avilez, ATM, MINSA
Lic. Lili Aguilar, OPS

2 pm Mr. Gerald Louis
Pastor Miguel Adonias, Adventist Development and
Relief Association

Tuesday, June 12 and Wednesday, June 13

Escorting Mrs. Cindy McCain, wife of the Senator from Arizona to various hospitals, interviews and other functions.

1 pm Dr. Freddy Cardenas, Director Materno-Infantil, MINSA

Sunday, June 24

9 am Mr. Norberto Ambros, Coordinator for Central and South America, Pan American Development Foundation

Monday, June 25

1 pm Dr. Eric Prado, Director Nacional de Enfermedades Tropicales, MINSA

3 pm Lic. Lavinia Belli, Program Officer, United Nations Fund for Population Activities

Tuesday, June 26

8 am Mr. Osvaldo Gualtieri, Sanitation Advisor, Italian Cooperation Agency,

9 am Lic. Milagros Barahona, Norwegian Development Agency

10 am Mr. Ronald Muyzert, Charge de Affaires, Embassy of the Netherlands

Wednesday, June 27

8 am Mr. Felipe Rios, Director, Canadian Agency for International Development

10 am Dr. Elizabeth Jane, Health Advisor, Spanish Cooperation Agency

12 pm Dr. Petronio Delgado, First Vice Minister of Health

2 pm Embassy of Finland

Thursday, June 28

Visit to Region I (Esteli) and health posts

Friday, June 29

Visit to Region V (Juigalpa) and participation in review of diarrhea program with Dr. Marvin Lund, Director General of Hygiene and Epidemiology

Tuesday, July 3

8 am Dr. Rene Aguilar, Jefe Nacional de programa de
Immunizaciones, MINSA

10 am Lic. Sergio Maltez, Director Ejecutivo, PROFAMILIA

4 pm Lic. Tita Picado, Director de Division de
Nutricion, MINSA

Wednesday, July 4

Visit to Region V (Juigalpa) and health establishments

Monday, July 9 to Thursday July 12

General National Strike

Monday, August 27 .

8 am Lic. Liliana Ayalde, USAID/Nicaragua

10 am Lic. Aida LeRoy and James Hooper, USPHS

Tuesday, August 28

9 am Lic. Sergio Maltez, PROFAMILIA

12 pm Dr. Petronio Delgado, Acting Minister

Wednesday, August 29

11 am Dr. Carlos Linger, PAHO

1 pm Dr. Janet Ballantyne, Mission Director

Thursday, August 30

2 pm Dr. Petronio Delgado and Dr. Douglas Sosa

Friday, August 31

10 am Lic. Sergio Maltez, PROFAMILIA

ANNEX G
MINSA ORGANIZATIONAL CHARTS

ORGANIGRAMA MINISTERIO DE SALUD

